TITULNÁ STRANA PREKLADU – COVER SHEET OF TRANSLATION

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PREKLAD číslo / TRANSLATION No. 172/2024

Z anglického jazyka do slovenského jazyka
From the English language to the Slovak language

Predmet prekladu: BREEAM
Subject of translation: BREEAM

Počet strán prekladanej listiny/ *Number of pages of the translated document*:	450
Počet strán preloženej listiny/*Number of pages of the translation*	454
Počet vyhotovení/ *Number of copies*	1

Miesto a dátum/ Place and date: Bratislava dňa / on 01.03.2024

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BREEAM International New Construction

Version 6.0

Technical Manual – SD250

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Acknowledgements

BREEAM International New Construction Version 6 has been made possible through the continued efforts of many dedicated BRE Group staff members, National Scheme Operators (NSOs), Technical Working Group members, BREEAM Assessors, customers and those who have responded to our consultation calls and meetings or provided feedback in other ways. BRE Global also extends its gratitude to those who support BREEAM by continuing to specify and apply the method and contribute towards a sustainable built environment.

Cover image: The Flow Building in Prague - the first building in the Czech Republic to achieve a BREEAM Outstanding rating under BREEAM International New Construction 2016.

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About BRE Global

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We aim to achieve this by:

1. Researching and writing standards
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4. Undertaking research and consultancy for clients and regulators
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About this Scheme Document

This document is the technical manual for BREEAM International New Construction Version 6. It describes an environmental performance standard against which new buildings worldwide can be assessed and achieve a BREEAM New Construction rating.

The scheme document and the information detailed within is intended for use by trained, qualified and licensed BREEAM International Assessors in accordance with the procedural and operational requirements of BREEAM (as described in the BREEAM Operations Manual, SD5070) under the terms and conditions of a BREEAM licence. This document should be used by non-BREEAM Assessors for reference purposes only.

Changes to this BREEAM scheme document

This scheme document is subject to revision and can be reissued from time to time by BRE Global. A schedule of the publication date for each issue of this document is provided below.

Scheme document reference	Version	Date
SD250	6.0.0	01/12/2021

Introduction to BREEAM

BREEAM (Building Research Establishment's Environmental Assessment Method) is the world's first sustainability rating scheme for the built environment and has contributed much to the strong focus in the UK on sustainability in building design, construction and use. BREEAM is now an international standard that is locally adapted, operated and applied through a network of international operators, assessors and industry professionals. Through its application and use BREEAM helps clients measure and reduce the environmental impacts of their buildings and in doing so create higher value, lower risk assets.

To date, BREEAM has been used to certify over 590,000 building assessments across the building life cycle and it is being applied in over 85 countries.

Aims of BREEAM

- To mitigate the life cycle impacts of buildings on the environment.
- To enable buildings to be recognised according to their environmental benefits.
- To provide a credible, environmental label for buildings.
- To stimulate demand and create value for sustainable buildings, building products and supply chains.

Objectives of BREEAM

- To provide market recognition of buildings with a low environmental impact.
- To ensure best environmental practice is incorporated in the planning, design, construction and operation of buildings and the wider built environment.
- To define a robust, cost effective performance standard surpassing that required by regulations.
- To challenge the market to provide innovative, cost effective solutions that minimise the environmental impact of buildings.
- To raise awareness among owners, occupants, designers and operators of the benefits and value of buildings with a reduced life cycle impact on the environment.
- To allow organisations to demonstrate progress towards corporate environmental objectives.

BREEAM is developed and operated to meet the following underlying principles:

- Ensure **environmental quality** through an accessible, holistic and balanced measure of environmental impacts.
- Use **quantified measures** for determining environmental quality.
- Adopt a **flexible approach** that encourages and rewards positive outcomes, avoiding prescribed solutions.
- Use **robust science** and **best practice** as the basis for quantifying and calibrating a cost effective and rigorous performance standard for defining environmental quality.
- Reflect the **social and economic benefits** of meeting the environmental objectives covered.
- Provide a **common international framework** of assessment that is tailored to meet the 'local' context including regulation, climate and sector.
- **Integrate building professionals** in the development and operational processes to ensure wide understanding and accessibility.
- Adopt **third party certification** to ensure independence, credibility and consistency of the label.
- Adopt **existing industry tools**, practices and other standards wherever possible to support developments in policy and technology, build on existing skills and understanding, and minimise costs.
- Align technically and operationally with **relevant international standards**, including the suite of standards on the 'Sustainability of Construction Works' prepared by the European Committee for Standardisation Technical Committee CEN/TC 350, as well as other international initiatives that promote harmonisation in the assessment of sustainability performance of built environment assets across their life cycle.
- Engage with a representative range of **stakeholders** to inform ongoing development in accordance with the underlying principles and the pace of change in performance standards (accounting for policy, regulation and market capability).

The aims, objectives and principles of BREEAM are embodied within a Core Technical Standard owned and managed by BRE Global. This is applied through a suite of BREEAM schemes covering aspects of the built environment life cycle. These schemes are locally developed and operated by a number of different organisations, called National Scheme Operators (NSOs), across a range of countries.

For a full list of BREEAM NSOs and schemes visit the BREEAM website (www.breeam.com).

The BREEAM schemes

BRE Global is the NSO of BREEAM in the UK. We develop and operate a number of BREEAM schemes for the UK and internationally, each designed to assess the environmental performance of developments at various stages in the life cycle, and these include:

- **BREEAM Communities** for the master-planning of a larger community of buildings.
- **CEEQUAL** for civil engineering, infrastructure, landscaping and public realm works.
- **BREEAM New Construction** for new-build domestic and non-domestic buildings.
- **Home Quality Mark** for new-build dwellings (in the UK only).
- **BREEAM In-Use** for existing buildings in operation.
- **BREEAM Refurbishment and Fit-out** for domestic and non-domestic building fit-outs and refurbishments.

Independent BREEAM Assessors, trained, qualified and licensed by BRE Global can undertake a BREEAM assessment using this scheme document and associated reporting and calculation tools.

Once an assessment is complete and quality assured BRE Global will issue a BREEAM certificate. The BREEAM certificate provides formal verification that the Assessor has completed an assessment of a building in accordance with the requirements of the scheme and its quality standards and procedures.

A BREEAM certificate provides assurance to any interested party that a building's BREEAM rating, at the time of certification, accurately reflects its performance against the BREEAM standard.

Anyone wishing to verify the BREEAM rating of a building can do so by either checking its BREEAM certificate, which will contain the certification mark, (see Figure 1 below) or by searching the BREEAM buildings listings on BREEAM Projects (www.breeam.com/projects). Examples of a BREEAM New Construction certificate can be found in Appendix F – Examples of BREEAM New Construction certificates on page 414.

Figure 1: The BREEAM certification mark

Ensuring quality and consistency

All BREEAM schemes are developed and operated by NSOs in accordance with the Code for a Sustainable Built Environment. The Code for a Sustainable Built Environment is a set of strategic principles and requirements which define an integrated approach to the design, management, evaluation and certification of the environmental, social and economic impacts of the built environment.

The Code is interpreted through the BREEAM Core Process and Technical Standards. These linked documents set out the requirements that a compliant scheme must meet in order to be affiliated with the Code. The Standards ensure that a common scientific and performance basis is used by all compliant schemes operated by NSOs, while ensuring that these are relevant to local demands, standards and practices.

To ensure competence, impartiality and performance capability, all National Scheme Operators are required to maintain scheme operations to internationally agreed standards and seek accreditation from a national accreditation body.

BRE Global is a United Kingdom Accreditation Service (UKAS) accredited certification body (No. 0007). The scope of our accreditation to ISO/IEC 17065 'Conformity assessment - Requirements for bodies certifying products, processes and services' can be verified on the UKAS website, and includes BREEAM Scheme SD123 'Environmental assessments of the built environment – certification of the process'.

BRE Global is also certified to ISO 9001 'Quality management systems – Requirements' for all its BREEAM related activities.

As an accredited certification body, BRE Global maintains an open and accountable governance structure.

BREEAM operates a series of Technical Working Groups, these provide BRE Global with access to a range of experts that can review BRE Global's standards and schemes to ensure their robustness from a scientific, technical and market perspective as well as ensuring the development of the standards and schemes is open to greater external and independent scrutiny.

About BREEAM International New Construction Version 6

The BREEAM International New Construction Version 6 scheme is a performance based assessment method and certification scheme for new buildings.

The primary aim of BREEAM International New Construction Version 6 is to mitigate the life cycle impacts of new buildings on the environment in a robust and cost effective manner. This is achieved through integration and use of the scheme by clients and their project teams at key stages in the design and construction process.

This enables the client, through the BREEAM Assessor and the BRE Global certification process, to measure, evaluate and reflect the performance of their new building against best practice in an independent and robust manner.

This performance is quantified by a number of individual measures and associated criteria stretching across a range of environmental issues, see Table 1 below, which is ultimately expressed as a single certified BREEAM rating, i.e. the label. To see how a BREEAM rating is calculated, see Scoring and rating BREEAM assessed buildings on page 28.

Table 1: Environmental sections and assessment issues in BREEAM International New Construction Version 6

Section	Assessment issues
Management	— Project brief and design — Life cycle cost and service life planning — Responsible construction practices — Commissioning and handover — Aftercare
Health and wellbeing	— Visual comfort — Indoor air quality — Safe containment in laboratories — Thermal comfort — Acoustic performance — Accessibility — Hazards — Private space — Water quality
Energy	— Reduction of energy use and carbon emissions — Energy monitoring — External lighting — Low carbon design — Energy efficient cold storage — Energy efficient transport systems — Energy efficient laboratory systems — Energy efficient equipment — Drying space — Flexible demand side response
Transport	— Public transport accessibility — Proximity to amenities — Alternative modes of transport — Maximum car parking capacity — Travel plan — Home office

Section	Assessment issues
Water	— Water consumption — Water monitoring — Water leak detection — Water efficient equipment
Materials	— Life cycle impacts — Hard landscaping and boundary protection — Responsible sourcing of materials — Insulation — Designing for durability and resilience — Material efficiency
Waste	— Construction waste management — Recycled aggregates — Operational waste — Speculative floor and ceiling finishes — Adaptation to climate change — Functional adaptability
Land use and ecology	— Site selection — Ecological value of site and protection of ecological features — Minimising impact on existing site ecology — Enhancing site ecology — Long term impact on biodiversity
Pollution	— Impact of refrigerants — NO_x emissions — Surface water run-off — Reduction of night time light pollution — Reduction of noise pollution
Innovation	— Innovation

When and how to engage with BREEAM International New Construction

Timing the engagement with and use of the BREEAM International New Construction scheme via the BREEAM Assessor is essential for ensuring seamless integration of the methodology in the new-build procurement process. Without this, the ability to optimise cost-effectively the building's environmental performance and achieve the desired BREEAM rating will be compromised. Appointing a BREEAM Assessor or Advisory Professional early in the project will help in achieving the target rating without undue impacts on the flexibility of design decisions, budgets and potential solutions.

Figure 2 on the next page serves to highlight the link between the BREEAM International New Construction Version 6 assessment and certification stages and the RIBA Plan of Work 2020.

This figure can assist clients in timing their engagement with BREEAM and the appointment of a BREEAM Assessor.

Clients can view up-to-date listings of licensed BREEAM International New Construction Assessors and BREEAM Advisory Professionals on BREEAM Projects (www.breeam.com/projects).

It is important to recognise that BREEAM primarily reflects the overall performance of the building rather than just the opportunities or limitations placed on specific stakeholders involved in the procurement process. This means that the client, design team, principal contractor and BREEAM Assessor, as well as other specialist disciplines, have an important role to play throughout the procurement process, if the desired performance level is to be achieved and reflected through the certified BREEAM rating.

The onus of orientating the brief towards sustainability needs to come first and foremost from the client. To facilitate this, BRE Global recommends that clients and their project teams engage with a BREEAM Assessor or BREEAM Advisory Professional no later than the Preparation and Briefing stage (RIBA Stage 1 or equivalent) and ideally sooner where practical. This will ensure that realistic targets are set and can be met, appropriate responsibilities can be defined and understood, and low or no cost solutions to environmental impacts can be sought and applied wherever possible.

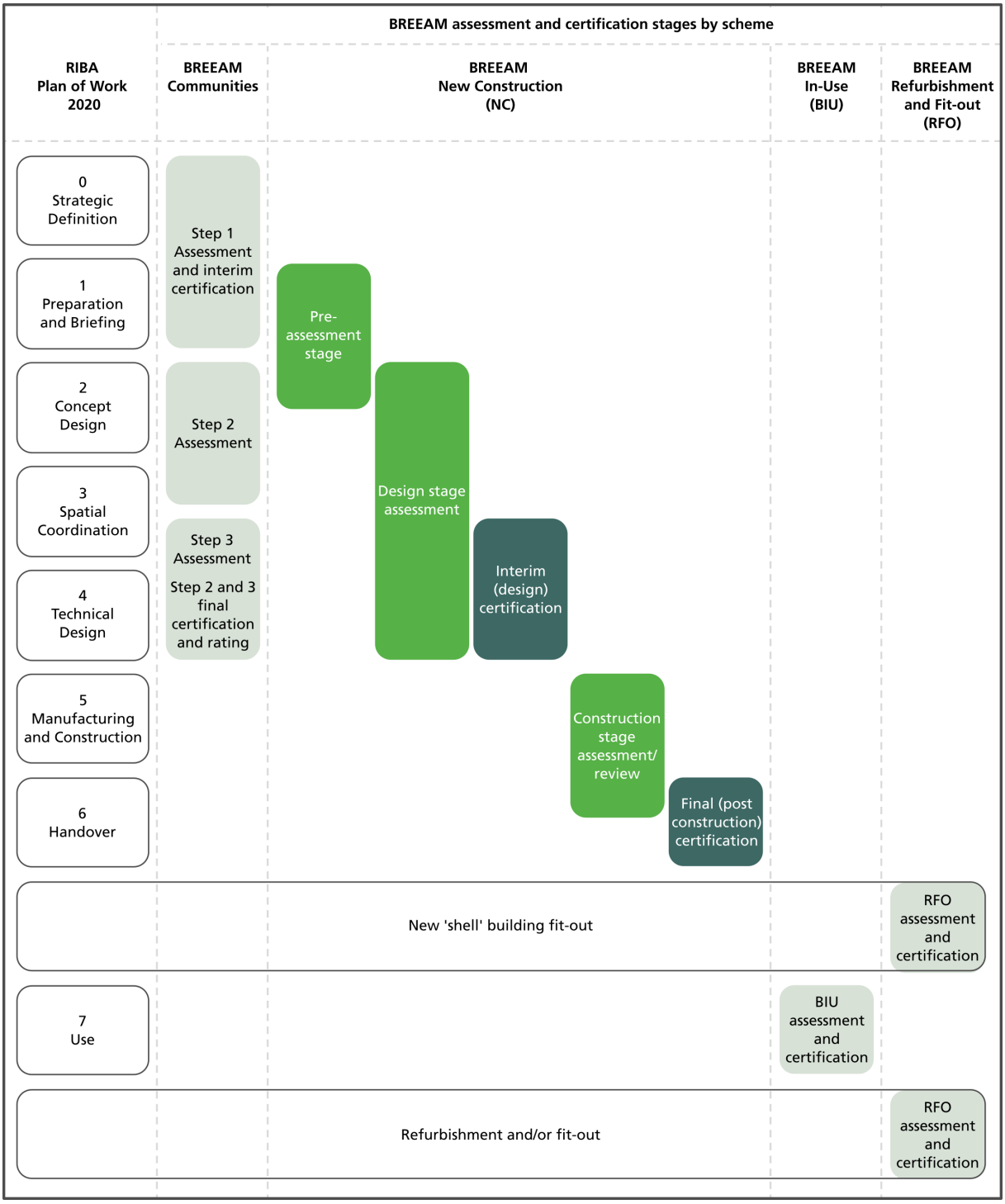

Figure 2: BREEAM assessment and certification stages and the Royal Institute of British Architects (RIBA) Plan of Work 2020 stages

How to use BREEAM International New Construction

This BREEAM scheme document is a technical document which has been created to:

1. Enable qualified and licensed BREEAM Assessors to complete BREEAM assessments and determine a rating
2. Enable BRE Global to complete quality assurance reviews of a BREEAM Assessor's assessment report, in accordance with the standards to which BRE Global is accredited
3. Act as an aid for BREEAM Advisory Professionals (AP) to undertake project team facilitation, in terms of defining, monitoring and successfully achieving the desired BREEAM rating
4. Act as a reference for clients and members of the project team whose proposed building is being BREEAM-assessed.

The scheme document is split into the following parts:

1. Introduction to BREEAM
2. Scope of the BREEAM International New Construction scheme
3. Scoring and rating BREEAM assessed buildings, including minimum standards and BREEAM rating benchmarks
4. The BREEAM evidential requirements
5. Assessment criteria
6. Appendices
7. Checklists

The **Scope** section describes the types of buildings and stages of assessment that this BREEAM scheme can be applied to. Appendices A to F provide additional scoping guidance for specific building and project types. The Scope section can be used by clients and BREEAM Assessors to check whether this is the correct BREEAM scheme to use for their project.

The **Scoring and rating** section illustrates how a building's assessed performance is measured and rated. It outlines the BREEAM rating level benchmarks, the minimum BREEAM standards for each rating level and the BREEAM environmental section weightings. It also includes a description of the BREEAM assessment issues and 'credits', including BREEAM 'innovation credits', and how performance against these is calculated and expressed as a BREEAM rating.

Please note that, for the purpose of formal assessment and certification, the building's actual BREEAM performance must be determined by the BREEAM Assessor using the relevant BREEAM reporting and calculation tools.

The **BREEAM evidential requirements** section provides guidance to assessors and project teams on the various types and forms of evidence required by the BREEAM Assessor to demonstrate compliance with BREEAM criteria. This includes a description of why BREEAM requires an auditable trail of evidence.

The **Assessment criteria** section includes the individual BREEAM assessment issues, categorised in 10 environmental sections. Each issue defines a level of performance (the assessment criteria) against which the assessed building demonstrates compliance (using appropriate project information, i.e. evidence) in order to achieve a corresponding number of available BREEAM credits.

The majority of BREEAM issues and credits are tradable, meaning that a client and their project team can pick and choose which to target in order to build their BREEAM performance score and achieve the desired BREEAM rating. Several BREEAM issues have minimum standards, meaning that to achieve a particular BREEAM rating specific credits or criteria must be achieved (BREEAM's minimum standards are outlined in the Scoring and rating BREEAM-assessed buildings section).

Each BREEAM issue is structured as follows:

1. **Issue information**: This contains the assessment issue reference, title, number of credits available[1] and whether the issue forms part of BREEAM's minimum standards.
2. **Aim**: This outlines the broad objective of the issue and the impact it measures or mitigates.
3. **Assessment criteria**: This outlines the good and best practice performance level benchmarks and criteria. Where the building complies with the assessment criteria, as determined by the BREEAM Assessor, the relevant number of BREEAM credits can be awarded. Some issues have exemplary level criteria; where a building demonstrates that it meets exemplary level criteria, a BREEAM innovation credit can be awarded (for more details, refer to Innovation on page 401). Up to a maximum of 10 innovation credits are available.
4. **Checklists and tables**: This section contains any checklists and tables referenced in the assessment criteria section. This can include tables of benchmarks or building type specific performance criteria.
5. **Compliance notes**: These notes provide additional guidance that supports the application and interpretation of the main assessment criteria, including how to assess compliance in a particular location or for a particular building or project type, e.g. shell only.
6. **Methodology**: This section includes a description of any methodology used to determine the number of BREEAM credits achieved for a given level of building performance. It includes, for example, calculation procedures or guidance on how non-BREEAM schemes, standards or qualifications referenced in the assessment criteria relate to those criteria.
7. **Evidence**: This section describes the types of project information that must be provided by the design team or client and given to the BREEAM Assessor to enable verification of the building's performance against the assessment criteria and so justify the award of the relevant number of BREEAM credits. The BREEAM evidential requirements section provides further guidance on evidential requirements.
8. **Additional information**: This section contains any further information relevant to the application of the assessment criteria, including any definition of terms used in the assessment issue or sources of additional information that may be of use in addressing the issue.

The **Appendices** provide supporting information relevant to either the scope of the BREEAM International New Construction Version 6 scheme or its assessment criteria.

Scope of BREEAM International New Construction

The BREEAM International New Construction scheme can be used to assess the environmental life cycle impacts of new buildings at the design and construction stages. 'New Construction' is defined as development that results in a new standalone structure, or a new extension to an existing structure, which will come into operation or use for the first time upon completion of the works.

This BREEAM International New Construction scheme version is applicable to new buildings in countries without a BREEAM affiliated National Scheme Operator (NSO). Note: Where the country has a NSO offering a country-specific local scheme that is appropriate to the building type, their scheme must be used in preference to BREEAM International. Information on countries with local schemes can be found in Appendix A and also on the BREEAM website (www.breeam.com).

Type of buildings that can be assessed using BREEAM International New Construction

The building types which can be assessed and rated using this scheme version are outlined in Table 2 below. Additional guidance for some of the building types listed is also provided in the appendices (refer to the endnotes).

Table 2: List of building types covered under BREEAM International New Construction Version 6

Sector	Building type	Description
Residential	Residential	— Single dwellings — Multiple dwellings
Commercial	Offices	— General office buildings — Offices with research and development areas (category 1 laboratories only)
	Industrial	— Industrial unit – warehouse storage or distribution — Industrial unit – process, manufacturing or vehicle servicing
	Retail	— Shop or shopping centre — Retail park or warehouse — 'Over the counter' service provider, e.g. financial, estate and employment agencies, and betting offices — Showroom — Restaurant, café and drinking establishment — Hot food takeaway
Education[2]		— Preschool — Schools and colleges — Universities — Higher education institutions
Residential institutions[3]	Long term stay	— Residential care home — Sheltered accommodation — Residential college or school (halls of residence) — Local authority secure residential accommodation — Military barracks

Sector	Building type	Description
Hotels and Residential institutions	Short term stay	— Hotel, hostel, boarding and guest house — Secure training centre — Residential training centre
Non-standard building types	Bespoke	— Community or visitor centre — Town hall or civic centre — Conference facility — Theatre or concert hall — Sports or leisure facility (with or without a pool) — Library — Cinema — Hospital and other healthcare facility — Prison — Law court — Police station — Fire station — Transport hub (coach, bus or rail station) — Gallery or museum — Place of worship — Research and development (category 2 or 3 laboratories - non-higher education)

Mixed-use developments and building types

Developments which consist of a number of separate buildings of differing functional types, or a single building containing a number of different functions, e.g. office and retail or retail and residential, will typically require an assessment and therefore BREEAM rating and certificate for each individual building or functional use within a single building.

This is necessary as BREEAM defines differing criteria and benchmarks for some assessment issues according to building type, function and use. Therefore to maintain comparability and consistency of the assessment and BREEAM rating, a separate assessment score and rating are required for each building type, function or use in the development.

Further guidance on how to define mixed-use developments for the purpose of a BREEAM assessment can be found in Guidance Note 10 *Mixed-use developments and similar buildings (or units)*.

Part new-build, part refurbishment projects

For developments that are a mixture of new-build and refurbished areas, the choice of scheme depends on the scope of the new-build and refurbishment works.

For smaller projects, where the total development area is less than 1000m², a single BREEAM assessment can be undertaken to cover both the new-build and refurbished areas. The BREEAM New Construction or BREEAM Refurbishment and Fit-out scheme choice will be based on whichever (new-build or refurbishment) constitutes the majority of the assessed floor area.

For larger projects, a single New Construction assessment can be undertaken, as the refurbished areas would then have to reach the more challenging New Construction criteria. If the development is predominantly refurbishment with a new-build extension, then the BREEAM Refurbishment and Fit-out scheme contains thresholds under which a single Refurbishment and Fit-out assessment can be completed.

Where the new extension is above these thresholds and a single BREEAM Refurbishment and Fit-out assessment is not appropriate, there are two options as described below.

Option 1: Separate BREEAM New Construction and BREEAM Refurbishment and Fit-out assessments

Under option 1, two separate BREEAM assessments are conducted with a BREEAM New Construction assessment undertaken on the new extension and a BREEAM Refurbishment and Fit-out assessment undertaken on the existing building refurbishment or fit-out. Two separate certificates and ratings can be obtained to indicate the performance of both the new extension and existing building refurbishment or fit-out.

Option 2: Bespoke BREEAM combined New Construction and Refurbishment and Fit-out assessment

Under option 2, BRE Global produces a bespoke criteria appendix document that determines, for specific BREEAM issues, which issues and assessment criteria are applicable to the part new-build, part-refurbishment project. It refers to both the BREEAM Refurbishment and Fit-out manual and the BREEAM New Construction manual. A bespoke Scoring and Reporting tool is also produced for the project.

As part of the bespoke criteria development for issue Ene 01 Reduction of energy use and carbon emissions on page 150 we allow the new-build to be assessed against the New Construction scheme and the refurbishment against the RFO scheme. The tool performs an area-weighted average score.

In determining the appropriate option for a part new-build, part-refurbishment project, the BREEAM Assessor should review the scope of the proposed works and consider in particular the scope of the refurbished elements, i.e. is it a major refurbishment, will there be a significant change of use and will the building's thermal and structural elements remain 'as existing'? Using this information, the assessor should advise the client on the most suitable option in terms of which BREEAM version or scheme is most appropriate for maximising the building's environmental performance.

BREEAM International New Construction assessment types

Within the International New Construction scheme a number of assessment types are defined and can be used to assess and rate a new building's performance. These are:

- Non-residential
  - Fully fitted
  - Shell and core (see Appendix D – Shell and core project assessments on page 409)
  - Shell only (see Appendix D – Shell and core project assessments on page 409)
- Residential
  - Fully fitted (see Appendix E – Applicability of BREEAM New Construction to single and multiple dwellings, partially and fully fitted on page 412)
  - Partially fitted (see Appendix E – Applicability of BREEAM New Construction to single and multiple dwellings, partially and fully fitted on page 412).

The assessment criteria for these options are clearly identified in this technical manual. The assessor, in collaboration with the client and design team as necessary, should determine which BREEAM assessment type is relevant for their project.

Similar building types (or units) on the same site

It is possible to assess and rate a number of separate but similar non-residential buildings, or individual units within a larger building development, within one BREEAM assessment report. Further guidance on this type of assessment can be found in Guidance Note 10 *Mixed use developments and similar buildings (or units)*.

Shell and core, speculative buildings

Non-fitted out 'speculative' new buildings, often referred to as shell and core buildings, can be assessed using the BREEAM International New Construction scheme. Further details on the application of the scheme to these types of new building can be found in Appendix D – Shell and core project assessments on page 409.

Non-standard building types

Non-standard building types

If a building type requiring assessment is listed as a non-standard building in Scope of BREEAM International New Construction: Table 2 on page 23 or is not listed at all, it can still be assessed using BREEAM International New Construction. Such building types will require the development of a set of bespoke assessment criteria to be used in conjunction with this International New Construction scheme. In such instances BREEAM Assessors and clients should contact BRE Global for advice and information on how to proceed. Further details are given in Guidance Note 23 *BREEAM Bespoke Process*.

Data centres

Data centres are currently assessed in the UK with BREEAM Data Centres 2010 (SD5068). Internationally, bespoke criteria development is required as detailed above for other non-standard buildings. At the time of writing BRE Global are updating the Data Centres scheme, and will produce a Data Centres appendix to this International New Construction scheme, so bespoke criteria development will not be required.

Building life cycle stages covered

This scheme can be used to assess and rate the environmental impacts arising from a newly constructed building development (including external site areas), at the following life cycle stages:

1. New build design stage (DS) – leading to an interim BREEAM rating and certificate of assessment
2. New build post-construction stage (PCS) – leading to a final BREEAM rating and certificate of assessment.

Design stage

The design stage (DS) assessment and interim BREEAM rating confirms the proposed new building's performance at the design stage of the life cycle. Assessment and ideally certification will occur prior to the beginning of operations on site. The BREEAM rating at this stage is labelled as 'interim' because it does not represent the building's final, new construction BREEAM performance.

To complete an assessment at this stage, the design must be advanced to a point where the relevant design information is available to enable the BREEAM Assessor to evaluate and verify the building's performance against the criteria defined in this scheme document. The interim DS assessment will therefore be completed and certified at the scheme design or detailed design stages.

Post-construction stage (PCS)

The post-construction stage (PCS) assessment and BREEAM rating confirms the final as-built performance of the building at the new construction stage of the life cycle. A final PCS assessment is completed and certified after practical completion of the building works.

There are two approaches to assessment at the post-construction stage:

1. A post-construction review (PCR) based on a completed interim design stage assessment
2. A post-construction assessment (PCA).

A PCR serves to confirm that the building's as-built performance and rating is in accordance with the assessment certified at the interim design stage. Where an interim DS assessment has not been carried out, i.e. certified, and a BREEAM assessment and rating is required, a full post-construction stage assessment can be conducted.

Building life cycle stages not covered

The BREEAM International New Construction scheme is not designed for, and therefore not appropriate to assess the environmental impacts of buildings at the following life cycle stages:

1. Infrastructure projects (refer to CEEQUAL)
2. Master planning projects (refer to BREEAM Communities)
3. Existing building refurbishment and fit-out (refer to BREEAM International Refurbishment and Fit-out)
4. Existing building in operation or existing unoccupied building (refer to BREEAM In-Use)

Scoring and rating BREEAM assessed buildings

BREEAM rating benchmarks

There are a number of elements that determine the overall performance of a project assessed using BREEAM:

1. The scope of the assessment
2. The BREEAM rating level benchmarks
3. The minimum BREEAM standards
4. The environmental section weightings
5. The BREEAM assessment issues and credits

How these elements combine to produce a BREEAM rating for a project is summarised on the following pages. This is followed by a description and example describing the methodology for calculating a rating.

The BREEAM rating benchmarks for projects assessed using the BREEAM International New Construction Version 6 scheme are as follows:

Table 3: BREEAM rating benchmarks

BREEAM Rating	% score
OUTSTANDING	≥ 85
EXCELLENT	≥ 70
VERY GOOD	≥ 55
GOOD	≥ 45
PASS	≥ 30
UNCLASSIFIED	< 30

The BREEAM rating benchmarks enable a client and all other stakeholders to compare the performance of a building with other BREEAM rated buildings of the same type, and the typical sustainability performance of a stock of buildings.

In this respect each BREEAM rating broadly represents performance equivalent to:

1. Outstanding: Less than the top 1% of buildings (innovator)
2. Excellent: Top 10% of buildings (best practice)
3. Very Good: Top 25% of buildings (advanced good practice)
4. Good: Top 50% of buildings (intermediate good practice)
5. Pass: Top 75% of buildings (standard good practice)

An unclassified BREEAM rating represents performance that is non-compliant with BREEAM, in terms of failing to meet either the BREEAM minimum standards of performance for key environmental issues or the overall threshold score required to achieve at least a Pass rating.

Minimum standards

To maintain a flexible system BREEAM adopts a 'balanced scorecard' approach to the assessment and rating of a project. This means that to achieve a particular level of performance the majority of BREEAM credits can be traded, i.e. non-compliance in one area can be offset through compliance in another to achieve the target BREEAM rating.

However, to ensure that performance against fundamental environmental issues is not overlooked in pursuit of a particular rating, BREEAM sets minimum standards of performance in key areas, e.g. energy, water, waste etc. It is important to bear in mind that these are minimum acceptable levels of performance and in that respect they should not necessarily be viewed as levels that are representative of best practice for a BREEAM rating level.

To achieve a particular BREEAM rating, the minimum overall percentage score must be achieved and the minimum standards, detailed in Table 4 below, applicable to that rating level complied with.

Table 4: Minimum BREEAM standards by rating level

BREEAM issue	**Minimum standards by BREEAM rating level**				
	Pass	Good	Very Good	Excellent	Outstanding
Man 03 Responsible construction practices	Criterion 2 only (Health and Safety)	Criterion 2 only (Health and Safety)	Criterion 2 only (Health and Safety)	One credit (Considerate construction)	Two credits (Considerate construction)
Man 04 Commissioning and handover	None	None	None	Criterion 10 (Building or home user guide)	Criterion 10 (Building or home user guide)
Man 05 Aftercare	None	None	None	One credit (Seasonal commissioning)	One credit (Seasonal commissioning)
Hea 01 Visual comfort	Criterion 1 only (High frequency ballast)	Criterion 1 only (High frequency ballast)	Criterion 1 only (High frequency ballast)	Criterion 1 only (High frequency ballast)	Criterion 1 only (High frequency ballast)
Hea 02 Indoor air quality	Criterion 1 only (No asbestos)	Criterion 1 only (No asbestos)	Criterion 1 only (No asbestos)	Criterion 1 only (No asbestos)	Criterion 1 only (No asbestos)
Hea 06 Accessibility	None	None	None	None	Two credits (Inclusive and accessible design - residential buildings and residential institutions only)

BREEAM issue	Minimum standards by BREEAM rating level				
	Pass	Good	Very Good	Excellent	Outstanding
Hea 08 Private space	None	None	None	None	One credit
Hea 09 Water quality	Criterion 1 only (minimise legionellosis risk)	Criterion 1 only (minimise legionellosis risk)	Criterion 1 only (minimise legionellosis risk)	Criterion 1 only (minimise legionellosis risk)	Criterion 1 only (minimise legionellosis risk)
Ene 01 Reduction of energy use and carbon emissions	None	None	None	Four credits (Energy performance) OR Four credits (Prediction of operational energy consumption)*	Six credits (Energy performance) AND Four credits (Prediction of operational energy consumption)
Ene 02a Energy monitoring	None	None	One credit (First sub-metering credit)	One credit (First sub-metering credit)	One credit (First sub-metering credit)
Wat 01 Water consumption	None	One credit	One credit	One credit	Two credits
Wat 02 Water monitoring	None	Criterion 1 only (mains water meter)	Criterion 1 only (mains water meter)	Criterion 1 only (mains water meter)	Criterion 1 only (mains water meter)
Mat 03 Responsible sourcing of construction products	Criterion 1 only (Legal timber)	Criterion 1 only (Legal timber)	Criterion 1 only (Legal timber)	Criterion 1 only (Legal timber)	Criterion 1 only (Legal timber)
Wst 01 Construction waste management	None	None	None	None	One credit
Wst 03a Operational waste	None	None	None	One credit	One credit
Wst 03b Operational waste					

* For the 'Prediction of operational energy consumption' in Ene 01, it must be demonstrated that the operational energy performance has been substantially improved.

Environmental section weightings

Environmental weightings are fundamental to any building environmental assessment method as they provide a means of defining, and therefore ranking, the relative impact of environmental issues. In 2016, BREEAM developed a new, independently peer reviewed, weightings methodology to derive new consensus-based category weightings for use in BREEAM schemes operated by BRE Global (for more information, see the briefing paper: New methodology for generating BREEAM category weightings).

Table 5: The table shows how weightings may vary depending on the project type. The example shows the Luxembourg weightings types

Environmental section	Weighting						
	Non-residential			Single residential dwellings		Multiple residential dwellings	
	Fully fitted	Shell only	Shell and core	Partially fitted	Fully fitted	Partially fitted	Fully fitted
Management	11.00%	11.13%	10.64%	9.58%	9.10%	11.18%	10.57%
Health and wellbeing	19.00%	12.66%	13.87%	21.64%	21.70%	21.58%	21.49%
Hazards	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Energy	20.00%	20.07%	19.09%	19.03%	21.23%	17.98%	19.97%
Transport	6.00%	8.50%	6.77%	5.74%	6.13%	6.10%	6.41%
Water	7.00%	3.30%	7.90%	6.69%	6.36%	6.32%	6.73%
Materials	13.00%	18.41%	14.67%	13.98%	13.29%	13.21%	12.50%
Waste	6.00%	7.43%	6.77%	5.65%	5.37%	6.10%	5.77%
Land use and ecology	8.00%	9.02%	9.02%	8.60%	8.18%	8.13%	7.69%
Pollution	10.00%	6.54%	12.28%	9.10%	8.65%	9.38%	8.87%
Total	100.00%	100%	100%	100%	100%	100%	100%
Innovation (additional)	10.00%	10%	10%	10%	10%	10%	10%

Each of the above environmental sections consists of a differing number of assessment issues and BREEAM credits (as described elsewhere and defined in detail in the technical sections of this scheme document).

Adaptation of weightings for local conditions

In order to provide weightings that are adapted for local conditions, the weightings are reviewed for the first project that registers for assessment in a country or region. These weightings are then set as appropriate for that project and all other projects thereafter in that country or region for the life of the current BREEAM International New Construction version. The development of these weightings is based on robust and independent information forwarded from 'local experts' who have an understanding of local conditions. This may be a member of the design team if they can demonstrate sufficient knowledge of the environmental conditions of the region or country, or another individual or organisation with the relevant expertise.

The required information is compiled by the BREEAM Assessor using the 'BREEAM International Weightings' form (available from BREEAM Projects). It is the assessor's responsibility to correctly complete the 'Environmental Weightings' and submit the form to BRE Global, who use the information to develop appropriate weightings for that country or region.

The weightings are tailored based on the 10 technical categories, with categories being considered 'Fixed' or 'Variable'. Fixed categories are those defined as having a universal impact, independent of the local context. Variable categories are those defined as being variable locally, due to social, environmental, political or economic factors. BRE Global will take account of these factors when determining the relative importance of the technical sections.

The influence of location

As well as having an impact on the weightings attributed to BREEAM sections and assessment issues (see Adaptation of weightings for local conditions above), the culture, economy, climate and work practices can also affect the development of criteria and the method of assessing certain BREEAM issues.

One example involves the opportunity for rainwater recycling in the BREEAM issue Wat 01 Water consumption on page 253. In this instance the higher performance benchmarks vary according to the amount of precipitation available. The assessor can determine the precipitation zone in which the building is located using the map in Figure 4 on the next page (and other information below) and consequently use this climatic zone to establish the appropriate water consumption benchmark for a building in that location.

The map below highlights the Earth's climatic zones according to the Köppen-Geiger climate classification method. They are defined according to maximum and minimum temperature ranges, as well as the total and seasonal distribution of precipitation.

For the purposes of BREEAM, the climatic zones (refer to Figure 3 on the next page) are defined as:

A. Equatorial - tropical climates where temperatures remain above 18°C
B. Arid - dry climates (semi-arid and desert climates)
C. Warm temperate - mid-latitude climates (warm, dry summers with cool, wet winters)
D. Snow - temperate, is generally between -3°C and 10°C (subarctic or temperate alpine areas and low precipitation)
E. Polar - permafrost or tundra climates.

For the purposes of Wat 01 Water consumption on page 253, the precipitation zones (refer to Figure 4 on the next page) are defined as:

1. Precipitation zone 1: corresponds to Köppen's precipitation regions f (fully humid) and m (monsoonal)
2. Precipitation zone 2: corresponds to Köppen's precipitation regions s (summer dry) and w (winter dry)
3. Precipitation zone 3: corresponds to Köppen's precipitation regions S (steppe) and W (desert)

Advice and guidance on how to carry out a classification can be found at:
www.physicalgeography.net/fundamentals/7v.html.

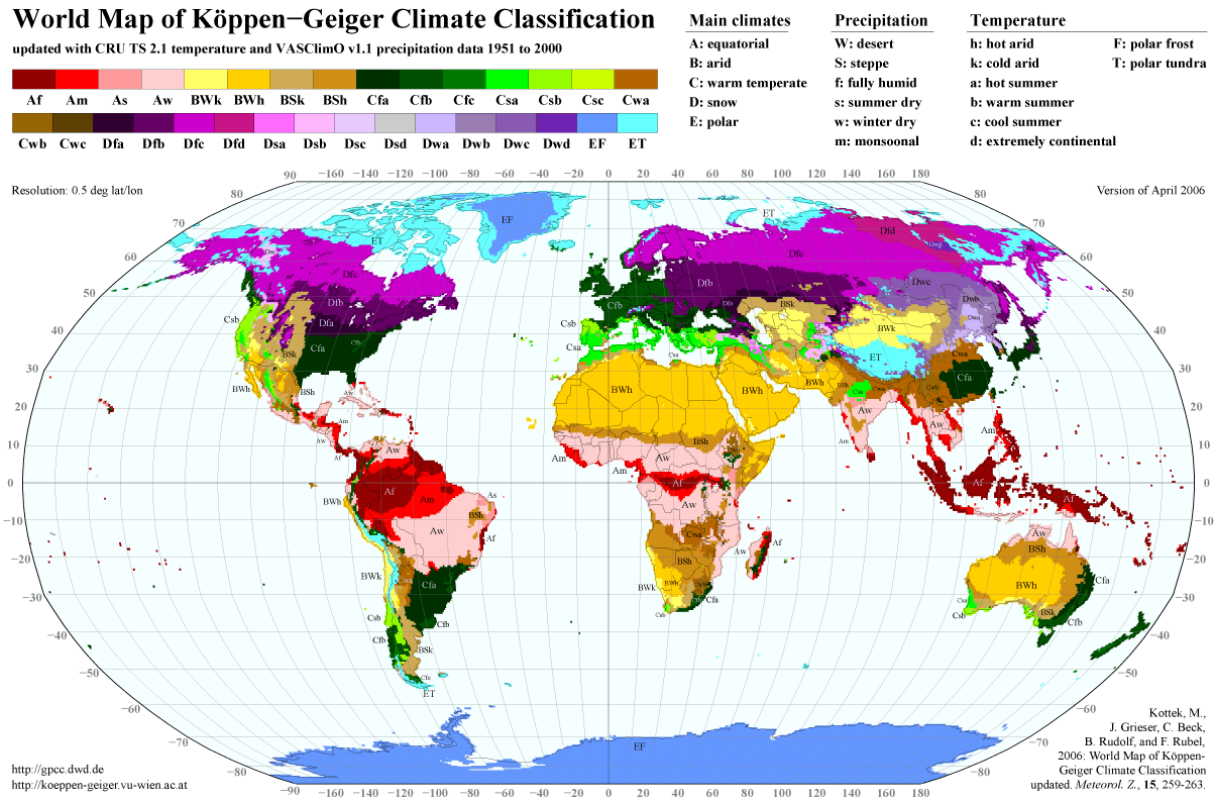

Figure 3: World map of Köppen-Geiger climate classification

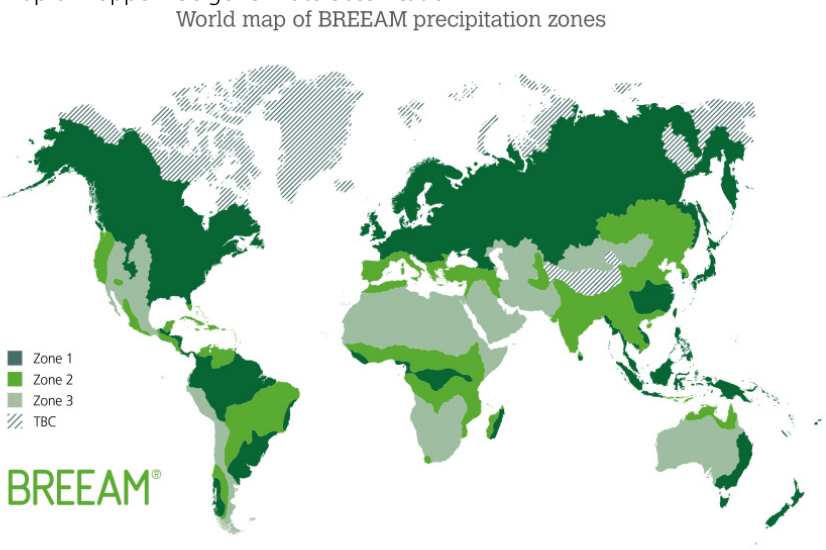

Figure 4: World map of BREEAM precipitation zones

BREEAM assessment issues and credits

BREEAM International New Construction Version 6 consists of 57 individual assessment issues spanning the nine environmental categories, plus a tenth category called 'Innovation' (described below). Each issue addresses a specific building related environmental impact or issue and has a number of credits assigned to it.

BREEAM credits are awarded where a building demonstrates that it meets the best practice performance levels defined for that issue, i.e. it has mitigated an impact or, in the case of Health and wellbeing on page 81, addressed a specific building occupant-related issue, e.g. good thermal comfort, daylight or acoustics.

The number of credits available for an individual assessment issue will vary and generally the higher the number there are for a given issue, the more important that issue is in terms of mitigating its impact. In most cases, where there are multiple credits available, the number awarded is based on a sliding scale or benchmark, where progressively higher standards of building performance are rewarded with a higher number of credits.

It is worth noting that, in addition to the environmental sections, and overall score and BREEAM rating, verified performance against individual assessment issues also provides users with a credible set of key building performance indicators for a range of embodied, operational and construction phase building impacts. In this respect, in addition to using BREEAM to define overall targets, it is possible to use the method to define performance levels in support of specific organisational policy objectives for individual environmental issues. Care should be taken when setting design targets using individual issues and credit levels in this way as it can limit design flexibility and have an impact on project costs.

Awarding credits for innovation

It is one of the aims of BREEAM to support innovation within the construction industry and its supply chain. BREEAM does this by making additional credits available for the recognition of sustainability related benefits or performance levels which are currently not recognised by standard BREEAM assessment issues and criteria. By doing this BREEAM is rewarding buildings that go beyond best practice in terms of a particular aspect of sustainability, i.e. where the building or its procurement has demonstrated innovation.

Awarding credits for innovation enables clients and design teams to boost their building's BREEAM performance and, in addition, helps to support the market for new innovative technologies, and design or construction practices.

There are two ways in which BREEAM awards 'innovation credits' to recognise innovation in building design and procurement. The first is by meeting exemplary performance criteria defined within an existing BREEAM issue, i.e. going beyond the standard BREEAM assessment criteria and therefore best practice. Note, not all assessment issues have exemplary performance criteria. The second route is where an application is made to BRE Global by the registered project's BREEAM Assessor to have a particular building technology or feature, design or construction method or process recognised as 'innovative'. If the application is successful and subsequently compliance is verified, an 'innovation credit' can be awarded.

An additional 1% can be added to a building's overall score for each 'innovation credit' achieved. The maximum number of 'innovation credits' that can be awarded for any one building is 10; therefore the maximum available additional score for 'innovation' is 10%. The building's final BREEAM score will be capped at 100%. Innovation credits can be awarded regardless of the building's final BREEAM rating, i.e. they can be awarded at any BREEAM rating level. Refer to Inn 01 Innovation on page 402 for more detail.

Local codes and standards

Use of local codes and standards

Certain criteria in BREEAM require compliance with specified standards or best practice documents. In some countries there may be local equivalents of these standards and in these cases BREEAM International allows BRE Global staff, with support from assessors and the project team, to review the local standards against BREEAM specified requirements and confirm their equivalence. The assessors need to send in the local standards to BRE Global for approval. Ideally the relevant sections of the standards will be translated into English; however, BRE Global can also provide this service for a fee.

If BRE Global approves the standard as equivalent, the local standard will form part of the approved standards for that country, region or area.

Approved standards and weightings list

The individual requirements for a particular local standard and a list of approved standards are provided in the approved standards and weightings list (ASWL).

Every BREEAM International assessment must include a version of the approved standards and weightings list when an assessment is submitted to inform BRE Global which standards the project team have worked to and complied with. This may involve the use of a 'New country worksheet' or, where assessments have already been undertaken in that country, an 'Existing country-specific worksheet' that is amended to suit the specific project.

For each BREEAM criterion requiring compliance with specified standards or best practice documents a combination of the following three situations is likely, as circumstances vary between issues.

1. No specific local standard is specified - when submitting the assessment the project team uses the approved standards and weightings list to inform BRE Global that it will be working to the requirements detailed in the criteria or the default International Standard.
2. Approved local standard is specified - when submitting the assessment the project team uses the approved standards and weightings list to inform BRE Global that it will be using the approved local standards detailed in the 'Existing country-specific worksheet'. The team also need to confirm that the standards being used are current.
3. Unapproved local standard is proposed - at the earliest opportunity the project team uses the approved standards and weightings list to inform BRE Global that they will be working to (as yet unapproved) local standards. The team will need to send the relevant sections of the standard to BRE Global with evidence of its robustness.
   Note: The approvals process for local standards happens at the very early stages of a project assessment, i.e. well before a report is submitted for certification so that:
   a. Certification is not delayed, and
   b. The project team or client have certainty over which approved standards against which their building's performance is being assessed.

If BRE Global approves the local equivalent, it is added to the 'approved standards' for that country or region. If not, it is added to the 'rejected standards' for that country - this is included for information and to prevent duplication of effort.

More details on this process can be found within the BREEAM Operations Manual (SD5070), available on BREEAM Projects.

Calculating a building's BREEAM rating

A BREEAM Assessor must determine the BREEAM rating using the appropriate assessment tools and calculators. An indication of performance against the BREEAM scheme can also be determined using a BREEAM Pre-Assessment Estimator, which is available on BREEAM Projects. Any pre-assessment estimate should be informed by a licensed BREEAM Assessor who understands the full details of the process.

The process of determining a BREEAM rating is outlined below and an example calculation included in Table 6.

1. Firstly, the scope of the project being assessed needs to be determined, i.e. Shell only or Shell and Core. The appropriate BREEAM assessment tool or calculator then adjusts the scoring and weightings to reflect the categories and individual credits assessed.
2. The BREEAM Assessor will then determine for each of BREEAM's nine environmental sections (as applicable) the number of 'credits' awarded. This must be determined by the BREEAM Assessor in accordance with the criteria of each assessment issue (as detailed in the technical sections of this document).
3. The percentage of 'credits' achieved is then calculated for each section.
4. The percentage of 'credits' achieved in each section is then multiplied by the corresponding section weighting. This gives the overall environmental section score.
5. The section scores are then added together to give the overall BREEAM score.
6. The overall score is then compared to the BREEAM rating benchmark levels and, provided all minimum standards have been met, the relevant BREEAM rating is achieved.
7. An additional 1% can be added to the final BREEAM score for each 'innovation credit' achieved (up to a maximum of 10% and with the total BREEAM score capped at 100%).

Table 6: Example BREEAM score and rating calculation

BREEAM section	Credits achieved	Credits available	Credits achieved, %	Section weighting (fully fitted)	Section score
Management	10	20	50.00%	0.12	6.00%
Health and wellbeing	17	21	80.95%	0.14	11.33%
Hazards	1	1	100.00%	0.01	1.00%
Energy	16	32	50.00%	0.19	9.50%
Transport	5	11	45.45%	0.08	3.63%
Water	5	9	55.56%	0.06	3.33%
Materials	10	14	71.43%	0.125	8.92%
Waste	3	13	23.07%	0.075	1.73%
Land use and ecology	5	5	100.00%	0.10	10.00%
Pollution	9	12	75.00%	0.10	7.44%
Innovation	2	10	20.00%	0.10	2.00%
Final BREEAM score					64.88%
BREEAM rating					VERY GOOD

Table 7: Minimum standards for a BREEAM Very Good rating

Minimum standards for BREEAM 'Very Good' rating	Achieved?
Man 03 Responsible construction practices on page 56	Y
Hea 01 Visual comfort on page 83	Y
Hea 02 Indoor air quality on page 98	Y
Hea 09 Water quality on page 144	Y
Ene 01 Reduction of energy use and carbon emissions on page 150	N/A
Wat 01 Water consumption on page 253	Y
Wat 02 Water monitoring on page 264	Y
Mat 03 Responsible sourcing of construction products on page 282	Y

Producing case studies for BREEAM 'Outstanding' rated buildings

Projects certified to the BREEAM 'Outstanding' rating should act as exemplars for the industry. If they are to do this, case studies of these projects are needed so that other project teams and clients can refer to them.

Prior to Final Certification, the design team and client for BREEAM 'Outstanding' rated projects are asked to provide either a case study of the building or information to allow BRE Global to produce a case study. This information will be requested at the final Post-construction stage and should be provided with the BREEAM Assessor's Final Certification Report.

BRE Global will publish the case study on the BREEAM website, Green Book Live website and in other BRE and BREEAM-related publications.

The BREEAM evidential requirements

This section provides guidance to assessors and project teams on the types of evidence required to demonstrate compliance with BREEAM issues.

Why does BREEAM require evidence?

BREEAM is a third party assessment and certification scheme operated in accordance with international standards. Operating to international standards ensures that certification schemes such as BREEAM are run in a consistent and reliable manner. The BREEAM Assessor's assessment report and the BRE Global quality assurance process are the fundamental tenets of BREEAM, ensuring consistency of, and confidence in, the BREEAM rating awarded by the assessor.

To maintain this consistency and credibility, all certification decisions must be based on verified and credible project information that is traceable, i.e. evidence based. This is not only important for ensuring compliance with the international standards to which BREEAM operates, but also in terms of managing risk to clients and BREEAM Assessors in the event that a certification outcome is challenged.

The assessment report and the BREEAM Assessor role

It is the BREEAM Assessor who determines the BREEAM rating and the assessment report is the formal record of an assessor's audit against the criteria defined in the Technical Manual for a BREEAM scheme. The BREEAM certificate issued by BRE Global provides assurance that the service provided by the assessor (that is, the process of producing the assessment report) has been conducted in accordance with the requirements of the scheme. The purpose of the certificate is therefore to give confidence to the client in the assessor's performance and processes in determining a BREEAM rating.

It is the role of the assessor to gather project information and use it to assess performance against the BREEAM scheme in a competent and impartial manner. To award a BREEAM credit, the assessor must be satisfied beyond reasonable doubt that the evidence gathered demonstrates unambiguous compliance with all relevant criteria defined in the BREEAM scheme. All evidence must be appropriately referenced in the formal report produced by the assessor and made available on request from BRE Global for quality assurance checks.

Clear, ordered and well referenced evidence for each BREEAM issue and criterion facilitates efficient quality assurance and certification. BREEAM Assessors can access further guidance on assessment report referencing in Assessor Guidance Note 01, and the 'reporting process' webinar, both available from the BREEAM Assessor Guidance section of BREEAM Projects (www.breeam.com/projects).

Evidence

Evidence should not necessarily need to be prepared specifically for the purpose of the BREEAM assessment. In many instances, the assessor should be able to source readily available and prepared project information for the purpose of demonstrating compliance. For this reason, BREEAM aims to avoid being prescriptive on the type of evidence required, while each issue does have specific documents listed these are provided as guidance rather than a definite list.

The assessor and project team will find that many assessment issues require more than one piece or type of information to demonstrate compliance with one criterion, or alternatively, one piece of information may be sufficient to demonstrate compliance with multiple criteria.

Written commitments at the interim stage of assessment – Design stage

At the interim design stage of assessment it is permissible to use letters or emails to demonstrate intent to comply with BREEAM criteria (provided they meet the requirements for the communication records below). Such evidence must also make clear the actions and evidence (or an understanding thereof) that will be undertaken and provided to ensure the project's ongoing compliance, particularly at the final stage of assessment, i.e. post-construction. This is to ensure that the party who makes the commitment is clearly aware of the actions and evidence that needs to be supplied to demonstrate compliance with BREEAM at the final stage of assessment. For example, in many circumstances it would not be acceptable for the design team to copy and paste the BREEAM criteria into a formal commitment. The commitment should specifically detail how criteria are to be achieved in the context of the assessment, and often copying and pasting the BREEAM criteria will not provide this level of detail.

While letters of commitment can play a role in demonstrating compliance, they are not a replacement for more formal and established types of project information. The assessor must not award credits where they have a reason to doubt the validity or intent of written commitments, or where it is not unreasonable to expect formal design or specification information to be available to confirm compliance.

Written commitments at the final stage of assessment – Post-construction

As stated in the Scope section, there are two types of assessment that can be carried out at the post-construction stage, a post-construction review of a design stage assessment, or a post-construction assessment (where no design stage assessment has been carried out). The 'Final post-construction stage' column of the evidence table in each issue assumes that a design stage assessment has been completed. Where a design stage assessment has not been completed, the assessor will need to review both the 'Interim design stage' and 'Final post-construction stage' evidence listed in the evidence table and ensure sufficient evidence is submitted with the assessment to demonstrate compliance with the criteria.

Evidence supplied at the post-construction stage must be reflective of the completed building and must therefore demonstrate what has actually been implemented. For example, if sub-meters have been specified at the design stage, evidence at the post-construction stage would need to demonstrate that these have actually been installed. Appropriate evidence may be a site inspection report with supporting photographs or as-built drawings showing the location of the sub-meters.

Letters of commitment cannot be used to demonstrate compliance at the final, post-construction stage of assessment. The only exception to this is where the criteria require an action to take place post-construction, i.e. after handover and possibly during the building operation. An example could be a written commitment from the building owner or occupier making a commitment to conduct post-occupancy evaluation. As with written commitments at the design stage, the BREEAM Assessor must not award BREEAM credits where they have a reason to doubt the validity or intent of written commitments or where it is not unreasonable to expect formal documentation, e.g. a schedule of services or professional services contract.

Evidence principles that BREEAM Assessors and BRE Global Quality Assurance work to

As described above, where specific evidence is stated in the 'Evidence' table within each assessment issue, this must be sourced and verified by the BREEAM Assessor.

In determining the appropriateness of evidence for each issue, the principles outlined in Table 8 below must be considered by BREEAM Assessors. Where the evidence meets the principles outlined in Table 8 below and, where appropriate, the guidance provided in the 'Robustness of evidence' section, such evidence is admissible for the purpose of the assessment and the BRE Global Quality Assurance checks.

These principles are not listed in a hierarchical order and are all equally important when considering which evidence type to submit to demonstrate compliance for each issue or criterion.

Table 8: BREEAM evidence principles

	Summary	Principle	Objective	A question to ask to check
1	Evidence provided for all criteria for all credits sought	Evidence must demonstrate that ALL relevant* criteria and sub-criteria for each credit sought are achieved and where relevant, is provided to support compliance notes, definitions etc.	Completeness	Are all criteria and sub-criteria covered? Have all relevant compliance notes and definitions been addressed?
2	Unambiguous assessment	The assessment must demonstrate unambiguous compliance and the evidence must support this assessment. Evidence (and supporting notes) must clearly demonstrate to a third party reviewer that the criteria have been met.	Independent review compatibility	If a third party (e.g. BRE Global) reviewed my report with the submitted evidence, would they be able to confirm compliance and award the same credits I have?
3	Robust	1. When selecting the evidence, always ensure it is robust and relevant to the stage of assessment. 2. The selected evidence contains all the relevant basic information, with the necessary constituent parts to be deemed robust. (See Robustness of evidence on the next page for further details on both of these principles).	Proof that evidence is robust and from a reliable source.	Is this the most robust form of evidence available to demonstrate compliance with this criterion? Does the evidence contain all the relevant basic information? Is it fully auditable?
4	Use existing evidence	Use existing project information to demonstrate compliance. In most cases evidence should not need to be 'created' for BREEAM compliance purposes.	Minimises evidence and reduces time and cost of compliance.	Does robust evidence meeting the above principles already exist that I can use? If I need to ask for more evidence, is the project seeking credits where compliance is not adequately demonstrated?

* Where the assessor or design team deem specific criteria 'not relevant' to the assessment, a full justification should be collated and then submitted as a technical query for review by BRE Global.

Robustness of evidence

Robust evidence provides confirmation that the assessment has been carried out correctly and the building complies with the criteria for the BREEAM credits sought. The assessor should consider the following when gathering project information and evaluating whether the evidence provided is as 'robust' as possible:

- Is there more than one piece of evidence that could be used to demonstrate compliance?
- Is the chosen evidence the most robust and appropriate piece of evidence to demonstrate that a particular criterion has been achieved?

Any evidence submitted for a BREEAM assessment must be robust in terms of its source and its traceability. Below is a list of the minimum information the assessor must expect to see when certain types of evidence are submitted.

Communication records: Any communication records used as evidence must provide clear confirmation of the site name, author's identity and role, the date and recipient's identity.

Formal letters of correspondence: Must be on company or organisation headed note-paper with a signature (electronic signatures are acceptable). Ideally letters should be a secured document. (Please see sections relating to written commitment for further information.)

Meeting minutes: Must include date, location and attendee information (names, organisations and roles), along with a record of the meeting and agreed actions.

Drawings: All drawings must have the building or site name, phase (if applicable), title of drawing, date, revision number and a scale.

Specification: A specification must be clear that it relates to the project under assessment, and it must have a date and revision number. Where sections of a specification are provided, the assessor should reference the extract and as a minimum submit the front page of the specification detailing the project name, revision number and date.

Site inspection report: A site inspection report must include the building or site name, date, author and summary text to detail what was witnessed, confirming compliance. Photographic evidence can be used to support the text in the report.

For other types of evidence not listed, the assessor should use the above as a guide for the sort of evidence that is suitable. As a minimum, in most cases, the evidence used to assess compliance should always contain key information such as the project name, the author, date, revision numbers etc.

Management

Summary

This category encourages the adoption of sustainable management practices in connection with design, construction, commissioning, handover and aftercare activities to ensure that robust sustainability objectives are set and followed through into the operation of the building. Issues in this section focus on embedding sustainability actions through the key stages of design, procurement and initial occupation from the initial project brief stage to the appropriate provision of aftercare.

Category summary table

Issue	Credits	Credit summary
Man 01 Project brief and design	4	— Stakeholder consultation covering project delivery and relevant third parties. — Sustainability champion appointed to facilitate the setting, monitoring and achievement of BREEAM performance targets for the project.
Man 02 Life cycle cost and service life planning	4	— Recognising and encouraging the use of life cycle costing and service life planning and the sharing of data to raise awareness and understanding.
Man 03 Responsible construction practices	6	— The principal contractor demonstrates sound environmental management practices and consideration for neighbours across their activities on site. — Site related energy, water and transport impacts are monitored and reported to ensure ongoing compliance during the Construction, Handover and Close Out stages and to improve awareness and understanding for future projects.
Man 04 Commissioning and handover	4	— Schedule of commissioning including optimal timescales and appropriate testing and commissioning of all building services systems and building fabric in line with best practice. — Inspecting, testing, identifying and rectifying defects via an appropriate method. — Provision of a non-technical building user guide and user training or operator training timed appropriately around handover and proposed occupation.
Man 05 Aftercare	3	— Provision of the necessary infrastructure and resources to provide aftercare support to the building occupiers. — Seasonal commissioning activities will be completed over a minimum 12 month period, once the building becomes substantially occupied. — The client or building occupier commit to carrying out a post occupancy evaluation (POE) exercise one year after initial building occupation and to disseminate the findings in terms of the building's post occupancy performance.

Man 01 Project brief and design

(all buildings)

Number of credits available	Minimum standards
4	No

Aim

To recognise and encourage an integrated design process that optimises building performance.

Assessment criteria

This issue is split into two parts:

- Stakeholder consultation (2 credits)
- Sustainability champion (2 credits)

The following is required to demonstrate compliance:

One credit - Stakeholder consultation (project delivery)

1 A clear sustainability brief is developed prior to completion of the concept design which sets out:
- 1.a Client requirements, e.g. internal environmental conditions required
- 1.b Sustainability objectives and targets including target BREEAM rating, business objectives etc.
- 1.c Timescales and budget
- 1.d List of consultees and professional appointments that may be required, e.g. Suitably Qualified Acoustician (SQA) etc.
- 1.e Constraints for the project, e.g. technical, legal, physical, environmental.

2 Prior to completion of the concept design, the project delivery stakeholders (see Relevant definitions on page 48) have met to identify and define their roles, responsibilities and contributions for each of the key phases of project delivery.

3 In defining the roles and responsibilities for each key phase of the project, the following must be considered:
- 3.a End user requirements
- 3.b Aims of the design and design strategy
- 3.c Particular installation and construction requirements and limitations
- 3.d Design and construction risk assessments, e.g. national health and safety regulations or best practice, legionella risk assessment
- 3.e Legislative requirements, e.g. local building regulations, heritage requirements
- 3.f Procurement and supply chain
- 3.g Identifying and measuring project success in line with project brief objectives
- 3.h Occupiers' budget and technical expertise in maintaining any proposed systems
- 3.i Maintainability and adaptability of the proposals
- 3.j Requirements for the production of project and end user documentation
- 3.k Requirements for commissioning, training and aftercare support.

4 The project team demonstrate how the project delivery stakeholder contributions and the outcomes of the consultation process have influenced or changed the initial project brief. This includes, if appropriate, the project execution plan, communication strategy, and the concept design.

One credit - Stakeholder consultation (third party)

5 Prior to completion of the concept design work stage, all relevant third party stakeholders have been consulted by the design team and this covers the minimum consultation content (see CN3 on the next page).

6 The project must demonstrate how the stakeholder contributions and outcomes of the consultation exercise have influenced or changed the initial project brief and concept design.

7 Prior to completion of the detailed design, consultation feedback has been given to, and received by, all relevant parties.

Additionally for Education only:

8 The consultation exercise used a method carried out by an independent party (see Relevant definitions on page 48).

One credit - Sustainability champion (design)

9 A sustainability champion has been appointed to facilitate the setting and achievement of BREEAM performance targets for the project. The design stage sustainability champion is appointed to perform this role during the feasibility (Preparation and Brief) stage.

10 The defined BREEAM performance targets have been formally agreed (see Relevant definitions on page 48) between the client and design or project team no later than the concept design work stage.

11 To achieve this credit at the interim design stage assessment, the agreed BREEAM performance targets must be demonstrably achieved by the project design. This must be demonstrated via the BREEAM Assessor's design stage assessment report.

One credit - Sustainability champion (monitoring progress)

12 The credit for sustainability champion (design) (criteria 9 to 11 above) has been achieved.

13 A sustainability champion is appointed to monitor progress against the agreed BREEAM performance targets throughout the design process and formally report progress to the client and design team.

14 The sustainability champion must attend key project and design team meetings during the concept design, developed design and technical design work stages (see Relevant definitions on page 48). Reporting must be carried out during and prior to completion of each stage, as a minimum.

Checklists and tables

None.

Compliance notes

Ref	Terms	Description
Shell and core (non-residential and residential institutions only)		
CN1	Applicable assessment criteria	Both options: All criteria relevant to the building type and function apply. Refer to Appendix D – Shell and core project assessments on page 409 for a more detailed description of the shell and core assessment options.

Ref	Terms	Description
Residential - Partially fitted and fully fitted		
CN2	Applicable assessment criteria - Single dwellings	Both options: All criteria relevant to the building type and function apply. See CN2.2 below for more detail on the sustainability champion role. Refer to Appendix E – Applicability of BREEAM New Construction to single and multiple dwellings, partially and fully fitted on page 412 for a more detailed description of residential assessment options.
CN2.1	Applicable assessment criteria - Multiple dwellings	Both options: All criteria relevant to the building type and function apply. Refer to Appendix E – Applicability of BREEAM New Construction to single and multiple dwellings, partially and fully fitted on page 412 for a more detailed description of residential assessment options.
CN2.2	Sustainability champion for single dwellings	For single dwellings a BREEAM International New Construction Assessor can act as the Sustainability champion. In this situation it will still be necessary to manage any conflicts of interest that could arise.
General		
CN3	Minimum consultation content. See criterion 5 on the previous page.	Minimum consultation content will be dependent on the building and scope of the project, but would typically include the following: 1. Functionality, build quality and impact (including aesthetics) 2. Provision of appropriate internal and external facilities (for future building occupants, visitors and users) 3. Management and operational implications 4. Maintenance resources implications 5. Impacts on the local community, e.g. local traffic and transport impacts 6. Opportunities for shared use of facilities and infrastructure with the community and appropriate stakeholders, if relevant and appropriate to the building type 7. Compliance with statutory (national or local) consultation requirements 8. Inclusive and accessible design In the case of educational building types, minimum content also includes: 9. How the building and grounds could best be designed to facilitate learning 10. Where the scope of works involves changes to the internal layout and function, the consultation considers how the design can best provide a range of social spaces appropriate to the needs of pupils, students and other users. In the case of building types containing technical areas or functions, e.g. laboratories, workshops etc., minimum content also includes: 11. The end users' broad requirements for such facilities, including appropriate sizing, optimisation and integration of equipment and systems.

Ref	Terms	Description
CN3.1	Assessing and awarding the available credits for a sustainability champion	There is an additional credit for appointing a sustainability champion during the construction and handover phase (see BREEAM issue Man 03 Responsible construction practices on page 56). The aim of the credit in Man 03 Responsible construction practices on page 56 is to encourage and reward contractors and project teams that appoint a sustainability champion and therefore ensure continuation of the sustainability objectives during the construction phase, and that the constructed building meets the client's target BREEAM rating.
CN3.2	BREEAM-related performance targets. See criteria 9 to 13 on page 45.	If the BREEAM-related performance targets set at the end of the Concept Design stage have not been achieved at the post-construction stage assessment, the credits awarded at the interim design stage assessment for appointing the sustainability champion must be withheld in the final assessment (see Relevant definitions on the next page).
CN3.3	National health and safety regulations and best practice	Where there are no national health and safety regulations in the country of assessment, evidence is required to demonstrate that EITHER: — The principal contractor has an occupational health and safety management system compliant with OHSAS 18001:2007 OR — The works will be carried out in accordance with the International Labour Association's Safety and health in construction Code of Practice.

Methodology

None.

Evidence

Criteria	Interim design stage	Final post-construction stage
Stakeholder consultation		
1–8	A list of the stakeholders consulted. A consultation plan setting out the process and the scope of the consultation. Agenda or minutes from consultation meetings. Documentation demonstrating consultation feedback and subsequent actions.	As design stage.
Sustainability champion credits		

Criteria	Interim design stage	Final post-construction stage
9–14	The sustainability champion appointment letter. Relevant section or clauses of the building specification or contract. Project programme indicating the dates by which the key work stages (Preparation and design) are to be completed. Meeting notes or minutes, recorded correspondence or schedules that can demonstrate BREEAM issues are a regular agenda item and sustainability champion attendance. The sustainability champion progress report (for each work stage). Design stage BREEAM assessment report.	As design stage, plus the final post-construction assessment report.

Additional information

Relevant definitions

BREEAM Advisory Professional (AP)

An individual trained and qualified by BRE as a specialist in built environment sustainability, environmental design and assessment. The role of the BREEAM AP is to facilitate the project team's efforts to successfully schedule activities, set priorities and negotiate the trade-offs required to achieve a target BREEAM rating when the design is formally assessed. Only qualified individuals who are members of BRE's associated membership scheme comply with the BREEAM requirements. This membership ensures an adequate level of competence is maintained through regular continuing professional development (CPD) in key relevant areas. For a list and contact details of BREEAM APs, visit: www.greenbooklive.com.

BREEAM-related performance targets

BREEAM performance targets refer specifically to the BREEAM rating and minimum standards required. This does not necessarily include individual targeted BREEAM issues or credits, which may be traded over the course of the project as it evolves. In agreeing a BREEAM target, it is recommended that individual BREEAM issues, credits and criteria are targeted or prioritised. This is to ensure that the agreed target is achievable and achieved without potentially costly alterations to the design at a later stage.

Concept design

The concept design work stage includes the development of strategies and outline proposals for site planning, built form, structural design, building services systems, outline specifications and preliminary cost information.

Communication strategy

The communication strategy is defined as a strategy that sets out when the project team will meet, how they will communicate effectively, and the protocols for issuing information between the various parties, both informally and at information exchanges.

Consultation feedback

This is feedback which focuses on the stakeholder suggestions, comments, recommendations and the consultation outcomes. This includes how the suggestions and outcomes influenced, or resulted in modifications to, the proposed design and building operation and use.

Developed design

The developed design work stage includes the coordination and updating of proposals for structural design, building services systems, outline specifications, cost information and project strategies.

Facilities management

EN 15221-1:2006 states that facilities management is the integration of processes within an organisation to maintain and develop the agreed services which support and improve the effectiveness of its primary activities. For the purposes of the assessment, the term 'agreed services' is taken to mean those relating to the maintenance and management of the building, its services and surroundings, including the interaction with related activities within, and users of, the building.

Formally agreed

The term 'formally agreed' relates to BREEAM performance targets. Examples of formal agreements include a contract or letters of appointment with the architect and other relevant project team members.

Independent party (see criterion 8 on page 45)

To comply with criterion 8, relating to the use of an independent party, the client or design team needs to demonstrate EITHER of the following options:

1. They have used a party independent of the design process to conduct the necessary consultation exercise, using a compliant method OR
2. If the consultation is to be carried out by an organisation involved with the design of the building, e.g. the project architect, then they must present the assessor with evidence that robustly demonstrates the independence of the consultation process. BREEAM has not attempted to define what form this evidence must take. The onus is on the design team or relevant individual to clearly demonstrate to the BREEAM Assessor a credible level of independence.

Key design team meetings

Key design team meetings can be defined as those where fundamental decisions that influence or affect the building's proposed design and its construction in accordance with the design (and therefore the building's sustainability impacts and BREEAM performance), are discussed and made. These meetings would typically include representatives from at least three of the parties listed below:

1. Representatives of the client or developer
2. The principal contractor
3. The architect
4. Structural engineers
5. Building services engineers
6. Cost consultants
7. Environmental consultants
8. Project management consultants.

Key phases

The definition of key phases of project delivery includes the following:

- Concept design
- Developed design
- Construction
- Commissioning and handover
- In-use occupation.

Project delivery stakeholders

The purpose of criterion 1 on page 44 is to reflect the need to consider the input of all the major project stakeholders from the earliest practical stage. This is to ensure smooth and successful delivery of the project's sustainability objectives. Project delivery stakeholders therefore include the client, the building occupier (where known), the design team and the principal contractor. With regards to contractors' involvement, it ensures their input in terms of formulating sustainable design solutions, commenting on the practicality and buildability of (one or more) design solutions and their impact on programming, costs etc. BREEAM recognises that traditionally for some projects, the contractor for the works might not be appointed at the early stages of the project and therefore compliance with criterion 1 on page 44 would not be possible. In these instances, criterion 1 on page 44 will be met provided that a suitably experienced person with substantial construction or contracting experience in similar projects is involved prior to appointment of the

contractor. A suitably experienced person could be a contractor appointed as a consultant for this stage or a construction project manager.

Project execution plan

The project execution plan is defined as a plan produced in collaboration between the project lead and lead designer, with contributions from other designers and members of the project team. The project execution plan sets out the processes and protocols to be used to develop the design. It is sometimes referred to as a 'project quality plan'.

Relevant third parties (see criterion 5 on page 45)

This includes, but is not limited to the following:

1. Actual or intended building users (if known) including facilities management (FM) staff or those responsible for the day-to-day operation of the building and grounds
2. A representative consultation group from the existing community (if the building is a new development in an existing community) or for a community still under construction
3. Existing partnerships and networks that have knowledge of, and experience of working on, existing buildings of the same type
4. Potential users of any shared facilities, e.g. operators of clubs and community groups

AND the following where relevant:

5. In educational buildings, representatives from the local education authority, school board etc.
6. Local or national historic or heritage groups (over and above any requirements relating to statutory consultees)
7. Specialist service and maintenance contractors and representatives where the building function has particular technical requirements in complex environments, e.g. buildings containing laboratories.

Sustainability champion (design and monitoring progress)

Members of formal schemes approved by BRE Global in connection with the provision of design advice. Providers of schemes or qualifications not listed, who feel their members meet this definition and who would like to be listed as approved membership schemes, should contact BRE Global.

At present the following schemes are deemed to satisfy this requirement:

- BREEAM Advisory Professional (AP) Membership Scheme.

Sustainability Champions are trained and qualified to provide BREEAM-related advice to the design team. They are able to facilitate timely and successful target setting, scheduling, prioritisation and monitoring of BREEAM compliance relating to the design of the building. They will be subject to ongoing training and competency requirements to ensure that their knowledge is maintained.

Note: The aim of the sustainability champion credits is to encourage an integrated design and construction process that uses BREEAM as a framework for establishing, agreeing and achieving the desired level of sustainability performance for the project. The sustainability champion credits in this BREEAM issue focus on achieving this objective through the provision of appropriate expertise during the preparation, brief, and design stages of the project.

Technical design work stage

The technical design work is the stage at which all architectural, structural and building service design information, specialist subcontractor design and specifications are finalised.

Other information

None.

Man 02 Life cycle cost and service life planning (all buildings)

Number of credits available	Minimum standards
4	No

Aim

To deliver whole life value by encouraging the use of life cycle costing to improve design, specification, through-life maintenance and operation, and through the dissemination of capital cost reporting to promote economic sustainability.

Assessment criteria

This issue is split into three parts:

- Elemental life cycle cost (2 credits)
- Component level life cycle cost (1 credit)
- Capital cost reporting (1 credit)

The following is required to demonstrate compliance:

Two credits - Elemental life cycle cost (LCC)

1 An outline, entire asset elemental LCC plan has been carried out at the Concept Design stage together with any design option appraisals in line with 'Buildings and constructed assets – Service life planning – Part 5: Life cycle costing ISO 15686-5:2008[4].

2 The outline LCC plan:
- 2.a Provides an indication of future replacement costs over a period of analysis as required by the client (e.g. 20, 30, 50 or 60 years)
- 2.b Includes service life, maintenance and operation cost estimates.

3 Demonstrate, using appropriate examples provided by the design team, how the elemental LCC plan has been used to influence building and systems design, and specification to minimise life cycle costs and maximise critical value.

One credit - Component level LCC options appraisal

4 A component level LCC options appraisal has been developed by the end of Process Stage 4 (equivalent to Technical Design Stage) in line with ISO 15686-5:2008, and includes the following component types (where present):
- 4.a Envelope, e.g. cladding, windows, or roofing
- 4.b Services, e.g. heat source, cooling source or controls
- 4.c Finishes, e.g. walls, floors or ceilings
- 4.d External spaces, e.g. alternative hard landscaping, boundary protection.

5 Demonstrate, using appropriate examples provided by the design team, how the component level LCC options appraisal has been used to influence building and systems design, and specification to minimise life cycle costs and maximise critical value.

One credit - Capital cost reporting

6 Report the capital cost for the building , via the BREEAM Assessment Scoring and Reporting tool.

Checklists and tables

None.

Compliance notes

Ref	Terms	Description
Shell and core (non-residential and residential institutions only)		
CN1	Applicable assessment criteria	**Elemental life cycle cost, capital cost reporting and maintenance strategy, criteria 1 to 3 and 6 above** Both options: All assessment criteria relevant to the building type and function apply. **Component level LCC plan, criteria 4 to 5 on the previous page** Both options: The plan must include all component types to be installed by the developer. Refer to Appendix D – Shell and core project assessments on page 409 for a more detailed description of the shell and core assessment options.
Residential - Partially fitted and fully fitted		
CN2	Applicable assessment criteria - Single and multiple dwellings	Both options: All criteria relevant to the building type and function apply. Refer to Appendix E – Applicability of BREEAM New Construction to single and multiple dwellings, partially and fully fitted on page 412 for a more detailed description of residential assessment options.
General		
CN3	Appropriate examples See criterion 3 on the previous page.	The options selected to demonstrate how life cycle costs have been minimised and critical value maximised must be appropriate in terms of their relative impact on project costs, future building maintenance burden and size (volume or area) and the stage of the project. At stage 2, when considering the outputs from the **elemental LCC plan**, examples could be in the form of elemental appraisals (where appropriate), evolutions in concept design to reduce maintenance or replacement costs or contracts for further elemental analysis. At stage 4, when considering the outputs from the **component level options analysis**, examples are likely to be in the form of component specifications coupled with justifications for their selection (i.e. how they reduce life cycle costs and maximise critical value).

Ref	Terms	Description
CN3.1	Predefined specifications	Where the building is constructed to a predefined standard specification, the LCC elemental plan for this specification may be used to help demonstrate compliance.
CN3.2	Capital cost reporting final information not available	At the design stage of assessment, where the final information is not available, the credit can be awarded where the client provides the predicted capital cost, including contingencies, and commits to providing this information for the final stage of assessment. At the final stage, if the final capital cost is not known, the client's or cost consultant's best estimate should be provided. This data will be used to inform future BREEAM performance benchmarking and will be anonymised.
CN3.3	Independent assessment of parts	All three parts can be awarded independently from one another. For example, the project team can still target the one credit for the component level LCC option appraisal at stage 4 even if they have not been awarded the first two credits at stage 2 for developing an elemental life cycle cost plan. The capital cost reporting credit can also be awarded independently from the other two parts.
CN3.4	Component level LCC options appraisal – assessing types 4.a–4.d on page 51	The component level LCC options appraisal should review all of the component types listed, 4.a–4.d (where present). However not every single example cited under each component need be considered; only a selection of those most likely to draw valued comparisons. This is to ensure that a wide range of options are considered and help focus the analysis on components which would benefit the most from appraisal.
CN3.5	Elemental LCC plan study period	The study period should ideally be agreed by the client, in line with the design life expectancy of the building. However, where the life expectancy of the building has not yet been formally agreed (due to the early stages of the design process), the default design life of 60 years should be used for modelling purposes.

Methodology

None.

Evidence

Criteria	Interim design stage	Final post-construction stage
1–3 on page 51	Elemental LCC plan.	As per interim design stage.
4–5 on page 51	Component level LCC options appraisal.	As per interim design stage.
6 on the previous page	Predicted capital costs via the BREEAM scoring and reporting tool.	Capital costs via the BREEAM scoring and reporting tool.

Additional information

Relevant definitions

Life cycle cost (LCC)

The cost of an asset, or its parts throughout its life cycle, while fulfilling the performance requirements; a methodology for systematic economic evaluation of life cycle costs over a period of analysis, as defined in the agreed scope.

Elemental LCC plan

This is commonly used for developing solutions at project level during option appraisals. Costs are normally at building elemental level on the entire asset. Information may be a mix of typical benchmark costs for key elements, comparative cost modelling or approximate estimates. It is expressed as cost per square metre of gross internal floor area (GIFA) and presented for elemental analysis, aligned to the level of capital cost plans.

Component level LCC options appraisal

A component level LCC plan is commonly used for cost planning specification choices of systems or component levels during design development. Component level LCC appraisal for service life planning requires the environment of the building and other local conditions to be identified, and the fundamental requirements to be met in planning the service life of the building. Decisions should be made on:

- The likely design life of the building (rather than the contractual design life)
- Minimum functional performance criteria for each component over the building's design life
- Components that must be repairable, maintainable or replaceable within the design life of the building. Only the key differentiators between components and systems need to be comparatively modelled.

Capital cost

The capital cost for the building includes the expenses related to the initial construction of the building:

- Construction, including preparatory works, materials, equipment and labour
- Site management
- Construction financing
- Insurance and taxes during construction
- Inspection and testing.

Costs relating to land procurement, clearance, design, statutory approvals and post occupancy aftercare should not be included.

Other information

Capital cost reporting

The lack of data relating to capital and life cycle costs and benefits arising from more sustainable building design presents a major barrier to take-up of more sustainable solutions. This issue seeks to encourage the sharing of data to break down these barriers and ensure that BREEAM continues to encourage cost effective and financially beneficial solutions. This information is collected to assist research into the cost and savings of developing sustainable or BREEAM-assessed buildings. This is used to inform the business case for sustainability and the ongoing development of BREEAM. All data submitted will be treated as confidential and will only be used anonymously.

When to undertake life cycle costing

Life cycle costing is relevant throughout the building or constructed asset's life cycle, in particular during the project planning, design and construction and also during the in-use phases. (For further information please refer to ISO 15686-5.)

Standardised method for life cycle costing (SMLCC) for construction

ISO 15686-5:2008 describes the standardised method for life cycle costing (SMLCC) for construction procurement. The objectives of this guide are to provide the following.

1. LCC practitioners with a standardised method of applying life cycle costing, applicable to the construction industry and to the key stages of the procurement process.
2. Process mapping the LCC stages - to help structure how to plan, generate, and interpret and present the results for a variety of different purposes and levels of LCC planning.
3. Instructions on how to define the client's specific requirements for life cycle costing and the required outputs and forms of reporting - and to decide on which method of economic evaluation to apply.
4. Simplification and demystification - by providing practical guidance, instructions and definitions, together with informative worked examples on how to undertake life cycle costing (for construction).
5. An industry accepted methodology to facilitate a more accurate, consistent and robust application of LCC estimation and option appraisals, thereby creating a more effective and robust basis for LCC analysis and benchmarking. ISO 15686-5:2008 also seeks to help eliminate confusion over scoping and terminology and to address concerns over the uncertainty and risks that are undermining confidence in life cycle costs used for construction procurement.

Man 03 Responsible construction practices (all buildings)

Number of credits available	Minimum standards
6	Yes

Aim

To recognise and encourage construction sites which are managed in an environmentally and socially considerate, responsible and accountable manner.

Assessment criteria

This issue is split in to four parts:

- Environmental management (1 credit)
- Sustainability champion (1 credit)
- Considerate construction (up to 2 credits)
- Monitoring of construction site impacts (2 credits)

The following is required to demonstrate compliance:

Prerequisite - Legally harvested and traded timber

1 All timber and timber-based products used during the construction process of the project are 'Legally harvested and traded timber' (see Relevant definitions on page 63).

Note: For other materials there are no prerequisite requirements at this stage.

Prerequisite - National health and safety legislation

2 All national health and safety legislation and regulations for construction sites are considered and implemented during (refer to CN3.6 on page 62):
- 2.a The design of the asset; to minimise health and safety risks
- 2.b Pre-construction work planning and organisation; to collate health and safety information from all relevant stakeholders (refer to Relevant definitions on page 63)
- 2.c Site set-up; to implement health and safety features
- 2.d Construction; to manage, monitor and report on the health and safety of construction site staff.

One credit - Environmental management

3 The principal contractor operates an environmental management system (EMS) covering their main operations. The EMS must be third party certified to ISO 14001/EMAS or an equivalent standard.

4 Implement best practice pollution prevention policies and procedures on site, demonstrated through the project team completing the checklist outlined in Table 9 on page 58. To demonstrate compliance, not all actions need to be achieved; however the assessor and project team must demonstrate that the intent of each section (i.e. air quality) has been met.

One credit - sustainability champion (construction)

5 A sustainability champion is appointed to monitor the project to ensure ongoing compliance with the relevant sustainability performance and process criteria, and therefore BREEAM targets, during the construction, handover and close out work stages. To do this the sustainability champion will ideally be site-based or will visit the site regularly to carry out spot checks, with the relevant authority to do so, and will require action to be taken to address shortcomings in compliance. The sustainability champion will monitor site activities with sufficient frequency (see compliance note CN3.3 on page 61) to ensure that risks of non-compliance are minimised. They will report on progress at relevant project team meetings, including identifying potential areas of non-compliance and any action needed to mitigate.

6 The defined BREEAM performance target forms a requirement of the principal contractor's contract (see Man 01 Project brief and design: CN3.2 on page 47 and Man 01 Project brief and design – Relevant definitions on page 48).

7 To achieve this credit at the final post-construction stage of assessment, the BREEAM-related performance target for the project must be demonstrably achieved by the project. This is demonstrated via the BREEAM Assessor's final post-construction stage assessment report.

Up to two credits - Considerate construction

8 For single dwellings:
- 8.a One credit can be awarded where an individual is responsible for implementing and maintaining the following considerate construction practices throughout the works stage (see Relevant definitions on page 63):
  - 8.a.i Keeping the site clean and tidy
  - 8.a.ii Reducing impacts on the community through community and neighbour engagement
  - 8.a.iii Continuous improvements in safety
  - 8.a.iv Commitments to respect and ensure fair treatment of all workers
  - 8.a.v Suitable site facilities for operatives and visitors.
- 8.b Two credits can be awarded where the contractor achieves six items in each of the four sections within Checklist A1 on page 418

9 For all other building types, the BREEAM credits can be awarded as follows:
- 9.a One credit where the principal contractor achieves six items in each of the four sections within Checklist A1 on page 418
- 9.b Two credits where the principal contractor achieves all items in each of the four sections within Checklist A1 on page 418 AND the contractor's performance has been confirmed by independent assessment and verification.

Up to two credits - Monitoring of site impacts

10 Responsibility has been assigned to an individual for monitoring, recording and reporting energy use, water consumption and transport data (where measured) resulting from all on site processes (and dedicated off-site monitoring) throughout the programme. To ensure the robust collection of information, this individual must have the appropriate authority and responsibility to request and access the data required. Where appointed, the sustainability champion could perform this role.

First monitoring credit - Utility consumption

Energy consumption

11 Criterion 10 above is achieved.

12 Monitor and record data of the site energy consumption in kWh (and where relevant, litres of fuel used) as a result of the use of construction plant, equipment (mobile and fixed) and site accommodation (as relevant to the project type).

13 Report the total carbon dioxide emissions (total kg CO_2/project value) from the construction process via the BREEAM Assessment Scoring and Reporting tool (for the purposes of potential future BREEAM performance benchmarking).

Water consumption

14 Criterion 10 on the previous page is achieved.

15 Monitor and record data on the principal constructor's and subcontractors' potable water consumption (m^3) arising from the use of construction plant, equipment (mobile and fixed) and site accommodation (as relevant to the project type, see Compliance notes.

16 Using the collated data report the total net water consumption (m^3), i.e. consumption minus any recycled water use from the construction process via the BREEAM Assessment Scoring and Reporting tool (for the purposes of potential future BREEAM performance benchmarking).

Second monitoring credit - Transport of construction materials and waste

17 Criterion 10 on the previous page is achieved.

18 Monitor and record data on the transport movements and impacts resulting from delivery of the majority construction materials to the site and construction waste from the site. As a minimum this must cover:
- 18.a Transport of materials from the factory gate to the building site, including any transport, intermediate storage and distribution, see Relevant definitions on page 63.
- 18.b The scope of this monitoring must cover the following as a minimum:
  - 18.b.i Materials used for major building elements, (i.e. those defined as mandatory in the BREEAM International Mat 01 Calculator tool), including insulation materials
  - 18.b.ii Where within scope, ground works and landscaping materials.
- 18.c Transport of construction waste from the construction gate to waste disposal processing or the recovery centre gate. The scope of this monitoring must cover the construction waste groups outlined in the project's waste management plan.

19 Using the collated data, report separately for materials and waste, the total transport-related carbon dioxide emissions ($kgCO_2eq$) via the BREEAM Assessment Scoring and Reporting tool (for the purposes of potential future BREEAM performance benchmarking).

Exemplary level criteria

The following outlines the exemplary level criteria to achieve one innovation credit for this BREEAM issue:

20 Where the principal contractor has achieved compliance with a BREEAM 'compliant' organisational, local or national considerate construction scheme and their performance against the scheme has been confirmed by independent assessment and verification.

Checklists and tables

The project team are to complete this checklist. The assessor and project team must ensure that the intent of each section is met through actions appropriate to the site.

Table 9: Checklist of actions to minimise air and water pollution during construction works

Section	Action	Completed (Y/N)
Noise and vibration	Intent: To minimise the impact of noise and vibration in the local community.	
A	Plan the noisiest activities for times that will result in the least disturbance to the local community.	
B	Use noise control devices, e.g. temporary noise.	

Section	Action	Completed (Y/N)
C	Use barriers or deflectors for impact and blasting activities.	
D	Avoid or minimise transport through community areas.	
Air quality	Intent: To prevent dust and other air pollution on site and in the local community.	
A	Minimise dust from materials by using covers, storage, control equipment, and increasing moisture content.	
B	Minimise dust from vehicle movements, using water sprays if appropriate.	
C	Avoid burning of materials on site.	
Water run-off management	Intent: To prevent water pollution from on site activities.	
A	Prepare a drainage plan and mark manholes or water entry points to highlight risk areas. Note: this plan may change as the works progress.	
B	Where possible or appropriate, schedule works to avoid heavy rainfall periods (i.e. during the dry season) and modify activities during extreme rainfall and high winds.	
C	Contour and minimise length and steepness of slopes.	
D	Mulch to stabilise exposed areas or line steep channels or slopes, e.g. using jute matting.	
E	Revegetate areas promptly.	
F	Reduce or prevent off-site sediment transport through the use of settlement ponds, silt fences, or water treatment.	
G	Segregate or divert clean water run-off to prevent it mixing with water with a high solids content (therefore minimising the amount of water requiring treatment).	
H	Provide adequate drainage systems to minimise and control infiltration.	
I	Carry out any activities that could cause pollution in designated, bunded areas away from rivers, boreholes or other water courses.	
Hazardous materials	Intent: To prevent hazardous materials polluting local water courses.	

Section	Action	Completed (Y/N)
A	Provide adequate secondary containment for fuel storage tanks and for the temporary storage of other fluids such as lubricating oils and hydraulic fluids.	
B	Train workers on the correct transfer and handling of fuels and chemicals, and the response to spills.	
C	Use impervious surfaces for refuelling areas and other fluid transfer areas.	
D	Provide portable spill containment and clean-up equipment on site and train staff to use it.	
E	Provide adequate sanitation facilities serving all workers.	

Compliance notes

Ref	Terms	Description
Shell and core (non-residential and residential institutions only)		
CN1	Applicable assessment criteria	Both options: All criteria relevant to the building type and function apply. Refer to Appendix D – Shell and core project assessments on page 409 for a more detailed description of the shell and core assessment options.
Residential - Partially fitted and fully fitted		
CN2	Applicable assessment criteria - Single dwellings	Both options: All criteria relevant to the building type and function apply, see CN2.2 below for more detail on the sustainability champion role. Refer to Appendix E – Applicability of BREEAM New Construction to single and multiple dwellings, partially and fully fitted on page 412 for a more detailed description of residential assessment options.
CN2.1	Applicable assessment criteria - Multiple dwellings	Both options: All criteria relevant to the building type and function apply. Refer to Appendix E – Applicability of BREEAM New Construction to single and multiple dwellings, partially and fully fitted on page 412 for a more detailed description of residential assessment options.
CN2.2	Sustainability champion for single dwellings	For single dwellings a BREEAM International New Construction Assessor can act as the Sustainability champion. In this situation it will still be necessary to manage any conflicts of interest that could arise.
General		

Ref	Terms	Description
CN3	BREEAM compliant organisational, local or national considerate construction schemes	Where a considerate construction or constructors' scheme exists and is not listed as a BREEAM compliant scheme, the scheme administrator or operator can apply to BRE Global for recognition as a compliant scheme. Prior to any application, the operator should first review their scheme against the requirements of Appendix G – Considerate constructor scheme requirements on page 415. If they believe their scheme demonstrates equivalence with Appendix G – Considerate constructor scheme requirements on page 415, they should contact BRE Global. BRE Global will review the scheme and, if appropriate, add it to the list of compliant schemes and define appropriate benchmarks of performance for achieving BREEAM credits using the scheme.
CN3.1	Site timber and reusable formwork. See criterion 1 on page 56.	Reusable timber formwork itself does not automatically comply. All timber used in the manufacture of the formwork must be either initially reclaimed, or 'legally harvested and traded' (see Mat 03 Responsible sourcing of construction products – Relevant definitions on page 292).
CN3.2	Environmental management system (EMS)	The EMS can be developed following guidance in the WRAP publication 'Your Guide to Environmental Management Systems', which can be downloaded from the WRAP website. While a UK based document, this guide follows the requirements of ISO 14001 and EMAS; however certification against ISO 14001, EMAS or the equivalent standard will be required to demonstrate compliance with criterion 3 on page 56.
CN3.3	Frequency of site monitoring. See criterion 5 on page 57.	In this context, visits should occur at key stages of the construction process, at times where: — Works can be observed before they are covered up or new works or trades start; where significant risks of conflicts or errors could occur — Timing is critical to demonstrating compliance — Key evidence is required to be produced at specific times including, but not limited to, photographic, delivery notes and other documentary evidence — Different trades and systems come together and one could harm the integrity or compliance of another system's performance against BREEAM requirements.
CN3.4	Independent assessment and verification	An assessment of the site activities against Checklist A1 on page 418 which is carried out by an individual who can demonstrate their independence from the project delivery, i.e. someone not employed by (or working under a contract for) the contractor's organisation. The individual must have at least five years experience working within the construction industry, either as a contractor or as part of a design team. Where the assessor meets the criteria above, they can fulfil this role.
CN3.5	Compliance with Considerate Contractor Checklist	In instances where items in Checklist A1 on page 418 are not relevant due to the scope of works on site, the assessor should seek guidance from BRE Global on the appropriate number of items required.

Ref	Terms	Description
CN3.6	National health and safety regulations and best practice	Where there are no national health and safety regulations in the country of assessment, evidence is required to demonstrate that EITHER: — The principal contractor has an occupational health and safety management system compliant with OHSAS 18001:2007 OR — Works will be carried out in accordance with the International Labour Association's Safety and health in construction Code of Practice.
CN3.7	Water Consumption	Where there is no water use associated with construction plant, equipment (mobile and fixed) and site accommodation, the requirement for monitoring water consumption is not required.

Methodology

None.

Evidence

Criteria	Interim design stage	Final post-construction stage
All	Relevant section or clauses of the building specification or contract. OR A signed and dated letter of commitment to meet the relevant criteria.	Name of the individuals responsible for monitoring, recording and reporting data resulting from all construction processes. Summary details of the monitoring and data gathering mechanism, protocols or system used to collate and process the relevant data. Collated construction phase data or information as follows: — Total site energy consumption by fuel type or total carbon dioxide emissions — Total site net water consumption (m^3) — For both materials and waste, the total fuel consumption by type or total carbon dioxide emissions plus total distance travelled (km). For certified and non-certified site timber, evidence as required for BREEAM issue Mat 03 Responsible sourcing of construction products on page 282. A copy of the principal contractors EMS/EMAS certificate. Copies of the documented procedures used on site for working to best practice pollution management guidelines. A letter from the principal contractor confirming: — Procedures for pollution management and mitigation were implemented — Name or job title of the individual responsible for monitoring and managing construction site impacts throughout the project.

Additional information

Relevant definitions

BREEAM Advisory Professional (AP)

Refer to Man 01 Project brief and design on page 44.

Construction processes

The construction process includes the enabling works, assembly, installation and disassembly activities necessary for servicing the construction and completion of a new building.

Dedicated off-site manufacturing or fabrication

Production of a component or material carried out in an off-site manufacturing or processing facility specifically set up for a development project.

Factory gate

For the purposes of this issue, the factory gate is defined as being the product manufacturer gate (i.e. where manufacture and pre-assembly finishes and the material is in its final product form). Examples might include:

1. Steel, concrete or glass manufacturers for cladding, windows and beams etc.
2. Quarry gate for aggregate and sand
3. Concrete plant for concrete
4. Saw mill and timber processing plant for timber.

Legally harvested and traded timber

Refer to Mat 03 Responsible sourcing of construction products on page 282.

Principal contractor

The company that has overall responsibility for overseeing the construction stage of the project, whether that is a contractor or managing agent.

Sustainability champion (construction)

Members of formal schemes approved by BRE Global in connection with the provision of design advice. At present the following schemes are deemed to satisfy this requirement:

- BREEAM Advisory Professional (AP) Membership Scheme
- BRE Site Sustainability Manager Membership Scheme.

Sustainability Champions are trained and qualified to provide BREEAM-related advice to the design team to facilitate timely and successful target setting, scheduling, prioritisation and monitoring of BREEAM compliance relating to the design of the building. They will be subject to ongoing training and competency requirements to ensure that their knowledge is maintained. Providers of schemes or qualifications not listed, who feel their members meet this definition and who would like to be listed as approved membership schemes, should contact BRE Global.

Note: The aim of the sustainability champion credits is to encourage an integrated design and construction process that uses BREEAM as a framework for establishing, agreeing and achieving the desired level of sustainability performance for the project. The sustainability champion credits in this BREEAM issue focus on achieving this objective through the provision of appropriate expertise during the Construction, Handover and Close Out stages of the project.

BRE site sustainability manager

An individual qualified by BRE to help ensure quality in project delivery and to minimise the environmental impacts of the construction process, as well as achieving the intentions of the building designers. They are based on site and ensure that the construction site is managed in an environmentally efficient manner and that the site teams are confident in achieving the exacting regulations and requirements of environmental certification schemes, for example BREEAM. Only qualified individuals who are members of BRE's associated membership scheme and are registered to the scheme throughout the period of construction comply with the BREEAM requirements. This membership ensures an adequate level of competence is maintained through regular continuing professional development (CPD) in key relevant areas.

Other information

CO_2 reporting protocols

At the time of publication, the following guidance is available for CO_2 measuring protocols.

1. Encord (www.encord.org): They have launched a CO_2 reporting protocol.
2. GHG Protocol (www.ghgprotocol.org)

Tools for monitoring and targeting construction site impacts

SMARTWaste is an online environmental reporting tool for the construction industry. It enables organisations to efficiently capture, monitor and report on:

- Waste (including Site Waste Management Plans & Pre-Demolition Audits)
- Energy (including conversion to carbon dioxide emissions)
- Water
- Responsibly sourced materials (including timber)
- Transport
- Considerate Contractors Scheme.

Used to meet the criteria of this issue and as a source of evidence for demonstrating compliance, SMARTWaste helps organisations to reduce their environmental impacts, making substantial time and cost savings.

More information about SMARTWaste can be found at: www.smartwaste.co.uk.

The International Finance Corporation website provides information relating to this issue, i.e. the IFC World Bank Group - Environmental, Health and Safety (EHS) Guidelines.

Considerate construction practices

The following are examples of considerate construction practices that provide possible ways of meeting the criteria for single dwellings. Further examples can be found at the Considerate Contractors Scheme website under Examples of Good Practices.

1. Keeping the site clean and tidy:
   a. Ensure there is no loose materials or debris lying around the site including the perimeter
   b. Vehicles are regularly checked for cleanliness
   c. Implement a 'Tidy Friday' initiative.
2. Reduce the impacts to the community:
   a. Schedule the timing of deliveries to the site to avoid disturbance to local residents
   b. Ensure that any noisy work is carried out at agreed times with adjoining neighbours
   c. Record car registration numbers of all operatives in the event that a complaint was made with regard to nuisance parking.
3. A drive for continuous improvements in safety:
   a. Toolbox talks on safety matters
   b. Passport or helmet stickers for operatives who have successfully completed health and safety training
   c. Near miss reporting procedure.
4. A commitment to respect and provide fair treatment of all workers:
   a. A 'Respect for people' wall chart displayed, recording satisfaction levels with welfare and other relevant topics
   b. Questionnaires issued to all operatives to establish what can be done to improve working conditions
   c. Information on dealing with abusive behaviour.
5. Provide suitable site facilities:
   a. Suitable toilet facilities for male and female operatives
   b. Rest areas for operatives to have breaks away from work areas
   c. Suitable first aid facilities.

Man 04 Commissioning and handover

(all buildings)

Number of credits available	Minimum standards
4	Yes

Aim

To encourage a properly planned handover and commissioning process that reflects the needs of the building occupants.

Assessment criteria

This issue is split into four parts:

- Commissioning and testing schedule and responsibilities (1 credit)
- Commissioning building services (1 credit)
- Testing and inspecting building fabric (1 credit)
- Handover (1 credit)

The following is required to demonstrate compliance:

One credit - Commissioning and testing schedule and responsibilities

1 There is a schedule of commissioning and testing that identifies the appropriate commissioning required for the scope of works. The schedule includes a suitable timescale for commissioning and recommissioning of building services and control systems, as well as testing and inspecting the building fabric.

2 The schedule will identify the appropriate standards that all commissioning activities will be conducted in accordance with. This will include national best practice commissioning codes or other appropriate standards, where applicable. Where a building management system (BMS) is specified, refer to compliance note CN3.2 on page 69 on BMS commissioning procedures.

3 An appropriate project team member is appointed to monitor and programme pre-commissioning, commissioning and testing. Where necessary, this will include recommissioning activities on behalf of the client.

4 The principal contractor accounts for the commissioning and testing programme, responsibilities and criteria within their budget and the main programme of works. The programme shall allow for the required time to complete all commissioning and testing activities prior to handover.

One credit - Commissioning building services

5 The commissioning and testing schedule and responsibilities credit is achieved.

6 For complex building services and systems, a specialist commissioning manager is appointed during the design stage (by either the client or contractor) with responsibility for:

- 6.a Undertaking design reviews and giving advice on suitability for ease of commissioning
- 6.b Providing commissioning management input to construction programming and during installation stages
- 6.c Management of commissioning, performance testing and handover or post-handover stages.

6.d For simple building services, this role can be carried out by an appropriate project team member (see criterion 3 on the previous page), provided they are not involved in the general installation works for the building services systems.

One credit - Testing and inspecting building fabric

7 The commissioning and testing schedule and responsibilities credit is achieved.

8 The integrity of the building fabric, including continuity of insulation, avoidance of thermal bridging and air leakage paths is quality assured through completion of post-construction testing and inspection. Dependent on the building type or construction, this can be demonstrated through the completion of a thermographic survey, as well as an airtightness test and inspection (see compliance notes CN3.3 and CN3.4 on page 70. The survey and testing is undertaken by a suitably qualified professional (see Relevant definitions on page 71) in accordance with the appropriate standard.

9 Any defects identified in the site inspection, thermographic survey and the airtightness testing reports are rectified prior to building handover and close out. Any remedial work must meet the required performance characteristics for the building or element as defined at the design stage.

One credit - Handover

10 A building or home user guide is developed, prior to handover for distribution to the building occupiers and premises managers (see Relevant definitions on page 71). A draft copy is developed and discussed with users first (where the building occupants are known) to ensure the guide is most appropriate and useful to potential users.

11 A training schedule is prepared for building occupiers or premises managers, timed appropriately around handover and proposed occupation plans, which includes the following content as a minimum:

- 11.a The design intent of the building
- 11.b The available aftercare provision and aftercare team main contacts, including any scheduled seasonal commissioning and post occupancy evaluation
- 11.c Introduction to, and demonstration of, installed systems and key features, particularly BMSs, controls and their interfaces, to ensure they are fully conversant with the detailed operation of the building
- 11.d Introduction to the building user guide and other relevant building documentation, e.g. design data, technical guides, maintenance strategy, operations and maintenance (O&M) manual, commissioning records, log book etc.
- 11.e Maintenance requirements, including any maintenance contracts and regimes in place.

Checklists and tables

None.

Compliance notes

Ref	Terms	Description
Shell and core (non-residential and residential institutions only)		
CN1	Applicable assessment criteria	**Commissioning and testing schedule and responsibilities, commissioning building services, criteria 1 to 6 on page 66** Shell only: These criteria are not applicable. Shell and core: With regard to the scope of services being specified or installed, all criteria relevant to the building type and function apply. **Testing and inspecting building fabric, criteria 7 to 9 on the previous page** Shell only: criteria **8** and **9 on the previous page** Shell and core: All criteria relevant to the building type and function apply **Handover, criteria 10 and 11 on the previous page** Shell only: These criteria are not applicable. Shell and core: Criterion **10 on the previous page** only is applicable. The guide includes, as far as possible, all relevant sections regarding the services and fabric installed. On completion of works the building owner, agent or user hands it over to the fit-out contractor, who can then complete the relevant sections based on the fit-out strategy. Refer to Appendix D – Shell and core project assessments on page 409 for a more detailed description of the shell and core assessment options.
Residential - Partially fitted and fully fitted		
CN2	Applicable assessment criteria - Single dwellings	**Commissioning and testing schedule and responsibilities, commissioning building services, criteria 1 to 6 on page 66** Both options: These criteria do not apply. **Testing and inspecting building fabric, criteria 7 to 9 on the previous page** Both options: These criteria do not apply. **Handover, criteria 10 and 11 on the previous page** Both options: Criterion **10 on the previous page** only is applicable. Refer to Appendix E – Applicability of BREEAM New Construction to single and multiple dwellings, partially and fully fitted on page 412 for a more detailed description of residential assessment options.

Ref	Terms	Description
CN2.1	Applicable assessment criteria - Multiple dwellings	**Commissioning and testing schedule and responsibilities, commissioning building services, criteria 1 to 6 on page 66** Partially fitted: With regard to the scope of services being specified or installed, all criteria relevant to the building type and function apply. Fully fitted: All criteria relevant to the building type and function apply. **Testing and inspecting building fabric , criteria 7 on page 67 to 9 on page 67** Both options: All criteria relevant to the building type and function apply. **Handover, criteria 10 and 11 on page 67** Partially fitted: The home user guide includes, as far as possible, all relevant sections regarding the services and fabric installed. Fully fitted: All criteria relevant to the building type and function apply. Refer to Appendix E – Applicability of BREEAM New Construction to single and multiple dwellings, partially and fully fitted on page 412 for a more detailed description of residential assessment options.
General		
CN3	National best practice commissioning codes	Please refer to the Approved Standards and Weightings List (ASWL) to locate the appropriate national building regulations and best practice commissioning codes in the county of assessment. Alternatively, please demonstrate that the minimum requirements as set out in the Approved standards and weightings list are covered by the proposed documents. Where appropriate commissioning codes do not exist for a country, the design team should demonstrate compliance with the UK or European standards as listed in each relevant country reference sheet.
CN3.1	Process-related equipment. See criterion 2 on page 66.	Any process or manufacture-related equipment specified as part of the project may be excluded from the assessment of the commissioning credits, except where they form an integral part of the building HVAC services, such as some heat recovery systems.
CN3.2	BMS commissioning procedures. See criterion 2 on page 66.	Where a BMS is specified, the following commissioning procedures must be carried out: 1. Commissioning of air and water systems is carried out when all control devices are installed, wired and functional 2. In addition to air and water flow results, commissioning results include physical measurements of room temperatures, off-coil temperatures and other key parameters, as appropriate 3. The BMS or controls installation should be running in auto with satisfactory internal conditions prior to handover 4. All BMS schematics and graphics (if BMS is present) are fully installed and functional to user interface before handover 5. The occupier or facilities team is fully trained in the operation of the system.
CN3.3	Scope of the thermographic survey	The thermographic survey must cover 100% of the treated spaces, unless it is a large complex building (see CN3.4 on the next page), and ensure that all elements of the building fabric that enclose an internal heated or conditioned (treated) zone of the building will be tested. This includes internal walls separating treated and untreated zones.

Ref	Terms	Description
CN3.4	Thermographic survey of large complex buildings	In the case of large and complex buildings, e.g. airports, large hospitals and high-rise buildings, it may be impractical for the thermographic survey and air tightness testing to cover 100% of the building. Where a complete thermographic survey is deemed impractical by a Class/Category II thermographic surveyor, the guidance in air tightness standard ISO 9972:2015[5] should be followed on the extent of the survey and testing.
CN3.5	Appropriate standards for thermal imaging and air leakage testing (where applicable)	ISO 6781-3:2015 Performance of buildings - Detection of heat, air and moisture irregularities in buildings by infrared methods – Part 3: Qualifications of equipment operators, data analysts and report writers. The other parts of this standard are still under development; until they are published the previous version will be applicable. ISO 6781:1983 Thermal performance of buildings - Qualitative detection of thermal irregularities in building envelopes - Infrared method. ISO 9972:2015 Thermal performance of buildings - Determination of air permeability of buildings - Fan pressurisation method.
CN3.6	Requirement for a thermographic survey AND air tightness testing	The requirement for this credit is to ensure continuity of insulation, and avoidance of thermal bridging and air leakage paths. How this is achieved is up to the judgment of the suitably qualified professional. Therefore there is no requirement to carry out both, unless this has been deemed necessary by a suitably qualified professional.
CN3.7	Remediation work	Any remediation work undertaken, resulting from a thermographic survey and air tightness test of the building, should be robust and durable, i.e. the remedial work must have the same performance characteristics and life expectancy of the surrounding elements. Where any defects are identified that relate to aspects that are outside of the scope of refurbishment works, these do not need to be remediated, e.g. where testing highlights that glazing has defects, but was not included in the scope of refurbishment works.
CN3.8	Thermographer qualification	The thermographic survey is normally undertaken by a suitably qualified professional classified and qualified as a Class/Category II in thermography (see Relevant definitions on the facing page). Where a Class/Category II thermographer is not available at the site, the survey may be undertaken by a Class/Category I thermographer and then the images interpreted by a Class/Category II thermographer.
CN3.9	Distribution of Home user guide for residential buildings	The Home user guide must be supplied to all dwellings in a development. Where the development is divided into multiple dwellings and whenever there are communal systems and features in place, one central building user guide should be provided covering the scope of the building owner or manager controlled areas and responsibilities. A separate building user guide should be provided for each individual dwelling with content appropriate to the residents and their interaction with the building and its systems.

Methodology

None.

Evidence

Criteria	Interim design stage	Final post-construction stage
Commissioning and testing schedule and responsibilities, commissioning building services		
1–6 on page 66	Project budget. Programme of works. Appointment letter or commissioning responsibilities schedule. Relevant section or clauses of the building specification or contract. Main contractor's programme. Commissioning schedule.	Commissioning records or reports. Main contractor's programme. Commissioning schedule.
Testing and inspecting building fabric		
7–9 on page 67	Drawings clearly marked with the line of the thermal insulation barrier AND Confirmation that these details have been checked to verify the continuity of the thermal barrier.	Thermographic survey or air leakage report. Thermographic qualification (if applicable) OR Evidence of inspection to confirm continuity of the thermal barrier during the construction process. Confirmation of remedied defects identified by either the thermographic survey or air tightness testing.
Handover		
10–11 on page 67	Relevant section or clauses of the building specification or contract. OR A letter of commitment from the client or developer.	A copy of the building or home user guide. Written confirmation from the design team or client that the guide has been, or will be, distributed to the building's owner, tenants or fit-out contractor (for completion), as appropriate. Copy of the training schedule, with confirmation that it was (or will be) issued to the relevant people at the required time.

Additional information

Relevant definitions

Building user guide

Dedicated building or site-specific guidance for the non-technical building user. The purpose of the guide is to help building users access, understand and operate the building efficiently and in a manner in keeping with the original design intent. A building user guide should be written so that it will provide easily accessible and understandable information relevant to the following stakeholders:

- The building's staff (or where relevant, residents)
- The non-technical facilities management team or building manager
- Other building users, e.g. visitors, community users.

The content of the guide will be specific to the building type and end users, but broadly should include information on the following:

- Overview of the building and its environmental strategy, e.g. energy or water or waste efficiency policy or strategy and how users should engage with and deliver the policy or strategy
- Building services overview and access to controls, e.g. where to find them, what they control, how to operate them effectively and efficiently etc.
- Pre-arrival information for visitors, e.g. access and security procedures and provisions
- Provision of, and access to, shared facilities
- Safety and emergency information and instructions
- Building related operational procedures specific to the building type or operation, e.g. laboratories
- Building related incident reporting and feedback arrangements
- Provision of, and access to, transport facilities, e.g. public transport, cyclist facilities, pedestrian routes etc.
- Provision of, and access to, local amenities
- Re-fit, refurbishment and maintenance arrangements and considerations
- Links, references and relevant contact details.

There is no requirement on the format the building user guide should take.

Complex systems

These include, but are not limited to, air-conditioning, comfort cooling, mechanical ventilation, displacement ventilation, complex passive ventilation, BMS, renewable energy sources, microbiological safety cabinets and fume cupboards, cold storage enclosures and refrigeration plant.

Home user guide

The aim of the Home user guide is to ensure the appropriate provision of guidance for the non-technical building user, so they can access, understand and operate the building efficiently and in a manner in keeping with the original design intent.

The guide should provide information relevant to the following stakeholders:

1. The building's residents
2. The non-technical facilities management team or building manager
3. Other building users, e.g. visitors or community users.

The section titles of the Home user guide are provided below. For further details on the scope or content of the guide refer to Checklist A2 on page 425.

Part 1 – Operational issues

1. Environmental strategy, design and features
2. Energy
3. Water use
4. Recycling and waste
5. Links, references and further information
6. Provision of information in alternative formats.

Part 2 – Site and surroundings

1. Recycling and waste
2. Sustainable (urban) drainage systems (SuDS)
3. Public transport
4. Local amenities
5. Responsible purchasing
6. Emergency information
7. Links, references and further information.

Suitably qualified professionals - thermographic survey and airtightness testing

Airtightness testing: professionals with membership of an organisation maintaining accreditation by the relevant Accreditation Body (to fulfil the requirements of ISO 17024), or a nationally recognised competent persons scheme, e.g. ATTMA.

Thermographic survey: professionals holding a valid Category II in thermography, as defined by ISO 18436-7:2014 or Class II in infrared thermography as defined by ISO 6781-3:2015.

Other information

Thermal bridging assessments

It is good practice to carry out thermal bridging assessments at the design stage. This is encouraged through building regulations for energy conservation by allowing the use of actual values in the energy calculation, which could make a significant improvement over using the default values in the National Calculation Methodology. This is reflected in Ene 01 Reduction of energy use and carbon emissions on page 150, so no additional credit is offered within this issue for thermal bridging assessments. However, good thermal bridging design and assessment will contribute to successful building fabric testing results and the associated credit.

Man 05 Aftercare

(all buildings)

Number of credits available	Minimum standards
3	Yes

Aim

To provide post-handover aftercare to the building owner or occupants during the first year of occupation to ensure the building operates and adapts, where relevant, in accordance with the design intent and operational demands.

Assessment criteria

This issue is split into three parts:

- Aftercare support (1 credit)
- Seasonal commissioning (1 credit)
- Post-occupancy evaluation (1 credit)

The following is required to demonstrate compliance:

One credit - Aftercare support

1 There is (or will be) operational infrastructure and resources in place to provide aftercare support to the building occupiers, which includes the following as a minimum:
- 1.a A meeting programmed to occur between the aftercare team or individual and the building occupier or management (prior to initial occupation, or as soon as possible thereafter) to:
  - 1.a.i Introduce the aftercare team or individual to the aftercare support available, including the building user guide (where existing) and training schedule and content
  - 1.a.ii Present key information about the building, including the design intent and how to use the building to ensure it operates as efficiently and effectively as possible.
- 1.b On site facilities management training, to include a walkabout of the building and introduction to and familiarisation with the building systems, their controls and how to operate them in accordance with the design intent and operational demands
- 1.c Initial aftercare support provision for at least the first month of building occupation, e.g. on site attendance on a weekly basis to support building users and management (this could be more or less frequent depending on the complexity of the building and building operations)
- 1.d Longer term aftercare support provision for occupants for at least the first 12 months from occupation, e.g. a helpline, nominated individual or other appropriate system to support building users and management.

2 There is (or will be) operational infrastructure and resources in place to coordinate the collection and monitoring of energy and water consumption data for a minimum of 12 months, once the building is occupied. This is done to facilitate analysis of discrepancies between actual and predicted performance, with a view to adjusting systems or user behaviours accordingly.

One credit - Seasonal commissioning

3 The following seasonal commissioning activities will be completed over a minimum 12-month period, once the building becomes substantially occupied:

3.a Complex systems - Specialist Commissioning Manager:
- 3.a.i Testing of all building services under full load conditions, i.e. heating equipment in midwinter, cooling and ventilation equipment in midsummer, and under part load conditions (spring and autumn)
- 3.a.ii Where applicable, testing should also be carried out during periods of extreme (high or low) occupancy
- 3.a.iii Interviews with building occupants (where they are affected by the complex services) to identify problems or concerns regarding the effectiveness of the systems
- 3.a.iv Recommissioning of systems (following any work needed to serve revised loads), and incorporating any revisions in operating procedures into the operations and maintenance (O&M) manuals.

3.b Simple systems (naturally ventilated) - external consultant or aftercare team or facilities manager:
- 3.b.i Review thermal comfort, ventilation, and lighting, at three, six and nine month intervals after initial occupation, either by measurement or occupant feedback
- 3.b.ii Take all reasonable steps to recommission systems following the review to take account of deficiencies identified and incorporate any relevant revisions in operating procedures into the O&M manuals.

One credit - Post-occupancy evaluation (POE)

4 The client or building occupier makes a commitment to carry out a POE exercise one year after initial building occupation. This is done to gain in-use performance feedback from building users to inform operational processes. This includes recommissioning activities, and to maintain or improve productivity, health, safety and comfort. The POE is carried out by an independent party (see Independent party on page 78) and needs to cover:
- 4.a A review of the design intent and construction process (review of design, procurement, construction and handover processes)
- 4.b Feedback from a wide range of building users including facilities management on the design and environmental conditions of the building covering:
  - 4.b.i Internal environmental conditions (light, noise, temperature, air quality)
  - 4.b.ii Control, operation and maintenance
  - 4.b.iii Facilities and amenities
  - 4.b.iv Access and layout
  - 4.b.v Other relevant issues.
- 4.c Sustainability performance (energy consumption, water consumption, performance of any sustainable features or technologies, e.g. materials, renewable energy, rainwater harvesting etc.).

5 The client or building occupier makes a commitment to carry out the appropriate dissemination of information on the building's post-occupancy performance. This is done to share good practice and lessons learned, inform changes in user behaviour, building operational processes and procedures, and system controls. Refer to CN3.1 and CN3.2 on page 77 for a definition of appropriate dissemination. This also provides advice on appropriate dissemination where the building or building information is commercially or security sensitive.

Exemplary level criteria

The following outlines the exemplary level criteria to achieve one innovation credit for this BREEAM issue:

6 There are, or will be, operational infrastructure and resources in place to coordinate the following activities at quarterly intervals for the first three years of building occupation:
- 6.a Collection of occupant satisfaction, energy consumption and (where available) water consumption data
- 6.b Analysis of the data to check the building is performing as expected, make any necessary adjustments to systems controls or to inform building user behaviours
- 6.c Setting targets or appropriate actions for reducing water and energy consumption and monitor progress towards these
- 6.d Feedback any 'lessons learned' to the design team and developer for use in future projects
- 6.e Provision of the actual annual building energy, water consumption and occupant satisfaction data to BRE.

Checklists and tables

None.

Compliance notes

Ref	Terms	Description
Shell and core (non-residential and residential institutions only)		
CN1	Applicable assessment criteria	Both options: This issue is not applicable. Refer to Appendix D – Shell and core project assessments on page 409 for a more detailed description of the shell and core assessment options.
Residential - Partially fitted and fully fitted		
CN2	Applicable assessment criteria - Single dwellings	**Aftercare support and Seasonal commissioning: criteria 1to 3.b on the previous page.** Both options: All criteria relevant to the building type and function apply. **Post-occupancy evaluation and Exemplary level: criteria 4 to 6 on the previous page** Both options: These criteria are not applicable Refer to Appendix E – Applicability of BREEAM New Construction to single and multiple dwellings, partially and fully fitted on page 412 for a more detailed description of residential assessment options.
CN2.1	Applicable assessment criteria - Multiple dwellings	Both options: All criteria relevant to the building type and function apply. Refer to Appendix E – Applicability of BREEAM New Construction to single and multiple dwellings, partially and fully fitted on page 412 for a more detailed description of residential assessment options.
General		
CN3	Collection and monitoring of energy and water consumption data. See criteria 2 and 4 on the previous page.	This function can be coordinated or carried out by a dedicated aftercare team or, where the building occupier is known and able to confirm compliance based on their existing or proposed operations for the building, the building owner or occupier's estates or facilities management team.

Ref	Terms	Description
CN3.1	Appropriate dissemination of POE information See criterion 5 on page 75.	1. Appropriate dissemination includes communication to immediate stakeholders such as building occupants, managers and owners. In addition information should be communicated externally. 2. Appropriate dissemination in most cases will be the production and publication of a building case study through one of the following means: a. The client's or building owner's own website, publicly available literature or press release b. Industry, sector, government or local authority sponsored website or information portals. Where there is a demonstrably justifiable reason why public dissemination is not possible, for example the information is commercially or security sensitive, compliance can be demonstrated by a commitment to produce and disseminate the relevant information at an organisational level or to appropriate internal or external stakeholders. Alternatively, the sensitive parts of the relevant information for dissemination can be omitted from the publication.
CN3.2	Relevant information for dissemination. See criterion 5 on page 75.	This includes the following information about the building and its performance: 1. A basic description of the project and building 2. BREEAM rating and score 3. The key innovative and low-impact design features of the building 4. Project cost 5. Project size: floor area, site area 6. Facilities available for community use (where relevant) 7. Any steps taken during the construction process to reduce environmental impacts, i.e. innovative construction management techniques 8. Predicted and actual carbon dioxide emissions or Energy Performance Certificate rating 9. Outcomes of the POE study to share lessons learned from the project including: a. Occupant feedback b. Energy and water consumption including renewable energy generation, level of rainwater or grey water provision

Methodology

None.

Evidence

Criteria	Interim design stage	Final post-construction stage
Aftercare support		
1-2 on page 74	Evidence of a commitment or contract to provide compliant aftercare support and training.	Evidence of a contract to provide compliant aftercare support and training.
Seasonal commissioning		
3	Appointment letters or commissioning responsibilities schedule. Evidence of either existing procedures or a commitment or contract to put in place a mechanism to: 1. Collect, compare and analyse relevant data 2. Undertake suitable adjustments if necessary.	Seasonal commissioning records, reports or a letter of appointment and commissioning responsibilities schedule. Records of occupant interviews.
Post-occupancy evaluation (POE)		
4–5	A signed and dated commitment by the client or developer or future building occupier.	As design stage.
Exemplary level requirements		
6	Evidence as above (for the data collection and aftercare support credit), but from the end user.	Evidence as above (for the data collection and aftercare support credit), but from the end user.

Additional information

Relevant definitions

Complex systems

These include, but are not limited to, air-conditioning, mechanical ventilation, displacement ventilation, complex passive ventilation, building management systems (BMS), renewable energy sources, microbiological safety cabinets and fume cupboards, cold storage enclosures and refrigeration plant.

Specialist commissioning manager

The specialist commissioning manager is a specialist subcontractor rather than a general subcontractor.

Independent party

To comply with criterion 4 on page 75 relating to the use of an independent party, the client or design team needs to demonstrate either of the following options:

1. They have used a party independent of the design process to conduct the necessary POE exercise using a compliant method OR
2. If the POE is to be carried out by an organisation involved with the design of the building, e.g. the project architect, they must present the assessor with the evidence that demonstrates the independence of the POE process from the design process. BREEAM has not attempted to define what form this exercise must take; the onus is on the design team or relevant individual to clearly demonstrate to the BREEAM Assessor a credible level of independence.

Actual vs predicted performance

In most cases it is not feasible to accurately compare predicted vs actual performance due to variances in the assumptions used in the models. Figures reported via the UK's Carbon Buzz website show that on average, buildings consume between 1.5 and 2.5 times the predicted values. When comparing predicted with actual values, an analysis should be carried out to understand why there may be discrepancies in performance. These discrepancies can be for a number of reasons including:

- Predicted energy consumption is normally based upon building regulation compliance models which only focus on 'regulated' energy use. Additional unrelated energy use may not have been modelled in the design prediction model
- They may be extended use due to extra occupancy and operating hours, not accounted for in the predicted models
- Inefficiencies from poor control, bad commissioning or poor maintenance
- Additional special functions such as a cafeteria, server rooms etc. not accounted for in the predicted model
- Variances in actual occupant behaviour that vary from predicted, such as use of small power and lighting.

CIBSE TM54, Evaluating Operational Energy Performance of Buildings at the Design Stage, CIBSE, 2013 provides guidance on how to improve the accuracy of the model for operational energy use of buildings at the design stage. The Carbon Trust guidance, 'Closing the gap: Lessons learned on realising the potential of low carbon building design', also provides additional guidance on this issue.

Absence of predicted performance data

Where building occupiers do not have predicted performance models, it may be more appropriate to benchmark actual building performance data with other sources of Building Performance Evaluation Data and benchmarks. The following sources of benchmarking information are from the UK and are internationally recognised. Building performance benchmarks can be found in CIBSE Guidance including:

- Guide F: Energy Efficiency in Buildings
- CIBSE TM46: Energy Benchmarks
- CIBSE TM47: Operational Ratings and Display Energy Certificates.

Additional information of building performance and benchmarking can be found at Buildings Performance Institute Europe (BPIE) (www.bpie.eu) and ASHRAE (www.ashrae.org).

POE Methodologies

The most relevant POE methodology that fulfils the criteria should be used. For example, in the UK, the building use studies (BUS) methodology was developed following a series of Government funded 'PROBE' building performance evaluation studies in 1995. The BUS methodology is used by independent licensed partners following a four part process. Further information can be found at: www.busmethodology.org.uk. BRE's Design Quality Method (DQM) is a tried and tested, independent, POE method used by all UK auditing authorities, and many funding bodies. Further information can be found at: www.bre.co.uk/dqm. Further guidance on POE:

- The BCO guide to Post Occupancy Evaluation (POE), British Council for Offices, 2007
- BRE Digest 478, Building performance feedback: getting started, Building Research Establishment, 2003
- Guide to Post Occupancy Evaluation Report and Toolkit, HEFCE, AUDE & University of Westminster, 2006.

Other information

Soft Landings Framework[6]

A framework written and produced by the Usable Buildings Trust (UBT) and the Building Services Research and Information Association (BSRIA) that seeks to promote improved briefing, design, handover and building performance in-use. Embedding the principles of this framework within a project should ensure that the evidence is available to demonstrate compliance with particular aspects of the criteria under this BREEAM issue. Please also note that BSRIA has produced a BREEAM New Construction Soft landings interpretation note[7] for clients and design teams.

The Government Soft Landings (GSL) is a version of the Soft Landings concept tailored for use on public sector related projects to link in with the work of the Government's Building Information Modelling Task Group. It is to be mandated in 2016 alongside Building Information Modelling (BIM) Level 2 and is to be implemented by central Government departments. It should be noted that the GSL programme will become compulsory for local Government developments after 2016. Further information is available from: www.bimtaskgroup.org/Government Soft Landings.

Health and wellbeing

Summary

This category encourages the increased comfort, health and safety of building occupants, visitors and others within the vicinity. Issues in this section aim to enhance the quality of life in buildings by recognising those that encourage a healthy and safe internal and external environment for occupants.

Category summary table

Issue	Credits	Credit summary
Hea 01 Visual comfort	Up to 6 credits	— The potential for disabling glare has been designed out of all relevant building areas. — Good practice daylighting levels have been met. — Floor space in the relevant building areas has an adequate view out to reduce eye strain and provide a link to the outside. — Internal and external lighting systems are designed to avoid flicker and provide appropriate illuminance (lux) levels. — Internal lighting is zoned to allow for occupant control.
Hea 02 Indoor air quality	5	— Minimising sources of air pollution through careful design, specification and planning. — Building ventilation strategy is designed to be flexible and adaptable to potential future building occupant needs and climatic scenarios.
Hea 03 Safe containment in laboratories	2	— Production of an objective risk assessment of the proposed laboratory facilities. — Containment devices such as fume cupboards meet best practice safety and performance requirements and objectives. — Containment level 2 and 3 laboratory facilities to meet best practice safety and performance criteria where specified.
Hea 04 Thermal comfort	3	— Thermal modelling carried out to appropriate standards. — Projected climate change scenarios considered as part of the thermal model. — The thermal modelling analysis has informed the temperature control strategy for the building and its users.

Hea 05 Acoustic performance	Up to 4 credits	— The building meets appropriate acoustic performance standards and testing requirements in terms of:
		  — Sound insulation
		  — Indoor ambient noise levels
		  — Reverberation times.

Issue	Credits	Credit summary
Hea 06 Accessibility	2	— Provision of effective measures which support safe access to and from the building. — Security needs are understood and taken into account in the design and specification.
Hea 07 Hazards	1	— Risk assessment for natural hazards that may affect the building and the implementation of measures to mitigate any risks.
Hea 08 Private space	1	— Provision of outdoor space which gives privacy and a sense of wellbeing.
Hea 09 Water quality	1	— Reduction of water contamination risk and provision of clean fresh sources of water.

Hea 01 Visual comfort

(all buildings)

Number of credits available	Minimum standards
Building type dependent	Yes (criterion 1 only)

Aim

To ensure daylighting, artificial lighting and occupant controls are considered at the design stage to ensure best practice in visual performance and comfort for building occupants.

Assessment criteria

This issue is split into five parts:

- Prerequisite
- Glare control (1 credit)
- Daylighting (up to 4 credits - building type dependent)
- View out (1 credit)
- Internal and external lighting (1 credit)

The following is required to demonstrate compliance:

Prerequisite

1 All fluorescent and compact fluorescent lamps are fitted with high frequency ballasts.

One credit - Glare control

2 The potential for glare has been designed out of all relevant building areas using a glare control strategy, either through building form and layout or building design measures (see compliance note CN3.1 on page 91).

3 The glare control strategy avoids increasing lighting energy consumption by ensuring that:

3.a The glare control system is designed to maximise daylight levels under all conditions while avoiding disabling glare in the workplace or other sensitive areas. The system should not inhibit daylight from entering the space under cloudy conditions, or when sunlight is not on the façade

AND

3.b The use or location of shading does not conflict with the operation of lighting control systems.

Up to four credits - Daylighting (building type dependent)

4 Daylighting criteria have been met using either of the following options:

4.a The relevant building areas meet good practice daylight factors and other criteria as outlined in Table 10 on the next page and Table 11 on page 86

OR

4.b The relevant building areas meet good practice average and minimum point daylight illuminance criteria as outlined in Table 12 on page 86.

Table 10: Minimum values of average daylight factor required

Building or area type	Average daylight factor required by latitude (degrees)						Minimum area (m²) to comply		Other requirements
	≤ 40	40-45	45-50	50-55	55-60	≥ 60	1 credit	2 credits	
Education buildings (up to 2 credits available)									
Preschools, schools - occupied spaces	1.5%	1.7%	1.8%	2.0%	2.1%	2.2%	-	80%	EITHER (a) OR {(b) and (c)} in Table 11 on page 86
Universities, colleges and higher education - occupied spaces	1.5%	1.7%	1.8%	2.0%	2.1%	2.2%	60%	80%	
Residential institutions (1 credit available*)									
Kitchen	1.5%	1.7%	1.8%	2.0%	2.1%	2.2%	80%	-	EITHER (a) OR (c) in Table 11 on page 86
Living rooms, dining rooms, studies (including workspaces in hotel bedrooms or suites)	1.2%	1.3%	1.4%	1.5%	1.6%	1.6%		-	
Non-residential or communal occupied spaces	1.5%	1.7%	1.8%	2.0%	2.1%	2.2%		-	
Residential dwellings (4 credits available)**									
Kitchen	1.5%	1.7%	1.8%	2.0%	2.1%	2.2%	-	80%	(b) in Table 11 on page 86
Living rooms, dining rooms, studies (including home offices)	1.2%	1.3%	1.4%	1.5%	1.6%	1.6%	-	80%	
Retail buildings (2 credits available)**									

Building or area type	Average daylight factor required by latitude (degrees)						Minimum area (m²) to comply		Other requirements
	≤ 40	40-45	45-50	50-55	55-60	≥ 60	1 credit	2 credits	
Sales areas	1.5%	1.7%	1.8%	2.0%	2.1%	2.2%	35%	-	-
Other occupied areas	1.5%	1.7%	1.8%	2.0%	2.1%	2.2%	80%	-	EITHER (a) OR {(b) and (c)} in Table 11 on the next page
Industrial, office, and all other building types (1 credit available*)									
Internal association or atrium area	2.3%	2.5%	2.8%	3.0%	3.1%	3.2%	80%	-	EITHER (a) OR {(b) and (c)} in Table 11 on the next page
Teaching, lecture and seminar spaces	1.5%	1.7%	1.8%	2.0%	2.1%	2.2%		-	
All occupied spaces, unless indicated in Relevant definitions on page 95	1.5%	1.7%	1.8%	2.0%	2.1%	2.2%		-	

Notes:
* All spaces must comply to achieve 1 credit.
** Each space can be awarded credits independently.

Table 11: Daylighting uniformity criteria

Ref	Criteria
(a)	A uniformity ratio of at least 0.3 or a minimum point daylight factor of at least 0.3 times the relevant average daylight factor value in Table 10 on page 84. Spaces with glazed roofs, such as atria, must achieve a uniformity ratio of at least 0.7 or a minimum point daylight factor of at least 0.7 times the relevant average daylight factor value in Table 10 on page 84.
(b)	At least 80% of the room has a view of sky from desk or table top height (0.85m in residential buildings and residential institutions, 0.7m in other buildings).
(c)	The room depth criterion d/w +d/HW < 2/(1-RB) is satisfied. Where: d = room depth. w = room width. HW = window head height from floor level. RB = average reflectance of surfaces in the rear half of the room. Note: Table 16 on page 90 gives maximum room depths in metres for different room widths and window head heights of side-lit rooms.

Table 12: Space type and illuminance requirements - both criteria (average illuminance and minimum point illuminance) should be met

Area type	Minimum area to comply		Average daylight illuminance (averaged over entire space)	Minimum daylight illuminance at worst lit point
	1 credit	2 credits		
Education buildings (up to 2 credits available)				
Preschools, schools - occupied spaces	-	80%	At least 300 lux for 2000 hours per year or more	At least 90 lux for 2000 hours per year or more
Universities, colleges and higher education - occupied spaces	60%			
Residential institutions (1 credit available*)				
Kitchens	100%	-	At least 100 lux for 3450 hours per year or more	At least 30 lux for 3450 hours per year or more
Living rooms, dining rooms, studies (including home offices)		-	At least 100 lux for 3450 hours per year or more	At least 30 lux for 3450 hours per year or more

Area type	Minimum area to comply		Average daylight illuminance (averaged over entire space)	Minimum daylight illuminance at worst lit point
	1 credit	2 credits		
Non-residential or communal occupied spaces	80%	-	At least 200 lux for 2650 hours per year or more	At least 60 lux for 2650 hours per year or more
Residential dwellings (4 credits available)**				
Kitchens	-	100%	At least 100 lux for 3450 hours per year or more	At least 30 lux for 3450 hours per year or more
Living rooms, dining rooms, studies (including home offices)	-	100%	At least 100 lux for 3450 hours per year or more	At least 30 lux for 3450 hours per year or more
Retail buildings (2 credits available)**				
Sales areas	35%	-	At least 200 lux point daylight illuminances for 2650 hours per year or more	
Other occupied areas	80%	-	At least 200 lux for 2650 hours per year or more	At least 60 lux for 2650 hours per year or more
Industrial and Office and all Other building types (1 credit available*)				
Internal association or atrium area	80%	-	At least 300 lux for 2650 hours per year or more	At least 210 lux for 2650 hours per year or more
Teaching, lecture and seminar spaces		-	At least 300 lux for 2000 hours per year or more	At least 90 lux for 2000 hours per year or more
All occupied spaces, unless indicated in Relevant definitions on page 95		-	At least 300 lux for 2000 hours per year or more	At least 90 lux for 2000 hours per year or more

Notes:
* All spaces must comply to achieve 1 credit.
** Each space can be awarded credits independently.

One credit - View out

5 Where 95% of the floor area space within relevant building areas are within X metres of a window or permanent opening that provides an adequate view out, as outlined in Table 13 below

6 In addition, the building type criteria in Table 14 below are applicable to view out criteria.

Table 13: Window or opening size required as a percentage of surrounding wall area depending on the distance of the desk or work space to the window or opening

Distance (in m) from window to workspace or desk (X)	Window or opening size (as % of surrounding wall area)
7m or less	20%
8m–11m	25%
11m–14m	30%
14m or more	35%

Table 14: View out building specific requirements

Building type	View out requirements
Residential buildings and residential institutions	**Self-contained flats - living rooms** **Sheltered housing - communal lounges, individual bedrooms and bedsits** All positions within relevant areas are to be within 5m of a wall which has a window or permanent opening providing an adequate view out. The window or opening must be ≥ 20% of the surrounding wall area.

One credit - Internal and external lighting levels, zoning and control

Internal lighting

7 Internal lighting in all relevant areas of the building is designed to provide an illuminance (lux) level appropriate to the tasks undertaken, accounting for building user concentration and comfort levels. This can be demonstrated through a lighting design strategy that provides illuminance levels in accordance with national best practice lighting guides (see CN3.10 on page 93).

8 The uniformity of illuminance due to electric lighting is as per the recommendation in the approved local standard.

9 For areas where computer screens are regularly used, confirmation is required that the lighting has been designed to limit the potential for glare in accordance with a numerical glare limit specified within national best practice lighting guides . These should include:

- 9.a Limits to the luminance of the luminaires to avoid screen reflections. Manufacturers' data for the luminaires should be sought to confirm this
- 9.b For uplighting, the recommendations refer to the luminance of the lit ceiling rather than the luminaire; a design team calculation is usually required to demonstrate this
- 9.c Recommendations for direct lighting, ceiling illuminance, and average wall illuminance.

External lighting

10 All external lighting located within the construction zone is designed to provide illuminance levels that enable users to perform outdoor visual tasks efficiently and accurately, especially during the night. To demonstrate this, external lighting provided is specified in accordance with EN 13201 series Road Lighting and EN 12464-2:2014 Light and lighting - Lighting of work places - Part 2: Outdoor work places.

Zoning and occupant control

11 Internal lighting is zoned to allow for occupant control (see Relevant definitions on page 95) in accordance with the criteria below for relevant areas present within the building:
- 11.a In office areas, zones of no more than four workplaces
- 11.b Workstations adjacent to windows or atria and other building areas separately zoned and controlled
- 11.c Seminar and lecture rooms: zoned for presentation and audience areas
- 11.d Library spaces: separate zoning of stacks, reading and counter areas
- 11.e Teaching space or demonstration area
- 11.f Whiteboard or display screen
- 11.g Auditoria: zoning of seating areas, circulation space and lectern area
- 11.h Dining, restaurant, café areas: separate zoning of servery and seating or dining areas
- 11.i Retail: separate zoning of display and counter areas
- 11.j Bar areas: separate zoning of bar and seating areas
- 11.k Day rooms, waiting areas: zoning of seating and activity areas and circulation space with controls accessible to staff
- 11.l Hotel bedrooms: separate zoning of hallway, bathroom, desk and sleeping area (where present in the room).

12 Areas used for teaching, seminar or lecture purposes have lighting controls specified in accordance with the size and use of the space, but a typical auditorium or lecture theatre with stepped seating and a formal lectern or demonstration or performance area would typically be expected to have lighting controls as follows:
- 12.a Full normal lighting (to allow for entry and exit, cleaning etc.)
- 12.b Demonstration area lighting off and audience area lighting reduced to a low level (for the purpose of line slide projection, but allowing enough light for the audience to take notes)
- 12.c All lighting off (for the projection of tone slides, colour slides, and for the purposes of visual demonstrations or performances)
- 12.d Separate localised lectern lighting.

13 In addition the building type criteria in Table 15 below (where relevant).

Table 15: Internal and external lighting building specific requirements

Building type	Internal and external lighting requirements
Education buildings	Manual lighting controls are easily accessible for the teacher while teaching and on entering or leaving the teaching space.

Checklists and tables

Reflectance for maximum room depths and window head heights

Table 16 on the next page gives maximum room depths in metres for different room widths and window head heights of side-lit rooms.

Table 16: Reflectance for maximum room depths (m) and window head heights

Reflectance (RB)	0.4		0.5		0.6	
Room width (m)	**3**	**10**	**3**	**10**	**3**	**10**
Window head height (m)						
2.5	4.5	6.7	5.4	8.0	6.8	10.0
3.0	5.0	7.7	6.0	9.2	7.5	11.5
3.5	5.4	8.6	6.5	10.4	8.1	13.0

Compliance notes

Ref	Terms	Description
Shell and core (non-residential and residential institutions only)		
CN1	Applicable assessment criteria	**Prerequisite: criterion 1 on page 83** Both options: This criterion is not applicable. **Glare control: criteria 2 and 3 on page 83** Both options: These criteria are not applicable. **Daylighting: criterion 4 on page 83** Both options: All criteria relevant to the building type and function apply. **View out: criteria 5 and 6 on page 88** Both options: All criteria relevant to the building type and function apply. **Internal lighting, zoning and occupant control: criteria 7 to 9 on page 88, 11 to 13 on the previous page** Both options: These criteria are not applicable. **External lighting: criterion 10 on page 88** Both options: All criteria relevant to the building type and function apply. Refer to Appendix D – Shell and core project assessments on page 409 for a more detailed description of the shell and core assessment options.
CN1.1	View out	Both options Where it is not possible to confirm which areas of the building will contain workstations or benches or desks, then all areas of the building designed for or likely to be occupied by workstations or benches or desks must comply with the relevant criteria.
Residential - Partially fitted and fully fitted		

Ref	Terms	Description
CN2	Applicable assessment criteria - Single and multiple dwellings	**Prerequisite: criterion 1 on page 83** Both options: This criterion is not applicable. **Glare control: criteria 2 and 3 on page 83** Both options: These criteria are not applicable. **Daylighting: criterion 4 on page 83** Both options: All criteria relevant to the building type and function apply. **View out: criteria 5 and 6 on page 88** Both options: These criteria are not applicable. **Internal lighting, zoning and occupant control: criteria 7 to 9 on page 88, 11 to 13** Partially fitted: These criteria are not applicable. Fully fitted: All criteria relevant to the building type and function apply. **External lighting: criterion 10 on page 88** Partially fitted: These criteria are not applicable. Fully fitted: All criteria relevant to the building type and function apply. Refer to Appendix E – Applicability of BREEAM New Construction to single and multiple dwellings, partially and fully fitted on page 412 for a more detailed description of residential assessment options.
General		
CN3	Building location (choosing the most appropriate daylight factors)	The average daylight factor and uniformity criteria Table 10 on page 84 and Table 11 on page 86. For hot or sunny locations with predominantly clear skies, especially those at latitudes much less than 40 degrees, it is better to use the daylight illuminance criteria in Table 12 on page 86 instead. The daylight illuminance calculation should include the additional light available from clear and partly cloudy skies and reflected sunlight. In these locations, using the criteria in Table 10 on page 84 and Table 11 on page 86 may result in excessive solar heat gain.
Glare control		
CN3.1	Compliant forms of glare control - curtains as glare control	Compliant shading measures for meeting glare control criteria include: — Building integrated measures (e.g. low eaves) — Occupant controlled devices such as blinds (where transmittance value is less than 0.1 (10%) — Bioclimatic design — External shading or brise soleil. Glare control must provide shading from both high level summer and low level winter sun where relevant to the country of assessment (for example, latitudes of 40 degrees or more). Where using fixed systems, design studies can be used to demonstrate that sunlight is prevented from reaching building occupants during occupied hours. Curtains (where used without other forms of shading) do not meet the criteria for the glare control criteria, as they do not provide sufficient control to optimise daylight into the space. Furthermore, the use of curtains to control glare is likely to cause occupants to rely more on artificial lighting.

Ref	Terms	Description
Daylighting		
CN3.2	Percentage of assessed area. See criterion 4 on page 83.	Where the criteria specify that a percentage of floor area must be adequately illuminated by daylight, this refers to the percentage of the total floor area of all the rooms that must be assessed, i.e. the compliant area. If for example, a development has six rooms that must be assessed, each 150m² (total area 900m²) and 80% of this floor area must meet the criterion, then 720m² must comply with the criterion; this is equal to 4.8 rooms. The number of rooms that must comply must always be rounded up; therefore in this example, five rooms must have an average daylight factor of 2% or more (plus meet the other criteria) to achieve the credit.
CN3.3	External obstructions	In calculating minimum and average daylight factors and daylight illuminances, external obstructions should be taken into account. For illuminance calculations, the reflectance of external obstructions should be taken as 0.2 unless on site measurements of external reflectance have been made.
CN3.4	Dirt factors when calculating daylight	Daylight calculations should include a maintenance factor for dirt on the windows. An example is given in British Standard Code of Practice for daylighting, BS 8206 Part 2, appendix A1.3.
CN3.5	Borrowed light	For areas where borrowed light is used to demonstrate compliance with daylighting criteria, calculations or results from appropriate lighting design software must be provided to demonstrate that such areas meet the BREEAM criteria (if the light from these sources is required in order for the room to comply). Examples of borrowed light include: light shelves, clerestory glazing, sun pipes or internal translucent or transparent partitions (such as those using frosted glass).
CN3.6	Room depth criterion - rooms lit from two opposite sides	For rooms lit by windows on two opposite sides, the maximum room depth that can be satisfactorily illuminated by daylight is twice the limiting room depth (d) (measured from window wall to window wall; CIBSE Lighting Guide LG10[8]. The reflectance of the imaginary internal wall should be taken as 1.
CN3.7	Uniformity with rooflights	The room depth criteria cannot be used where the lighting strategy relies on rooflights. In such areas either appropriate software has to be used to calculate the uniformity ratio or, in the case of a regular array of rooflights across the whole of the space, figure 2.36 (page 37) within CIBSE Lighting Guide LG10 can be used to determine the uniformity ratio.
CN3.8	Daylighting - uniformity ratio calculation	The uniformity ratio calculation, minimum point daylight factor and minimum daylight illuminance can exclude areas within 0.5m of walls. Areas within 0.5m are not regarded as part of the working plane for this purpose, although they are included in the average daylight factor and average daylight illuminance calculations.

Ref	Terms	Description
CN3.9	View of sky requirement. See criterion 4 on page 83.	To comply with the view of sky criteria (ref (b)) in Table 11 on page 86, at least 80% of the room that complies with the average daylight factor requirement must receive direct light from the sky, i.e. it is permissible for up to 20% of the room not to meet the view of sky requirement and still achieve a compliant room.
Internal and external lighting levels or zoning and control		
CN3.10	National best practice lighting guides	Please refer to the country-specific reference sheet to locate the appropriate best practice lighting guidance in the country of assessment. Alternatively the minimum requirements as set out in the Approved standards and weightings list are covered by the proposed documents. Where appropriate lighting guides do not exist for a country, the design team should demonstrate compliance with the European standards EN 12464-1 Light and lighting - Lighting of workspaces, 2011 and EN 12464-2 Lighting of work places - Part 2: Outdoor work places, 2007.
CN3.11	Occupancy and workstation layout unknown	Where occupancy or workstation layout is not known, lighting control can be zoned on the basis of 40m² grids, i.e. an assumption of 1 person or workspace per 10m².
CN3.12	Small spaces	Buildings consisting entirely of small rooms or spaces (less than 40m²) which do not require any subdivision of lighting zones or control will meet the zoning criteria by default.
CN3.13	Zones of four workspaces	The limit of four workspaces is indicative of the required standard, but is not a fixed requirement. Where there is justification for this to be increased to fit with the adopted lighting strategy, this may be accepted provided that the assessor is satisfied that the aim of this criterion is upheld, i.e. that there is suitable zoning or control of lighting to enable a reasonable degree of occupant control over lighting in their personable work area. The relevant design team member, e.g. a lighting consultant, should set out how this is to be achieved in such an instance.
CN3.14	Lighting zoning and control - auditoria spaces	The controls specified will depend on the size and use of the space but a typical auditorium or lecture theatre with stepped seating and a formal lectern or demonstration or performance area would typically be expected to have lighting controls as follows: 1. Full normal lighting (to allow for entry and exit, cleaning etc.) 2. Demonstration area lighting off and audience area lighting reduced to a low level (for the purpose of line slide projection, but allowing enough light for the audience to take notes) 3. All lighting off (for the projection of tone slides, colour slides, and for the purposes of visual demonstrations or performances) 4. Separate localised lectern lighting.

Ref	Terms	Description
CN3.15	No external lighting	Where no external light fittings are specified (either separate from or mounted on the external building façade or roof), the criteria relating to external lighting do not apply and the credit can be awarded on the basis of compliance with the internal lighting criteria. The following internal areas are excluded from the lighting zone requirements: 1. Media and arts production spaces 2. Sports facilities (exercise spaces only, including hydrotherapy and physiotherapy areas).
CN3.16	Zoning rooms not listed	For zoning rooms or spaces not listed within criteria 11 and 12 on page 89, the assessor can exercise an element of judgment when determining whether what is specified is appropriate for the space, given its end use and the aim and criteria of this BREEAM issue.
CN3.17	Lighting levels for areas where computer screens are regularly used	Projects can specify 300 lux instead of what is prescribed in EN 12464:2011. This is as per CIBSE Lighting Guide 7.
Building type specific		
CN4	Education (preschools) and acute special educational needs controls for children	Where child care or acute special educational needs spaces are included within the scope of the assessment, controls should be provided for the teacher or member of staff, i.e. it is not a necessity for the controls to be accessible to the children. Where nursery spaces are included within the scope of the assessment, controls should be provided for the member of staff, not the nursery school children.
CN4.1	Hotels - lighting levels in hotel bedrooms	Internal lighting levels in hotel bedrooms will not usually need to conform to national best practice levels for offices as these spaces are not generally used as a workspace. However, if hotel bedrooms, or rooms within a hotel suite, are intended to be used as workspaces, similar to a small office, the lighting levels should conform to national best practice levels for this type of space.

Methodology

None.

Evidence

Criteria	Interim design stage	Final post-construction stage
Daylighting		
All	Design drawings and daylight calculations OR Relevant section or clauses of the building specification or contract confirming national best practice daylighting guidelines or BREEAM requirements.	BREEAM Assessor's site inspection report and photographic evidence OR As-built drawings and calculations OR Confirmation from the design team that daylighting is in accordance with national best practice daylighting guidelines or BREEAM requirements.
View out and glare requirements		
All	Design drawings. Relevant section or clauses of the building specification or contract. Window schedule.	BREEAM Assessor's site inspection report and photographic evidence. As-built drawings. Formal confirmation of compliance from the contractor or design team.
Internal and external lighting		
All	Design drawings or room data sheets or schedules. Relevant section or clauses of the building specification or contract OR A letter of formal confirmation of compliance from the relevant design team member.	BREEAM Assessor's site inspection report and photographic evidence. As-built drawings. Formal confirmation of compliance from the contractor or design team.

Additional information

Relevant definitions

Adequate view out

BREEAM defines an adequate view out as a view of a landscape or buildings (rather than just the sky) at seated eye level (1.2–1.3m) within the relevant building areas and should ideally be through an external window. A view into an internal courtyard or atrium will comply provided the distance from the opening to the back wall of the courtyard or atrium is at least 10m (therefore allowing enough distance for the eyes to refocus). The view cannot be an internal view across the room, as this is likely to become obstructed by partitions, filing cabinets etc.

Average daylight factor

The average daylight factor is the average indoor illuminance (from daylight) on the working plane within a room, expressed as a percentage of the simultaneous outdoor illuminance on a horizontal plane under an unobstructed CIE Standard Overcast Sky.

Computer simulation

Software tools that can be used to model more complex room geometries for daylighting.

Construction zone

For the purpose of this BREEAM issue, the construction zone is defined as the site which is being developed for the BREEAM-assessed building, and the external site areas that fall within the scope of the new works.

Illuminance

The amount of light falling on a surface per unit area, measured in lux.

Occupied space

A room or space within the assessed building that is likely to be occupied for 30 minutes or more by a building user. Please note there is a specific, unrelated, definition of 'unoccupied' with reference to acoustic testing and measurement and this should not be confused with the definition used here.

Point daylight factor

A point daylight factor is the ratio between the illuminance (from daylight) at a specific point on the working plane within a room, expressed as a percentage of the illuminance received on an outdoor unobstructed horizontal plane. This is based on an assumed overcast sky, approximated by the 'CIE (Commission Internationale de l'Eclairage) overcast sky'. The minimum point daylight factor is the lowest value of the daylight factor on the working plane at a point that is not within 0.5m of a wall. Similarly the minimum illuminance is calculated at the worst lit point on the working plane that is not within 0.5m of a wall. These points will usually be close to a rear corner of the room. Computer simulations are the most appropriate tools to allow for point daylight factors and illuminances to be calculated.

Relevant building areas:

Daylighting

For the purpose of BREEAM this is defined as areas within the building where good daylighting is considered to be of benefit to the building users (typically those areas occupied continuously for 30 minutes or more). This includes the following (where occupied continuously for 30 minutes or more) specifically stated because they are often omitted:

1. Sports hall exercise spaces
2. Laboratory areas unless the type of research that will be carried out requires strictly controlled environmental conditions, such as the exclusion of natural light at all times
3. Self-contained flats
4. Kitchen and catering areas
5. General communal areas
6. Small offices (including those within residential buildings and residential institutions)
7. Meeting rooms (including those within residential buildings and residential institutions)
8. Leisure areas
9. Any area that may involve close up work.

However, this excludes the following (where present):

1. Media, arts production, SEN sensory spaces, x-ray rooms and other areas requiring strictly controlled acoustic or lighting conditions.

Glare control

For glare control include areas of the building where lighting and resultant glare could be problematic for users, e.g. those areas that have been designed to contain or use workstations, projector screens etc. and sports halls. Spaces in the categories described above, for which daylight and view out are excluded, should not be assessed against the glare control criteria.

Internal and external lighting

Where no external light fittings are specified (either separate from or mounted on the external building façade or roof), the criteria relating to external lighting do not apply and the credit can be awarded on the basis of compliance with the internal lighting criteria. The following internal areas are excluded from the lighting zone requirements:

1. Media and arts production spaces
2. Sports facilities (exercise spaces only, including hydrotherapy and physiotherapy areas).

Reflectance

The ratio of the luminous flux reflected from a surface to the luminous flux incident on it.

Separate zoning control

Light switches or controls for a particular area or zone of the building that can be accessed and operated by the individuals occupying that area or zone. Such controls will be located within, or within the vicinity of, the zone or area they control.

Surrounding wall area

Surrounding wall area refers to the area (in m^2) of the internal wall on which the window or opening is located, including the area of the window or opening itself.

Uniformity

The uniformity is the ratio between the minimum illuminance (from daylight) on the working plane within a room (or minimum daylight factor) and the average illuminance (from daylight) on the same working plane (or average daylight factor).

View of sky

Areas of the working plane have a view of sky when they receive direct light from the sky, i.e. when the sky can be seen from working plane height.

View out

BREEAM defines relevant building areas requiring a view out to include areas of the building where:

1. There are or will be workstations or benches or desks for building users
2. Close work will be undertaken or visual aids will be used
3. A view out is deemed to be of benefit to the building occupants, e.g. in spaces where occupants are likely to spend a significant amount of time.

Excluded areas for each of these might include:

- Conference rooms, lecture theatres, sports halls, acute SEN and also any spaces where the exclusion or limitation of natural light is a functional requirement, e.g. laboratories, media spaces, etc.

Working plane

CIBSE LG10 defines the working plane as the horizontal, vertical or inclined plane in which a visual task lies. The working plane is normally taken as 0.7m above the floor for offices and 0.85m for industry.

Other information

None.

Hea 02 Indoor air quality

(all buildings)

Number of credits available	Minimum standards
Building type dependent	Yes (criterion 1 below)

Aim

To recognise and encourage a healthy internal environment through the specification and installation of appropriate ventilation, equipment and finishes.

Assessment criteria

This issue is split into three parts:

- Prerequisite - avoidance of asbestos
- Minimising sources of air pollution (4 credits)
- Adaptability - potential for natural ventilation (1 credit)

The following is required to demonstrate compliance:

Prerequisite

1 Materials containing asbestos are prohibited from being specified and used within the building.

Minimising sources of air pollution

One credit - Indoor air quality (IAQ) plan

2 An indoor air quality plan has been produced and implemented, with the objective of facilitating a process that leads to design, specification and installation decisions and actions that minimise indoor air pollution during the design, construction and occupation of the building. The indoor air quality plan must consider the following:
- 2.a Removal of contaminant sources
- 2.b Dilution and control of contaminant sources
- 2.c Procedures for pre-occupancy flush out
- 2.d Third party testing and analysis
- 2.e Maintaining indoor air quality in-use

One credit - Ventilation

The building has been designed to minimise the concentration and recirculation of pollutants in the building as follows:

3 Criterion 2 above has been achieved.

4 Provide fresh air into the building in accordance with the criteria of the national best practice standard for ventilation.

5 The location of fresh air intakes are designed to minimise the entry of air pollutants into the building, as follows:
- 5.a In air-conditioned and mixed-mode buildings or spaces:

5.a.i The location of the building's air intakes and exhausts, in relation to each other and external sources of pollution, is designed in accordance with EN 13779:2007[9] Annex A2 (see CN3 on page 106 for alternative methods of compliance).

OR

5.a.ii Where EN 13779:2007[10] Annex A2 is not followed, the building's air intakes and exhausts are over 10m of horizontal distance apart and intakes are over 10m of horizontal distance from sources of external pollution.

5.b In naturally ventilated buildings or spaces: openable windows or ventilators are at least 10m of horizontal distance from sources of external pollution (including the location of any building related air exhausts).

6 Where present, HVAC systems must incorporate suitable filtration to minimise external air pollution, as defined in EN 13779:2007 Annex A3.

7 Areas of the building subject to large and unpredictable or variable occupancy patterns have carbon dioxide (CO_2) or air quality sensors specified and:

7.a In mechanically ventilated buildings or spaces: sensors are linked to the mechanical ventilation system and provide demand-controlled ventilation to the space

7.b In naturally ventilated buildings or spaces: sensors either have the ability to alert the building owner or manager when CO_2 levels exceed the recommended set point, or are linked to controls with the ability to adjust the quantity of fresh air, i.e. automatic opening windows or roof vents.

8 In countries where smoking within buildings is not prohibited by law, one of the following is specified:

8.a A smoking ban covering all public and staff areas of the building is implemented, and 'No Smoking' signs are located in appropriate areas clearly visible to all occupants (i.e. common areas, offices and building entrances) OR

8.b Where smoking is permitted in dedicated smoking rooms only and smoking is banned in all other areas with 'No Smoking' signs located in appropriate areas clearly visible to all occupants and where:

8.b.i Ventilation rates in the dedicated smoking room are in accordance with national best practice standards for ventilation

8.b.ii A separate ventilation system prevents recirculation within the room and the smoking room is separated from all other occupied areas by a lobby

8.b.iii Air intakes or exhausts or openable windows or ventilators are positioned to minimise recirculation of smoke (see criterion 5 on the previous page).

One credit - Emissions from building products

9 Criterion 2 on the previous page has been achieved.

10 At least four of the five product types listed in Table 17 on page 101 meet the emission limits, testing requirements and any additional requirements listed in Table 17 on page 101 or refer to CN3.5 on page 106.

One credit - Post-construction indoor air quality measurement

11 Criterion 2 on the previous page has been achieved.

12 The formaldehyde concentration in indoor air is measured post-construction (but pre-occupancy) and does not exceed 100µg/m³, averaged over 30 minutes[11].

13 The formaldehyde sampling and analysis is performed in accordance with ISO 16000-2[12] and ISO 16000-3[13] .

14 The total volatile organic compound (TVOC) concentration in indoor air is measured post-construction (but pre-occupancy) and does not exceed 300µg/m³, averaged over 8 hours with [14].

15 The TVOC sampling and analysis is performed in accordance with ISO 16000-5[15] and ISO 16000-6[16] or ISO 16017-1[17] .

16 Where levels are found to exceed these limits, the project team confirms the measures that have, or will be undertaken in accordance with the IAQ plan, to reduce the TVOC and formaldehyde levels to within the above limits.

17 The measured concentration levels of formaldehyde (µg/m³) and TVOC (µg/m³) are reported, via the BREEAM scoring and reporting tool, for the purpose of confirming criteria 12 to 15 above.

Adaptability - Potential for natural ventilation

One credit

18 The building ventilation strategy is designed to be flexible and adaptable to potential building occupant needs and climatic scenarios. This can be demonstrated as follows:

- 18.a Occupied spaces of the building are designed to be capable of providing fresh air entirely via a natural ventilation strategy. The following are methods deemed to satisfy this criterion dependent upon the complexity of the proposed system:
  - 18.a.i The openable window area in each occupied space is equivalent to 5% of the gross internal floor area of that room or floor plate. For room or floor plates between 7m-15m depth, the openable window area must be on opposite sides and evenly distributed across the area to promote adequate cross-ventilation; OR
  - 18.a.ii The design demonstrates that the natural ventilation strategy provides an adequate cross flow of air to maintain the required thermal comfort conditions and ventilation rates.

For a strategy which does not rely on openable windows, or which has occupied spaces with a plan depth greater than 15m, the design must demonstrate that the ventilation strategy can provide adequate cross flow of air to maintain the required thermal comfort conditions and ventilation rates.

19 The natural ventilation strategy is capable of providing at least two levels of user control on the supply of fresh air to the occupied space (see CN3.12 on page 108 for further details).

Note: Any opening mechanisms must be easily accessible and provide adequate user control over air flow rates to avoid draughts. Relevant industry standards for ventilation can be used to define 'adequate levels of fresh air' sufficient for occupancy and internal air pollution loads relevant to the building type.

Note: Residential buildings and residential institutions with self-contained flats and individual bedrooms must have a degree of openable window function. This does not need to provide two levels of user control (as required in criteria 18 and 19 above), but must be occupant controlled.

Exemplary level criteria

One credit

20 Criterion 2 on page 98 has been achieved.

21 At least four of the five product types listed in Table 18 on page 102 meet the emission limits, testing requirements and any additional requirements listed in Table 18 on page 102

Two credits

22 Criterion 2 on page 98 has been achieved.

23 All product types meet the emission limits, testing requirements and any additional requirements listed in Table 18 on page 102.

Checklists and tables

Table 17: Emission criteria by product type

Product type (see CN3.1)	Emission limit*			Testing requirement (see CN3.2 and CN3.3)	Additional requirements
	For-malde-hyde	Total volatile organic compounds (TVOC)	Category 1A and 1B carcinogens		
Interior paints and coatings	≤ 0.06 mg/m³	≤ 1.0 mg/m³	≤ 0.001 mg/m³	EN 16402 [18] or ISO 16000-9 [19] or CEN/TS 16516 [20] or CDPH Standard Method v1.1 [21]	Meet TVOC content limits (Table 19 on page 104). Paints used in wet areas (e.g. bathrooms, kitchens, utility rooms) should protect against mould growth (see CN3.4 on page 106).
Wood-based products (including wood flooring)	≤ 0.06 mg/m³ (Non-MDF) ≤ 0.08 mg/m³ (MDF)	≤ 1.0 mg/m³	≤ 0.001 mg/m³	ISO 16000-9 [22] or CEN/TS 16516 [23] or CDPH Standard Method v1.1 [24] or EN 717-1 (formaldehyde emissions only) [25]	N/A
Flooring materials (including floor levelling compounds and resin flooring)	≤ 0.06 mg/m³	≤ 1.0 mg/m³	≤ 0.001 mg/m³	ISO 10580 or ISO 16000-9 or CEN/TS 16516 or CDPH Standard Method v1.1	N/A
Ceiling, wall, and acoustic and thermal insulation materials	≤ 0.06 mg/m³	≤ 1.0 mg/m³	≤ 0.001 mg/m³		N/A

Product type (see CN3.1)	Emission limit*			Testing requirement (see CN3.2 and CN3.3)	Additional requirements
	For-malde-hyde	Total volatile organic compounds (TVOC)	Category 1A and 1B carcinogens		
Interior adhesives and sealants (including flooring adhesives)	≤ 0.06 mg/m³	≤ 1.0 mg/m³	≤ 0.001 mg/m³	EN 13999 (Parts 1-4) [26, 27, 28, 29] or ISO 16000-9 or CEN/TS 16516 or CDPH Standard Method v1.1	N/A
* Compliance with emission limits shall be demonstrated after 28 days in an emission test chamber or earlier as stipulated by the relevant testing requirements standard.					

Table 18: Exemplary level emission criteria by product type

Product type (see CN3.1)	Emission limit*					Additional requirement
	For-malde-hyde	Total volatile organic compounds (TVOC)	Total semi-volatile organic compounds (TSVOC)	Category 1A and 1B carcinogens	Testing requirement (see CN3.2 and CN3.3)	
Interior paints and coatings	≤ 0.01 mg/m³	≤ 0.3 mg/m³	≤ 0.1 mg/m³	≤ 0.001 mg/m³	EN 16402 [30] or ISO 16000-9 or CEN/TS 16516 or CDPH Standard Method v1.1	Meet VOC content limits (Table 19 on page 104). Paints used in wet areas (e.g. bathrooms, kitchens, utility rooms) should protect against mould growth (see CN3.4 on page 106).

Product type (see CN3.1)	Emission limit*					Additional requirement
	For-malde-hyde	Total volatile organic compounds (TVOC)	Total semi-volatile organic compounds (TSVOC)	Category 1A and 1B carcinogens	Testing requirement (see CN3.2 and CN3.3)	
Wood-based products including wood flooring	≤ 0.01 mg/m³	≤ 0.3 mg/m³	≤ 0.1 mg/m³	≤ 0.001 mg/m³	ISO 16000-9 or CEN/TS 16516 or CDPH Standard Method v1.1 or EN 717-1 (formaldehyde emissions only) [31]	N/A
Flooring materials (including floor levelling compounds and resin flooring)	≤ 0.01 mg/m³	≤ 0.3 mg/m³	≤ 0.1 mg/m³	≤ 0.001 mg/m³	ISO 10580 or ISO 16000-9 or CEN/TS 16516 or CDPH Standard Method v1.1	N/A
Ceiling, wall, and acoustic and thermal insulation materials	≤ 0.01 mg/m³	≤ 0.3 mg/m³	≤ 0.1 mg/m³	≤ 0.001 mg/m³	ISO 10580 or ISO 16000-9 or CEN/TS 16516 or CDPH Standard Method v1.1	N/A
Interior adhesives and sealants (including flooring adhesives)	≤ 0.01 mg/m³	≤ 0.3 mg/m³	≤ 0.1 mg/m³	≤ 0.001 mg/m³	EN 13999 (Parts 1-4) [32, 33, 34, 35] or ISO 16000-9 or CEN/TS 16516 or CDPH Standard Method v1.1	N/A
* Compliance with emission limits shall be demonstrated after 28 days in an emission test chamber or earlier as stipulated by the relevant testing requirements standard.						

Table 19: Maximum TVOC content for paints and coatings

Product category	Free TVOC content of ready-to-use product (g/l)	Testing requirements (see CN3.3)
Interior matt walls and ceilings (Gloss <25@60°)	10	ISO 11890-2 or ISO 17895 or Calculation based on the ingredients and raw materials
Interior glossy walls and ceilings (Gloss >25@60°)	40	
Interior trim and cladding paints for wood and metal	90	
Interior trim varnishes and wood stains, including opaque wood stains	65	
Interior minimal build wood stains	50	
Primers	15	
Binding primers	15	
One-pack performance coatings	100	
Two-pack reactive performance coatings for specific end use such as floors	80	
Multi-coloured coatings	80	
Decorative effect coatings	80	

Compliance notes

Ref	Terms	Description
Shell and core (non-residential and residential institutions only)		
CN1	Applicable assessment criteria	**Prerequisite: criterion 1** Both options: All criteria relevant to the building type and function apply. **Indoor air quality: criterion 2** Both options: This criterion is not applicable. **Ventilation: criteria 3 to 8** Shell only: These criteria are not applicable. Shell and core: Criteria 4 and 5 on page 98 are applicable **Emissions levels: criteria 9 to 17 and 20 to 23** Both options: These criteria are not applicable. **Adaptability - Potential for natural ventilation: criteria 18 to 19** Both options: All criteria relevant to the building type and function apply. Refer to Appendix D – Shell and core project assessments on page 409 for a more detailed description of the shell and core assessment options.
CN1.1	Ventilation systems. See criteria 4 and 5 on page 98	Shell and core: Where ventilation systems are not within the remit of the shell and core developer, compliance can be demonstrated through the building servicing strategy where this is predetermined by the built form or core services provision as appropriate to the shell and core option being followed.
Residential - Partially fitted and fully fitted		
CN2	Applicable assessment criteria - Single and multiple dwellings	**Prerequisite: criterion 1** Both options: All criteria relevant to the building type and function apply. **Indoor air quality plan: criterion 2** Both options: This criterion is not applicable. **Ventilation: criteria 3 to 8** Both options: Criteria 4 to 6 on page 99 are applicable. **Emissions from building products: criteria 9 to 10** Both options: Criterion 10 on page 99 is applicable. **Post-construction indoor air quality measurement: criteria 11 to 17** Both options: These criteria are not applicable. **Adaptability - Potential for natural ventilation: criteria 18 to 19** Both options: All criteria relevant to the building type and function apply. **Exemplary: criteria 20 to 23** Both options: These criteria are not applicable. Refer to Appendix E – Applicability of BREEAM New Construction to single and multiple dwellings, partially and fully fitted on page 412 for a more detailed description of residential assessment options.

Ref	Terms	Description
General		
Minimising sources of air pollution		
CN3	Alternative methods for demonstrating compliance with the air intake and exhaust criteria	Compliance with the criteria can be demonstrated using alternative methods (e.g. wind tunnel studies, computational fluid dynamics (CFD) modelling), if such methods demonstrate that the proposed location of intakes and exhausts prevents significant recirculation of exhaust air under typical wind conditions.
CN3.1	Non-VOC emitting products	Inherently non-VOC emitting products such as brick, natural stone, concrete, ceramic tile, glass, metal surfaces, etc. do not need to be assessed and can be deemed fully compliant with the criteria, unless organic-based coatings, binders, or sealants are used in their production or finishes.
CN3.2	Testing requirements for emission limits	The testing requirements for emission limits are based on the use of standardised emission test chamber methods. Perforator, flask, desiccator and other extraction based test methods are specifically excluded. Compliance with these requirements may be met using alternative standards, where these stipulate emission test chamber methods similar to those in the standards listed in Table 17 and Table 18 on page 102. BREEAM Assessors must submit details of any alternative standards to BRE Global for approval prior to awarding any credits for this issue.
CN3.3	Accreditation of organisations performing sampling or laboratory analysis	All organisations used for sampling and analysis of indoor air or for analysis of emissions from building products must be accredited to ISO/IEC 17025[36] with specific accreditation covering: — Sampling: Pumped sampling for formaldehyde in air; Pumped sampling for VOCs in air — Chemical analysis: Determination of formaldehyde; Determination of VOCs. Sampling and chemical analysis of indoor air can be performed by separate organisations, but both must be accredited.
CN3.4	Paints used in wet areas	Evidence must be provided to show that paints used in wet areas protect against mould growth. Evidence could include appropriate test results (e.g. fungal or algal resistance testing) or manufacturer's product information or declaration. There are European standard tests which could be used: EN 15457 [37] and EN 15458 [38].
CN3.5	BREEAM recognised alternative schemes for emission levels from building products	Guidance Note 22, available on the BREEAM website, provides a list of approved alternative schemes recognised by BREEAM that can be used to demonstrate compliance for the emission from building products levels. If assessors, clients or scheme operators wish to seek recognition of other schemes not currently listed, please contact the BREEAM office (breeam@bregroup.com) for details of the application process.

Ref	Terms	Description
CN3.6	Products used in small quantities for ad hoc purposes	All products specified for a project that fall within one of the product types listed in Table 17 and Table 18 on page 102 must be assessed under this issue. However, it is accepted that it may be difficult to control the specification of some products (e.g. sealants) that are used in small quantities for ad hoc purposes such as 'making good'. As such, any products used in this way do not need to be assessed for this issue. The BREEAM Assessor should use their judgment to determine whether products being used or intended to be used for ad hoc purposes will be used in significant quantities and therefore need to be assessed for this issue.
CN3.7	Self-declaration of emission levels from building products	Self-declaration, by manufacturers, of emission levels from building products is acceptable if testing has been performed by an accredited laboratory in accordance with CN3.3 on the previous page or where the manufacturer declares that the product contains no formaldehyde or VOC emitting substances.
CN3.8	Number of product types required to comply	Where four or fewer product types are specified within the building, the number of product types that need to be assessed for the emissions criteria reduces proportionally as follows: — Where four products are present, three must comply — Where three products are present, two must comply — Where two or fewer products are present, all must comply.
CN3.9	Scope of assessment for product types installed or applied within a building	Only products that are installed or applied in parts of the building where their emissions are likely to affect indoor air quality need to be assessed. For the purposes of this issue, this means any product installed or applied inside of the inner surface of the building's infiltration, vapour or waterproof membrane or, where not present, inside of the inner surface of the building envelope's interior facing thermal insulation layer.
CN3.10	Furnishings	The scope of the VOC credits does not extend to furnishings, e.g. desks or shelving, it focuses on the key internal finishes and fittings integral to the building.
Adaptability - Potential for natural ventilation		
CN3.11	Mechanically ventilated or cooled buildings. See criteria 18 and 19 on page 100.	Buildings that employ a mechanically ventilated or cooled strategy are still able to achieve this credit provided it can be demonstrated that the features required by the criteria can be made easily available to the building user, e.g. windows fixed shut for an air-conditioned strategy can be modified to be opening windows. The aim of the potential for natural ventilation criteria is to ensure that a building is capable of providing fresh air using a natural ventilation strategy. Where the building is predominantly naturally ventilated, but mechanical ventilation is necessary to boost ventilation during peak conditions, (i.e. either maximum occupancy, peak temperature conditions or both) due to the function or specific usage patterns of the building, the potential for the natural ventilation credit can still be awarded provided calculations or modelling demonstrate that the mechanical ventilation system will be required for ≤ 5% of the annual occupied hours in the occupied spaces for the adopted building design or layout.

Ref	Terms	Description
CN3.12	Levels of ventilation. See criterion 19 on page 100.	The two levels of ventilation must be able to achieve the following: — Higher level: higher rates of ventilation achievable to remove short term odours or prevent summertime overheating — Lower level: adequate levels of draught-free fresh air to meet the need for good indoor air quality throughout the year, sufficient for the occupancy load and the internal pollution loads of the space.
CN3.13	Industrial buildings without offices	If the building does not contain any office areas, only the prerequisite within this issue applies.
CN3.14	Retail buildings without offices	The Adaptability - Potential for natural ventilation credit applies only to office areas. If the building does not contain any office areas, this credit is filtered out.

Methodology

None.

Evidence

Criteria	Interim design stage	Final post-construction stage
Prerequisite		
1	The relevant section or clauses of the building specification or contract or appropriate legislation. Design drawings.	Manufacturers' literature. BREEAM Assessor's site inspection report and photographic evidence or 'as-built' drawings, specification and calculations OR A formal letter from the design team or principal contractor confirming no changes have occurred since the design stage.
Minimising indoor air pollution		
2–7	A copy of the indoor air quality plan. Relevant section or clauses of the building specification or contract. Design drawings.	A copy of the indoor air quality plan. BREEAM Assessor's site inspection report and photographic evidence or 'as-built' drawings. For a naturally ventilated building, a letter from the design team or principal contractor confirming the building has been built in accordance with a design compliant with the BREEAM criteria. For a mechanically ventilated building, the commissioning manager's performance testing report confirming the required fresh air rates are achieved.

Criteria	Interim design stage	Final post-construction stage
9–10	A copy of the indoor air quality plan. Relevant section or clauses of the building specification or contract.	A copy of the indoor air quality plan. Letter from or copies of the manufacturer's literature confirming testing standards and emissions achieved.
11–17	A copy of the indoor air quality plan. Commitment to carry out necessary testing post-construction.	A copy of the indoor air quality plan. Confirmation from the project team that the recommendations are still relevant and have been implemented. Testing results for formaldehyde and TVOCs.
Potential for natural ventilation		
18–19	Relevant section or clauses of the building specification or contract. A formal letter from the design team with details of the ventilation strategy and calculations or results from appropriate software modelling tools.	Manufacturers' or suppliers' literature. BREEAM Assessor's site inspection report and photographic evidence* or 'as-built' drawings, specification and calculations OR A formal letter from the design team or principal contractor confirming no changes have occurred since design stage. * A random spot check of a selection of occupied spaces is sufficient. The assessor is not required to check each opening in all spaces or rooms.

Additional information

Relevant definitions

Areas with a large and unpredictable occupancy

The following are examples of these types of space:

- Auditoria
- Gyms
- Retail stores or malls
- Cinemas
- Waiting rooms.

Where the assessed building does not have any areas deemed to be large with an unpredictable pattern of occupancy, the criterion does not apply.

Category 1A and 1B carcinogens

Carcinogenic compounds detectable by the VOC emission testing requirements in Table 1 and Table 2 and that are classified as category 1A or 1B carcinogens in Annex VI to Regulation (EC) No. 1272/2008 on classification, labelling and packaging of substances and mixtures[39],which are listed as *Carcinogenic VOCs* in Annex G.2 of prEN 16516 (draft)[40].

Habitable or occupied room

A room used for dwelling purposes or a room in a non-dwelling occupied by people (e.g. office, hotel bedroom, classroom) but which is not used solely as a kitchen, bathroom, cellar, utility room or for storing plant or equipment.[41]

Occupied spaces

See relevant definition provided in issue Hea 01 Visual comfort on page 83. The following building areas, where relevant to the building type, can be excluded from the definition of occupied spaces for the potential for natural ventilation criteria:

1. Ancillary building areas, e.g. WCs, corridors, stairwells, store rooms, plant rooms
2. Swimming or hydrotherapy pools
3. Sauna, steam room or hammam (for hotel building type only)
4. Catering and small staff kitchens
5. Washrooms or changing areas
6. Laboratory or other areas where strictly controlled environmental conditions are a functional requirement
7. Operational, shop floors or ancillary areas in industrial buildings.

Occupied spaces requiring local exhaust ventilation, e.g. laboratories, workshops and food technology rooms, must still demonstrate that they meet the criteria for potential for natural ventilation (unless listed as an exempted area in this definition).

Openable window area

The openable window area is defined as the geometric free ventilation area created when a ventilation opening, e.g. window, is open to its normal operational fully designed extent for ventilation purposes (i.e. this excludes open areas created when reversible windows are opened for cleaning etc.). It is not the glazed area of a façade or the glazed area of the part of the window that is openable (unless it opens fully).

Sources of external pollution

This includes, but is not limited to the following:

1. Highways and the main access roads on the assessed site
2. Car parks, delivery areas and vehicle waiting bays
3. Other building exhausts, including from building services plant, industrial or agricultural processes.

Service and access roads with restricted and infrequent access (for example roads used only for waste collection) are unlikely to represent a significant source of external pollution. These roads can therefore be excluded from the criteria of this issue. This does not include vehicle pick-up or drop-off or waiting bays.

Total semi-volatile organic compound (TSVOC)

Sum of the concentrations of identified and unidentified volatile organic compounds eluting between n-hexadecane (excluded) and n-docosane (included) on a gas chromatographic column.

Total volatile organic compound (TVOC)

Sum of the concentrations of identified and unidentified volatile organic compounds eluting between and including n-hexane and n-hexadecane on a gas chromatographic column.

Other information

Post-construction indoor air quality measurement

The measurement of formaldehyde and TVOC must be made in accordance with the relevant standards (as listed in the criteria). ISO 16000-2[42] and ISO 16000-5 provide guidance on sampling strategies for formaldehyde and VOCs, respectively. Sampling should be performed in rooms that will be occupied for long periods of time such as bedrooms, living rooms, classrooms, offices, etc. A representative number of rooms should be sampled, rather than every room in the building. For example, in an office building, sampling of one cellular or single occupancy office should suffice to assess the indoor air quality for that type of habitable space in the building (assuming the other cellular offices have the same materials specification and ventilation strategy). In larger rooms, such as open-plan office areas, additional sampling locations may be required in order to understand the homogeneity of the indoor environment.

Uncertainties in sampling and analysis are inevitable and unavoidable, therefore it is recommended that replicate samples are taken at each sampling location (ideally a minimum of three samples for each measurement parameter). Before sampling, naturally ventilated rooms should be intensively ventilated for 15 minutes and then outer doors and windows closed for at least 8 hours (e.g. overnight) before sampling begins with the room still closed off. For mechanically ventilated rooms, the ventilation system should be running under standard operating conditions for at least for 3 hours before sampling begins. Sampling locations should be at least 1m to 2m from a wall and at a height of between 1m to 1.5m.

This information is provided to assist project teams and BREEAM Assessors on the appropriate scope of post-construction indoor air quality measurement, and, as such, is intended as guidance only and not a compliance requirement. The sampling strategy should be determined based on the advice of the appropriate person appointed to conduct the testing.

Hea 03 Safe containment in laboratories

(non-residential buildings only)

Number of credits available	Minimum standards
Building type dependent	No

Aim

To recognise and encourage a healthy internal environment through the safe containment and removal of pollutants.

Assessment criteria

The following is required to demonstrate compliance:

One credit - Laboratory containment devices and containment areas

1 An objective risk assessment of the proposed laboratory facilities has been carried out prior to completion of the Developed design to ensure potential risks are considered in the design of the laboratory.

2 Where containment devices such as fume cupboards are specified, their manufacture and installation is carried out in accordance with national best practice standards for safety and performance requirements in laboratory containment devices, or are manufactured and installed in accordance with the following standards:
- 2.a General purpose fume cupboards: EN 14175 Parts 1-7 (as appropriate)[43]
- 2.b Recirculatory filtration fume cupboards
- 2.c Microbiological safety cabinets: EN 12469:2000[44] (for manufacture)
- 2.d Clean air hoods, glove boxes, isolators and mini-environments: EN ISO 14644-7:2004[45]
- 2.e Articulated extension arms: PD CEN/TR 16589[46]

Or, for schools, universities and higher education buildings with laboratories and fume cupboards:

- 2.f Where laboratory containment devices that are ducted to discharge externally are specified, the guidance in the National Annex of EN 14175-2 must be followed to ensure an appropriate discharge velocity is achieved.

One credit - Buildings with containment level 2 and 3 laboratory facilities

3 Where containment level 2 and 3 laboratory facilities are specified or present they must meet best practice safety and performance criteria and objectives. This is demonstrated as follows:
- 3.a Criterion 1 abovehas been achieved
- 3.b Ventilation systems comply with national best practice guidance. Where there is no national best practice guidance, it shall follow the best practice guidance set out in 'DRAFT HSE Biological Agents and Genetically Modified Organisms (Contained Use) Regulations 2010'[47] in relation to ventilation systems
- 3.c Filters for all areas designated as containment level 2 and 3 are located outside the main laboratory space for ease of cleaning or replacement, and the filters are easily accessible by maintenance staff or technicians.

4 The design team demonstrate that the individual fume cupboard location and stack heights have been considered in accordance with national best practice guidance. Where national best practice guidelines do not exist then the stack height shall be calculated following the HMIP Technical Guidance Note (Dispersion) D1[48].

Checklists and tables

None.

Compliance notes

Ref	Terms	Description
Shell and core (non-residential and residential institutions only)		
CN1	Applicable assessment criteria	Both options: This issue is not applicable. Refer to Appendix D – Shell and core project assessments on page 409 for a more detailed description of the shell and core assessment options.
Residential - Partially fitted and fully fitted		
CN2	Applicable assessment criteria - Single and multiple dwellings	Both options: This issue is not applicable. Refer to Appendix E – Applicability of BREEAM New Construction to single and multiple dwellings, partially and fully fitted on page 412 for a more detailed description of residential assessment options.
General		
CN3	National best practice standards and relevant industry standards	Please refer to the Approved Standards and Weightings list (ASWL) to locate the appropriate national best practice standards in the country of assessment. Alternatively, standards deemed equivalent by the project team can be submitted as per the process outlined in the Assessor Operations manual. Where appropriate standards do not exist for a country, the design team should demonstrate compliance with the British or European standards as listed in each relevant country reference sheet.
CN3.1	Building contains no laboratory containment devices	Please note that the laboratory and containment device criteria and credits only apply where laboratory space, fume cupboards or other containment devices are present within the assessed building.

Methodology

None.

Evidence

Criteria	Interim design stage	Final post-construction stage
All	A copy of the proposed laboratory facilities risk assessment. The relevant section or clauses of the building specification or contract or a formal letter from the design team. Design drawings.	BREEAM Assessor's site inspection report and photographic evidence or as-built drawings. Correspondence from the design team confirming installation of a compliant system. A copy of the manufacturers' or suppliers' literature or a letter from these parties confirming their cupboards and cabinets are manufactured and installed in accordance with the relevant standards.

Additional information

Relevant definitions

Containment Levels

Containment Levels 2 and 3 are defined in The Management, Design and Operation of Microbiological Containment Laboratories 2001, ACDP.

Fume cupboard or safety cabinet

Scientific equipment designed to limit a person's exposure to hazardous fumes or biological material. Air is drawn through the enclosure of the cupboard conducting the contaminated air away from the experimental area and those using the equipment.

Risk assessment

For the purpose of the relevant laboratory criteria in this issue, a risk assessment is a systematic consideration of any activity in which there is a hazard, followed by decisions on the substances, equipment and procedures used, and on the restrictions and precautions needed to make the risk acceptably low. Below is a list of useful resources:

1. ISO 15189:2012, Medical laboratories - requirements for quality and competence
2. CWA 15793:2011 (Management system for laboratory biosafety and biosecurity).

Other information

EN 14175 Fume cupboard discharge velocity: Part 2 states that the discharge velocity from fume cupboard extracts should be at least 7m/s, but that a figure of 10m/s is preferable to ensure that the discharge will not be trapped in the aerodynamic wake of the stack. Higher discharge velocities may be required, especially in windy locations, but higher rates may cause noise problems.

Compliance in the EU would be demonstrated by meeting the following directives depending on the type of laboratory:

- EC directives 2000/54/EC
- Directive 98/81/EC
- Directive 2005/83/EC.

Hea 04 Thermal comfort

(all buildings)

Number of credits available	Minimum standards
3	No

Aim

To ensure that appropriate thermal comfort levels are achieved through design, and controls are selected to maintain a thermally comfortable environment for occupants within the building.

Assessment criteria

The following is required to demonstrate compliance:

One credit - Thermal modelling

1 Thermal modelling (or an analytical measurement or evaluation of the thermal comfort levels of the building) has been carried out using the predicted mean vote (PMV) and predicted percentage of dissatisfied (PPD) indices in accordance with ISO 7730:2005[49] taking full account of seasonal variations.

2 Local thermal comfort criteria have been used to determine the level of thermal comfort in the building, in particular internal winter and summer temperature ranges will be in line with the recommended comfort criteria within ISO 7730:2005, with no areas falling within the levels defined as representing local dissatisfaction.

3 Thermal comfort levels in occupied spaces meet the Category B requirements set out in Table A.1 of Annex A of ISO 7730:2005.

4 For air-conditioned buildings, the PMV and PPD indices based on the above modelling are reported via the BREEAM assessment scoring and reporting tool.

One credit - Adaptability for a projected climate change scenario

5 Criteria 1 to 4 above are achieved.

6 The thermal modelling demonstrates that the relevant requirements set out in criterion 3 above are achieved for a projected climate change environment (see Relevant definitions on page 118).

7 Where thermal comfort criteria are not met for the projected climate change environment, the project team demonstrates how the building has been adapted, or designed to be easily adapted in the future using passive design solutions in order to subsequently meet the requirements under criterion 6 above

8 For air-conditioned buildings, the PMV and PPD indices based on the above modelling are reported via the BREEAM assessment scoring and reporting tool.

One credit - Thermal zoning and controls

9 Criteria 1 to 4 above are achieved.

10 The thermal modelling analysis (undertaken for compliance with criteria 1 to 4 above) has informed the temperature control strategy for the building and its users.

11 The strategy for proposed heating or cooling systems demonstrates that it has addressed the following:

11.a Zones within the building and how the building services could efficiently and appropriately heat or cool these areas. For example, consider the different requirements for the central core of a building compared with the external perimeter adjacent to the windows

11.b The degree of occupant control required for these zones, based on discussions with the end user (or alternatively the building type or use specific design guidance, case studies, feedback) considers:

- 11.b.i User knowledge of building services
- 11.b.ii Occupancy type, patterns and room functions (and therefore the appropriate level of control required)
- 11.b.iii How the user is likely to operate or interact with the systems, e.g. are they likely to open windows, access thermostatic radiator valves (TRVs) on radiators, change air-conditioning settings etc.
- 11.b.iv The user expectations (this may differ in the summer and winter) and degree of individual control (i.e. obtaining the balance between occupant preferences, for example some occupants like fresh air and others dislike drafts).

11.c How the proposed systems will interact with each other (where there is more than one system) and how this may affect the thermal comfort of the building occupants

11.d The need or otherwise for an accessible building user actuated manual override for any automatic systems.

Checklists and tables

None.

Compliance notes

Ref	Terms	Description
Shell and core (non-residential and residential institutions only)		
CN1	Applicable assessment criteria	**Thermal modelling: criteria 1 to 4 on the previous page** Shell only: This issue is not applicable. Shell and core: All criteria relevant to the building type and function apply. **Adaptability - for projected climate change: criteria 5 on the previous page to 8 on the previous page** Shell only: These criteria are not applicable. Shell and core: All criteria relevant to the building type and function apply. **Thermal zoning and controls: criteria 9 on the previous page to 11 on the previous page** Both options: These criteria are not applicable. Refer to Appendix D – Shell and core project assessments on page 409 for a more detailed description of the shell and core assessment options.
CN1.1	Thermal model - thermal modelling. See criteria 1 to 4 on the previous page.	Shell and core: Where assumptions are required for the purpose of the thermal model, these must be reasonable and represent typical use patterns and loads given the parameters and function of the building. Note that thermal modelling may need to be completed on the basis of a typical notional layout.

Ref	Terms	Description
CN1.2	Thermal model - adaptability. See criteria 5 to 8 on page 114.	Shell and core: Where assumptions are required for the purpose of the thermal model, these must be reasonable and represent typical use patterns and loads given the parameters and function of the building. Note that thermal modelling may need to be completed on the basis of a typical notional layout.
Residential - Partially fitted and fully fitted		
CN2	Applicable assessment criteria - Single and multiple dwellings	Both options : All criteria relevant to the building type and function apply. Refer to Appendix E – Applicability of BREEAM New Construction to single and multiple dwellings, partially and fully fitted on page 412 for a more detailed description of residential assessment options.
General		
CN3	Typical occupancy and use patterns	If it is not possible to confirm the number of building occupants using the building, e.g. speculative developments, then the default occupancy rates given in Tra 04 Maximum car parking capacity: Table 38 on page 240can be used to determine a default number of users. Where the typical use patterns are also unknown, Tra 01 Public transport accessibility: Table 33 on page 220can be used to determine the typical opening hours of different building types. The design team need to justify or validate the occupancy number and use patterns applied in the thermal model.
CN3.1	Alternative to criterion 3 on page 114	In some cases it may be more straightforward to demonstrate compliance with the Category B design criteria in Table A.5 in Annex A of ISO 7730:2005. BREEAM considers this an appropriate equivalent to Table A.1; however, the example design criteria included in Table A.5 must be applicable to the building or space type and activity levels for the project. Criterion 4 on page 114 still requires PMV and PPD to be reported and Annex D of ISO 7730:2005 includes the code of a BASIC program that converts these design parameters into PMV and PPD. By using this program it is possible to obtain the PMV and PPD figures and show direct compliance with Table A.1.
CN3.2	National or local alternative to ISO standard	It is possible to use a national or local equivalent to ISO 7730:2005; however this must be approved by BRE Global. The Approved standards and weightings list can be used to check for previously approved standards or to propose a new national or local standard.

Ref	Terms	Description
CN3.3	Buildings with less complex heating or cooling systems. See criterion 11 on page 114.	For buildings with less complex heating or cooling systems the thermal comfort strategy need only comply with criteria 11.a on page 115.and 11.b on page 115 Compliance can be demonstrated where zoning allows separate occupant control (within the occupied space) of each perimeter area (i.e. within 7m of each external wall) and the central zone (i.e. over 7m from the external walls). For example, adequate TRVs placed in zones around the building perimeter, and the provision of local occupant controls to internal areas, such as fan coil units. Note: The distance requirement for smaller buildings is approximate; however, the assessor must use sound judgment considering fully the aims of this issue, before accepting solutions that do not strictly meet the above criteria. Examples of potentially compliant heating control measures can be found in Technology Guide CTG065 Heating control[50].
Building type specific		
CN4	Industrial: Industrial unit with no office space	Where an industrial unit contains no office space and only an operational or storage area, this BREEAM issue does not apply.
CN4.1	Education: Occupant controls. See criterion 11 on page 114.	In this issue, occupant controls are intended to be for staff use only.

Methodology

None.

Evidence

Criteria	Interim design stage	Final post-construction stage
1–4	The relevant section or clauses of the building specification, or contract or correspondence (e.g. letter, email or meeting minutes) from the design team. Thermal modelling, measurements and evaluation results with confirmation that these are within the required limits. PMV/PPD data from the design team.	Thermal modelling, measurement and evaluation results reflecting any changes to the design and resultant PMV/PPD data with confirmation that these are within the required limits.

Criteria	Interim design stage	Final post-construction stage
6–8	Thermal modelling and evaluation results with confirmation that these are within the required limits. PMV/PPD data from the design team.	Thermal modelling and evaluation results reflecting any changes to the design and resultant PMV/PPD data with confirmation that these are within the required limits.
10–11	Thermal comfort strategy and software results highlighting the points that have been considered and decisions taken accordingly. Confirmation that the modelling software is BREEAM compliant. The relevant section or clauses of the building specification or contract. Design drawings.	As design stage. BREEAM Assessor's site inspection report and photographic evidence.* *For large buildings it would not be expected that the assessor check every individual occupied space, but a random selection of spaces that confirm compliance.

Relevant definitions

Occupied space

Refer to Hea 01 Visual comfort on page 83, however for the purpose of BREEAM issue Hea 04 the definition excludes the following:

1. Atria or concourses
2. Entrance halls or reception areas
3. Ancillary space, e.g. circulation areas, storerooms and plant rooms.

Passive design

Passive design uses layout, fabric and form to reduce or remove mechanical cooling, heating, ventilation and lighting demand. Examples of passive design include optimising spatial planning and orientation to control solar gains and maximise daylighting, manipulating the building form and fabric to facilitate natural ventilation strategies and making effective use of thermal mass to help reduce peak internal temperatures.

Predicted mean vote (PMV)

The PMV is an index that predicts the mean votes of a large group of persons on the seven-point thermal sensation scale based on the heat balance of the human body. Thermal balance is obtained when the internal heat production in the body is equal to the loss of heat to the environment. See Other information on the facing page for the seven-point thermal sensation scale.

Predicted percentage dissatisfied (PPD)

The PPD is an index that establishes a quantitative prediction of the percentage of thermally dissatisfied people who feel too cool or too warm. For the purposes of ISO 7730, thermally dissatisfied people are those who will feel hot, warm, cool or cold. See the seven-point thermal sensation scale in Other information on the facing page.

Projected climate change environment

Dynamic thermal simulation software packages currently provide the facility for building designs to be assessed under external climatic conditions specific to geographic location. Industry standard weather data should be sought from an appropriate local or national best practice standard in the form of Test Reference Years (TRYs) and Design Summer Years (DSYs).

The weather data enables thermal analysis of building designs under current climatic conditions, yet no account is normally taken of the projected variations in weather data that will occur during the building's life cycle as a result of climate change. To demonstrate compliance, weather data should be used based upon a projected climate change scenario. The following probabilistic DSY weather data files should be used to establish the projected climate change environment against which the design is evaluated:

Naturally Ventilated Buildings

- Time period: 50 years after construction is complete
- Emissions scenario: Medium (A1B)

Mechanically Ventilated or Mixed Mode Buildings

- Time period: 15 years after construction is complete
- Emissions scenario: Medium (A1B)

The above weather files represent the minimum requirements to perform thermal modelling under a climate change scenario and subsequently demonstrate compliance. Where design teams feel that added consideration of building occupant risk or sensitivity to overheating is necessary, weather files can be used that exceed the minimum requirements outlined above. The time periods indicated above have been selected to represent the building services life cycle likely to be present in each building services strategy type. A shorter time period is chosen for mechanically ventilated or mixed-mode building types due to consideration of mechanical servicing equipment life span (before major upgrade or replacement is required), and to avoid over-specification of plant which could lead to inefficient operation. This should be sought from a recognised local or national best practice standard or organisation. Verification should be sought from BRE Global prior to using any such standards in an assessment.

Separate occupant control

Responsive heating or cooling controls for a particular area or zone of the building that can be accessed and operated by the individuals occupying that area or zone. Such controls will be located within, or within the vicinity of, the zone or area they control.

Thermal comfort

In EN ISO 7730:2005: Ergonomics of the thermal environment. Analytical determination and interpretation of thermal comfort, 'thermal comfort' is defined using the calculation of PMV and PPD indices and local thermal comfort criteria and is 'that condition of mind which expresses satisfaction with the thermal environment.' The term 'thermal comfort' describes a person's psychological state of mind and is usually referred to in terms of whether someone is feeling too hot or too cold. Thermal comfort is difficult to define because it needs to account for a range of environmental and personal factors in order to establish what makes people feel comfortable. The purpose of this issue is to encourage appropriate and robust consideration of thermal comfort issues and specification of appropriate occupant controls to ensure both maximum flexibility of the space and thermal comfort for the majority of building occupants.

Thermal dynamic analysis

Thermal comfort analysis tools can be subdivided into a number of methods of increasing complexity. The most complex of these and the one that provides greatest confidence in results, is the full dynamic model. This type of model enables annual heating or cooling loads, overheating risks and control strategies to be assessed.

Other information

Projected climate change weather data

The Intergovernmental Panel on Climate Change (IPCC) 5th Assessment Report outlines future climate change scenarios that can be used to project a range of alternative probabilistic weather data. These weather data should be used to evaluate the impact of varying climate change scenarios for the country to influence building design performance for the building throughout its life cycle. Projected climate change weather data should be sourced in TRYs and DSYs.

While not internationally applicable, reference can be made to the UK PROMETHEUS project at Exeter University that produced a number of future weather files specific to different locations across the UK, created using the UK Climate Projection 2009 (UKCP09) weather generator. Weather files produced under the PROMETHEUS project are available at the following location:

emps.exeter.ac.uk/engineering/research/cee/research/prometheus/downloads/

Hea 05 Acoustic performance

(all buildings)

Number of credits available	Minimum standards
Building type dependent	No

Aim

To ensure the building's acoustic performance, including sound insulation meets the appropriate standards for its purpose.

Assessment criteria

This issue is split into two parts:

- Prerequisite
- Acoustic performance standards (up to 4 credits)

The following is required to demonstrate compliance:

Prerequisite

1 A suitably qualified acoustician (SQA) (see Relevant definitions on page 130) is appointed by the client at the appropriate stage in the procurement process (but no later than completion of outline design) to provide early design advice on:
- 1.a External sources of noise impacting the chosen site
- 1.b Site layout and zoning of the building for good acoustics
- 1.c Acoustic requirements for users with special hearing and communication needs
- 1.d Acoustic treatment of different zones and façades.

Acoustic performance standards for all building types except residential buildings and long-term stay residential institutions

One credit - indoor ambient noise and sound insulation

2 All unoccupied spaces comply with the indoor ambient noise level targets as detailed in the more rigorous of criteria 2.a or 2.b below:
- 2.a Indoor ambient noise level targets within national building regulations or other appropriate good practice standards
- 2.b Where national building regulations or good practice standards do not exist for the building type or do not provide indoor ambient noise targets, the indoor ambient noise levels comply with 'good practice' criteria levels outlined in Table 20 on page 122

3 A SQA carries out ambient noise measurements to ensure that the relevant spaces achieve the required levels. Where the measurements identify that spaces do not meet the standards, remedial works are carried out and the measurements repeated to confirm that the levels are achieved prior to handover and occupation.

4 The sound insulation between acoustically sensitive rooms and other occupied areas comply with the privacy index, as detailed in the more rigorous of criteria 4.a or 4.b on the facing page:
- 4.a Sound insulation between acoustically sensitive rooms and other occupied areas comply with targets within national regulations or other appropriate good practice standards

4.b Where relevant national regulations or good practice standards do not exist for the building type or do not provide sound insulation performance targets, the sound insulation between acoustically sensitive rooms and other occupied areas complies with the following privacy index: $D_w + L_{Aeq\,T} > 75$. Where privacy is viewed to be critical by the client or design team (e.g. doctor's consulting room, consulting room within a bank) or where the room is adjacent to a noisy space such as a music room, the area should comply with an enhanced privacy index: $D_w + L_{Aeq\,T} > 85$.

- D_w is the weighted sound level difference between the two spaces
- $L_{Aeq\,T}$ is the measured indoor ambient noise level in the acoustically sensitive room (for the purposes of awarding design stage credits, the design ambient noise level can be used).

5 The source and receive room sound pressure levels from which Dw is determined are measured in accordance with (EN) ISO 140-4:1998 and rated in accordance with (EN) ISO 717-1:1996. Measurements must be based on finished, but unfurnished rooms, accounting for, and to include the effect of, any carpets and acoustically absorbent ceilings specified.

Education buildings only

6 Teaching and learning spaces with lightweight roofs and roof glazing demonstrate that the reverberant sound pressure levels in these rooms are not more than 25 dB above the appropriate limits given in Table 20 on the next page

One credit - reverberation times

7 Rooms or areas used for speech (including meeting rooms and rooms for public speaking) or rooms used for music performance and rehearsal, achieve reverberation times as detailed in the more rigorous of criteria 7.a or 7.b and 7.c:

7.a Demonstrate that the reverberation time or equivalent absorption area for relevant spaces complies with targets within relevant national regulations or other appropriate good practice standards

7.b Where relevant national regulations or good practice standards do not require the control of reverberation time, achieve reverberation times compliant with Table 21 on page 123

7.c In addition, if relevant to the assessed building, all areas used for teaching, training and educational purposes achieve reverberation times compliant with Table 22 on page 123

Up to four credits - Acoustic performance standards for residential buildings and long term stay residential institutions

8 The building meets the acoustic performance standards and testing requirements as detailed in the more rigorous of EITHER:

8.a Airborne and impact sound insulation values comply with the performance improvement standards, as compared to the relevant national regulations outlined in Table 23 on page 124

8.b Airborne and impact sound insulation levels comply with the performance standards outlined in Table 24 on page 124 unless otherwise stated within these criteria.

9 A programme of pre-completion testing is carried out by a compliant test body EITHER:

9.a Based on the normal programme of testing described in the relevant national regulations for every group or sub-group of rooms for residential purposes; this must demonstrate that the performance standards detailed within this issue are achieved OR

9.b Where there are no relevant national regulations in place, or they require laboratory measurements to demonstrate compliance, the programme of on site pre-completion testing must be carried out based on the 'Frequency of testing required' guidance (see calculation procedures in Methodology on page 128) for every group or sub-group of rooms.

10 The number of credits awarded will depend on improvement to the national regulations determined according to Table 23 on page 124 or Table 24 on page 124. Where commercial space is below the residential space, only airborne sound insulation tests will be required.

Checklists and tables

Table 20: A selection of good practice indoor ambient noise level targets in unoccupied spaces

Function of area	Indoor ambient noise level*
General spaces (staffrooms, restrooms)	≤ 40 dB L_{AeqT}
Single occupancy offices	≤ 40 dB L_{AeqT}
Multiple occupancy offices	40-50 dB L_{AeqT}
Meeting rooms	35-40 dB L_{AeqT}
Receptions	40-50 dB L_{AeqT}
Spaces designed for speech, e.g. teaching, seminar or lecture rooms	≤ 35 dB L_{AeqT}
Concert hall, theatre or auditoria	≤ 30 dB L_{AeqT}
Informal café or canteen areas	≤ 50 dB L_{AeqT}
Catering kitchens	≤ 50 dB L_{AeqT}
Restaurant areas	40-55 dB L_{AeqT}
Bars	40-45 dB L_{AeqT}
Retail areas	50-55 dB L_{AeqT}
Manual workshops	≤ 55 dB L_{AeqT}
Sound recording studios	≤ 30 dB L_{AeqT}
Laboratories	≤ 40 dB L_{AeqT}
Sports halls or swimming pools	≤ 55 dB L_{AeqT}
Library areas	40-50 dB L_{AeqT}
Hotel bedrooms	< 35 dB L_{AeqT}
* Where ranges of noise levels are specified and privacy is not deemed by the final occupier to be an issue, it is acceptable to disregard the lower limit of the range and consider the noise level criteria to be lower than or equal to the upper limit of the range[51].	

Table 21: Guide to reverberation time, T, at 500 Hz in unoccupied rooms for speech and music

Room volume m³	Reverberation time T* s	
	Speech	Music
50	0.4	1.0
100	0.5	1.1
200	0.6	1.2
500	0.7	1.3
1000	0.9	1.5
2000	1.0	1.6
*Where the reverberation times stated above or in the referenced documents are not appropriate for the type of space or building being assessed, the acoustician must confirm why this is the case. In addition, the acoustician must set alternative appropriate reverberation times at the design stage and provide these to demonstrate compliance.		

Table 22: Performance standards for reverberation in teaching and study spaces - mid-frequency reverberation time, Tmf, in finished but unoccupied and unfurnished rooms

Type of room (receiving room)	Tmf (seconds)*
Open plan Teaching areas Resource areas	< 0.8 < 1.0
Lecture rooms Small (fewer than 50 people) Large (more than 50 people)	< 0.8 < 1.0
Recording studio	0.6-1.2
Control room for recording	< 0.5
Libraries	< 1.0
Audio-visual, video conference rooms	< 0.8
*Tmf is the arithmetic average of the reverberation times in the 500 Hz, 1 kHz and 2 kHz octave bands[52].	

Table 23: Airborne and impact sound insulation performance improvement standards for national legislation or standards

Credits	Credits awarded according to improvement over national legislation, standard or other defined baseline	
	Airborne sound insulation dB	Impact sound insulation dB
Individual bedrooms & self-contained dwellings		
1	Insulation values are at least 3dB higher	Insulation values are at least 3dB lower*
3	Insulation values are at least 5dB higher	Insulation values are at least 5dB lower*
4	Insulation values are at least 8dB higher	Insulation values are at least 8dB lower*
*The index used to express impact sound insulation is usually based on the level of transmitted impact sound, such that a lower measured value indicates greater resistance to impact sound transmission. If the converse for the locally defined national index is true, the credit award will be based on the same performance increase as detailed for the airborne sound insulation and an accompanying statement from a SQA.		

Table 24: Airborne and impact sound insulation performance standards

Credits	Credits awarded according to sound insulation performance standards	
	Airborne sound insulation DnT,w + Ctr dB (minimum values)	Impact sound insulation L'nT,w dB (maximum values)
Individual bedrooms & self-contained dwellings		
1	48	59
3	50	57
4	53	54

Compliance notes

Ref	Terms	Description
Shell and core (non-residential and residential institutions only)		
CN1	Applicable assessment criteria	**Indoor ambient noise criteria:** Both options: All criteria relevant to the building type and function apply (an alternative method to demonstrate compliance applies in this instance, refer to CN1.1 below for further information). **Sound insulation and reverberation criteria:** Both options: These criteria are not applicable. Refer to Appendix D – Shell and core project assessments on page 409 for a more detailed description of the shell and core assessment options.
CN1.1	Alternative means of demonstrating compliance	The basic built form has a large impact on the acoustic performance of the building, and in the case of a shell only or shell and core development, this aspect of the build would be outside the control of the tenant. A SQA must carry out a quantifiable assessment of the specification of the build form, construction and any external factors that are likely to affect the indoor ambient noise levels. From this assessment, the SQA must confirm that given a typical arrangement and fit-out specification for the building type, the development is likely to meet the levels required to demonstrate compliance with the BREEAM criteria. Where the specific room functions and areas within the building are yet to be defined, the acoustician must base their assessment on the most sensitive room type likely to be present in the building, as a worst case. For example, in a retail assessment, where there are likely to be offices, the acoustician should make an assessment based on this scenario. One credit can be awarded where this has been achieved.
Residential - Partially fitted and fully fitted		
CN2	Applicable assessment criteria - Single and multiple dwellings	Both options: Criteria 1 and 8 to10 on page 121 only apply. Refer to Appendix E – Applicability of BREEAM New Construction to single and multiple dwellings, partially and fully fitted on page 412 for a more detailed description of residential assessment options.
CN2.1	Single dwelling default case - Applies to detached dwellings	Four credits are available where there are no attached dwellings.

Ref	Terms	Description
CN2.2	Attached multiple dwellings where separating walls or floors occur only between non-habitable rooms	Three credits are available. Note: these criteria apply only to walls, floors and staircases that perform a dwelling to dwelling separating function. Internal partitions are beyond the scope of this issue.
Country-specific		
CN3	Other appropriate good practice standards or regulations	As detailed in the assessment criteria it is possible to use a national or local equivalent to the BREEAM requirements stated; however this must be approved by BRE Global. The Approved standards and weightings list can be used to check for previously approved standards or to propose a new national or local standard.
CN3.1	Building types without areas 'used for speech'	Where a building type does not have areas 'used for speech', it does not need to comply with the relevant 'reverberation times' criteria. In these instances, the credit available for reverberation can be awarded by default where the building complies with the indoor ambient noise level and sound insulation criteria.
CN3.2	Acoustically sensitive rooms	Where the term 'acoustically sensitive rooms' is referenced in this BREEAM issue, it refers to any room or space the design team or client deems to be acoustically sensitive for the purposes of privacy, which may include the following types of spaces or rooms (where specified): 1. Single and multiple occupancy offices 2. Meeting, interview, consulting or treatment rooms 3. Rooms used for public speaking or seminars 4. Any other room or space the design team or client deems to be acoustically sensitive for the purposes of privacy.
CN3.3	Remedial works	Where a programme of pre-completion testing identifies that spaces do not meet the standards, remedial works must be carried out prior to handover and occupation, and the spaces retested to ensure compliance. Remedial works must be carried out to all affected and potentially affected areas, including rooms or spaces previously untested of a similar construction and performance requirement. The test report, or covering correspondence, should include a clear statement that the testing is in accordance with the required standard (where specified) or the BREEAM criterion 3 and Methodology on page 128 section, and include the relevant pass or fail criteria.
CN3.4	Privacy index	To increase the ambient noise level, where privacy is required or the ambient targets include a minimum as well as maximum limit, an artificial sound source or sound masking system may be required. Any artificial sound source or sound masking system should be installed and in operation at the time of the acoustic testing to demonstrate compliance.

Ref	Terms	Description
CN3.5	Reverberation times	Where the reverberation time required by the relevant standard is not appropriate for the type of space or building being assessed, the SQA must confirm why this is the case. In addition the SQA must set alternative appropriate reverberation times at the design stage and provide these to demonstrate compliance.
CN3.6	Programme of testing	It is not acceptable to undertake a shorter test programme due to site readiness on the day of testing. If this issue arises additional testing should be scheduled. It may be that testing at less than the typical regime identified would be acceptable in some instances. Where this is the case, clear reasoning must be provided by the compliant test body prior to awarding the credits.
Building type specific		
CN4	Long term stay residential institutions. Rooms not covered by residential criteria.	Long term stay residential institutions often contain a mixture of 'non-residential' areas such as offices, small retail outlets, meeting rooms etc. and residential areas, e.g. self-contained dwellings or rooms for residential purposes. Where less than 5% of the floor area of the assessed building includes 'non-residential' areas, these areas do not need to be assessed, hence only the residential spaces need to be assessed against the residential criteria to demonstrate compliance with criterion 8 on page 121. Where more than 5% of the floor area of the assessed building includes areas other than self-contained dwellings or rooms for residential purposes: — If awarding 1 credit, only the self-contained dwellings or rooms for residential purposes need to be assessed to demonstrate compliance. — If awarding 3 or 4 credits the 'non-residential' areas must meet the relevant criteria for their function, and the self-contained dwellings or rooms for residential purposes need to be assessed to demonstrate compliance. The calculation for the percentage of floor area that is 'non-residential' should only include occupied spaces (as defined in BREEAM issue Hea 01 Visual comfort on page 83).
CN4.1	Hotel type - Sound insulation	Bedrooms in hotels must be considered acoustically sensitive rooms. Sound insulation (DnT,w) for partitions and floors between rooms and between rooms and corridors should be > 50dB.
CN4.2	Residential only - Acoustic testing	Testing should be between habitable rooms on the ground floor and at higher storey levels, if applicable. Where there are not enough suitable separating walls or floors in a development to carry out the number of tests specified in the relevant national regulations or standards, all of the available suitable separating walls or floors must be tested. Note: separating walls can be defined as those walls which separate dwellings.

Ref	Terms	Description
CN4.3	Residential only - Mixed use developments	For mixed use developments where commercial premises share a separating wall or floor with residential spaces, a SQA shall propose an appropriate baseline performance making reference to national or international guidance, or good practice.
CN4.4	Residential only - Commercial space	Where a commercial space is separated from a dwelling or room for residential purposes by a separating wall or floor, testing shall be carried out between the commercial space and dwelling, with the commercial space being used as the source room irrespective of the volume.
CN4.5	Residential only - Pre-completion testing	No pre-completion testing is required where separating walls or floors only occur between non-habitable rooms, or non-habitable rooms and other spaces. In such cases, three credits can be awarded following an assessment by a SQA confirming that the constructions detailed would be capable of achieving the relevant performance requirements. No pre-completion testing is required where the dwellings are detached. In such cases, four credits can be awarded by default.
CN4.6	Residential only - Measurement procedures	Additional information on page 130 outlines the requirements for carrying out measurements and calculations to demonstrate compliance with this BREEAM issue. The appointed acoustician must confirm that the acoustic performance has been measured or calculated in accordance with these procedures. Where the acoustician has felt it necessary to deviate from these procedures, they must give justifiable reasons why they have done so.

Methodology

Testing, measurement and calculation procedures; non-residential only

Where specific guidance on testing, measurement and calculation is not stated in the criteria tables above for the relevant building type, or within the relevant standard or guidance referenced, the following procedures can be followed by the acoustician when measuring or calculating the levels required to demonstrate compliance with this BREEAM issue.

Measurements of sound insulation (airborne and impact) should be made in accordance with the relevant part of the ISO 16283 series. For measurements of reverberation time, the relevant principles of ISO 354:2003 should be used and the guidance provided in ISO 16283-1:2014 should be followed in respect of the number of source and microphone positions, and decay measurements. For measurements of ambient noise, when no specific guidance is available, the following procedures should be used.

1. Noise from both internal sources (e.g. mechanical ventilation systems, plant noise, noise-making systems) and external sources (e.g. traffic noise transmitted via the building façade) should be included, and, where windows are openable as part of the ventilation strategy, these should be assumed to be open for the purposes of calculations and open for measurements. If openable windows are not part of the background or permanent ventilation strategy, then these should be assumed to be closed for the purposes of calculation and closed for measurements.
2. Noise from occupants and office equipment (e.g. computers) should not be included in the measurements.
3. Unless otherwise stated in the referenced document, a rate of testing of at least 1 in 10 rooms or spaces of each performance level shall be subject to on site performance testing.
4. Measurements should be made in at least four rooms in which noise levels can be expected to be greatest either because they are on the noisiest façade or because they are on a naturally ventilated façade.
5. Where different ventilation strategies are used, measurements should be conducted in rooms utilising each strategy. Otherwise, measurements should be made in rooms on the noisiest façade.

6. T in $L_{Aeq\,T}$ is taken as the duration of the normal working day (typically 8 hours between 09.00 and 17.00).
7. Measurements need not be made over a period of 8 hours if a shorter measurement period can be used. In this case, measurements should be made when external noise levels are representative of normal conditions throughout the day.
8. Measurement periods of less than 30 minutes may give representative values for indoor ambient noise levels and may be utilised where this is the case. However, measurement periods shorter than 5 minutes should not be used.
9. Measurements should be taken in a minimum of three locations in rooms at a height of 1.2m above the floor level and at least 1m away from any surface.
10. Where relevant, measurement of airborne sound insulation between teaching spaces should be conducted between one in four pairs of adjacent rooms (or teaching spaces) of each room type or performance requirement category and construction type.
11. Where relevant, measurement of impact sound pressure level should be conducted in one in four teaching spaces (separated from rooms above) of each room type or performance requirement category and construction type.
12. The measured level of ambient noise should be used to determine compliance with the criteria for acoustically sensitive rooms. If at the time of acoustic commissioning it is not possible to measure ambient noise levels in the absence of construction or other extraneous noise sources that will not be present when the building is complete, then, for mechanical services the lower level of 35 dB, L_{Aeq} or the lowest design limit for the acoustically sensitive space should be used.

The above is intended as guidance for undertaking acoustic testing or measurements to demonstrate compliance with the performance requirements in BREEAM. If the acoustician has felt it necessary to deviate from the above procedures, they should provide a reason for doing so and confirm that the alternative procedures are adequate for demonstrating that the building meets the acoustic performance requirements.

Testing, measurement and calculation procedures; residential buildings and long term stay residential institutions only

Frequency of testing

When the country does not have legislation regarding frequency of testing, the following guidance below sets out the number of airborne or impact sound insulation tests to be conducted on each group or sub-group. A unit is either a flat or a house. Where units contain a single habitable room, i.e. bedsits, the number of tests required is halved.

The following guidance and examples on how to define groups and sub-groups is provided:

- The number of units within each group or sub-group shall be rounded up to the nearest 10.
- For every 10 units within the same group or sub-group a minimum of one set of tests shall be undertaken.

Table 25: Composition of test set

Type of testing	Houses Number of tests	Apartments
Airborne sound insulation test of separating walls between units	2	2
Airborne sound insulation test of separating floors between units	N/A	2
Impact sound insulation tests of separating floors between units	N/A	2

Example of testing series and compliance

Example 1

If a development consists of three houses; one set of tests will be required:

- Two airborne sound insulation tests of separating walls between house units.

Example 2

If a development comprises 42 houses and 59 apartments; then five sets of tests between houses and 6 sets of tests between apartments will be required:

- 10 airborne sound insulation tests of separating walls between houses units
- 12 airborne sound insulation tests of separating walls between apartments
- 12 airborne sound insulation tests of separating floors between apartments
- 12 impact sound insulation tests of separating floors between apartments

Evidence

Criteria	Interim design stage	Final post-construction stage
All (non-residential type)	Professional report or study and calculations from the acoustician. Letter of appointment or other confirmation demonstrating when the acoustician was appointed. The relevant section or clauses of the building specification or contract, or a formal letter from the project team regarding commitments.	Professional field report or study and calculations from the acoustician post-construction demonstrating compliance with the relevant credit criteria. Evidence, such as a formal letter from the acoustician or their test report confirming that they meet BREEAM's definition of a SQA. Where remediation works have been carried out, a professional field report or study and calculations from the acoustician post-completion of the works demonstrating compliance with the credit requirements.
All (residential buildings and residential institutions)	Where pre-completion testing will be carried out, a letter from the developer confirming the intent to: 1. Meet the relevant sound insulation performance levels 2. Use a compliant test body to complete testing.	Copies of the sound insulation field test results or a letter of confirmation that the required sound insulation performance standards as detailed in the assessment criteria have been achieved AND Evidence that the tests have been carried out by a compliant test body.

Additional information

Relevant definitions

Acoustically sensitive rooms

Where the term 'acoustically sensitive rooms' is referenced in this BREEAM issue, it refers to any room or space the design team or client deems to be acoustically sensitive for the purposes of privacy, which may include the following types of space or rooms (where specified):

1. Cellular offices
2. Meeting, interview, consulting or treatment rooms.

In addition:

1. Educational buildings or spaces: rooms for teaching and learning, i.e. classrooms, lecture theatres
2. Rooms used for public speaking or seminars
3. Any other room or space the design team or client deems to be acoustically sensitive for the purposes of privacy.

Compliant test body

A compliant test body is defined as:

1. Organisations who are accredited by a member of the International Accreditation Forum (IAF: www.iaf.nu) to the appropriate scope OR
2. Organisations who can provide evidence that they follow the relevant principles of ISO/IEC 17024 (Conformity assessment - General requirements for bodies operating certification of persons)[53] in relation to BREEAM requirements.

Dw Weighted level difference

Single number quantity that characterises airborne sound insulation between rooms, but which is not adjusted to reference conditions. Note: Weighted level difference is used to characterise the insulation between rooms in a building as they are; values cannot normally be compared with measurements made under other conditions (see (EN) ISO 717-1).

Groups

Grouping should be carried out according to the following criteria; rooms for residential purposes should be considered as three separate groups. In addition, if significant differences in construction type occur within any of these groups, sub-groups should be established accordingly.

Sub-groups

Rooms for residential purposes; sub-grouping should be by type of separating floor and type of separating wall. The construction of flanking elements (i.e. elements above, below and on either side of the space, for example walls, floors, cavities) and their junctions are also important. Where there are significant differences between flanking details, further sub-grouping will be necessary. Sub-grouping may not be necessary for rooms for residential purposes that have the same separating wall or separating floor construction, with the same associated flanking constructions, and where the room dimensions and layouts are broadly similar. Some rooms for residential purposes may be considered to have unfavourable features; an example could be apartments with large areas of flanking wall without a window at the gable end. It would be inappropriate for these to be included as part of a group and these should form their own sub-groups.

Habitable rooms

For the purpose of this issue, habitable rooms include any room where individuals will sit or lie down, and require a reasonably quiet environment to concentrate or rest. Such rooms are bedrooms, living rooms, dining rooms, studies, as well as kitchen-dining and kitchen-living rooms.

Lightweight roofs

Roofs that have a mass per unit area less than 150kg/m²

Multiple occupancy offices

Office space that is not cellular in nature, i.e. it is open plan, and designed to accommodate more than two desk spaces or workstations.

Non-habitable rooms

For the purpose of this issue, non-habitable rooms include any room that is not considered a habitable room (as defined above). This includes rooms such as kitchens, bathrooms, toilets, hallways, garages and laundry rooms.

Occupied spaces

Refer to Hea 01 Visual comfort on page 83 and note that for this BREEAM issue (Hea 05 Acoustic performance) there is a specific, unrelated, definition of Unoccupied spaces on the next page with reference to acoustic testing and measurement - see Compliance notes on page 125 for details.

Pre-completion sound testing

Tests should be carried out once the build is essentially complete, but may be carried out prior to or post-decoration. In the case of dwellings, unless stated otherwise within relevant national building regulations or standards, the impact sound insulation tests should be carried out before floor finishes such as carpets, wood flooring or vinyl coverings have been installed.

Room for residential purposes

A room, or a suite of rooms which is not a dwelling (house or a flat) and which is used by one or more persons to live and sleep. It includes a room in a hostel, hotel, boarding house, hall of residence or residential home, whether or not the room is separated from or arranged in a cluster group with other rooms, but does not include a room in a hospital, or other similar establishment, used for patient accommodation.

Suitably qualified acoustician (SQA)

An individual achieving all the following items can be considered to be 'suitably qualified' for the purposes of a BREEAM assessment.

1. Holds a degree, PhD or equivalent qualification in acoustic or sound testing.
2. Has a minimum of three years relevant experience (within the last five years). Such experience must clearly demonstrate a practical understanding of factors affecting acoustics in relation to construction and the built environment; including acting in an advisory capacity to provide recommendations for suitable acoustic performance levels and mitigation measures.
3. An individual who holds a recognised acoustic qualification and membership of an appropriate professional body.

Where a SQA is verifying the acoustic measurements or calculations carried out by another acoustician who does not meet the SQA requirements, they must, as a minimum, have read and reviewed the report and confirm in writing that they have found it to:

1. Represent sound industry practice
2. Be appropriate given the building being assessed and scope of works proposed
3. Avoid invalid, biased and exaggerated recommendations.

Additionally, written confirmation from the third party verifier that they comply with the definition of a SQA is required.

Single occupancy offices

Cellular office space designed to accommodate one or two desk spaces or workstations (typically no greater than 10m²).

Unoccupied spaces

Where the term 'unoccupied space' is referenced in this BREEAM issue it refers to the nature of the space for the purpose of carrying acoustic calculations or measurements, i.e. such measurements must be carried out when the space is unoccupied and therefore devoid of any sources of noise.

Weighted standardised level differences ($D_{nT,w}$)

HTM 08-01 defines this as the 'unit for rating airborne sound insulation on-site'.

Weighted standardised impact sound pressure level ($L_{nT,w}$)

HTM 08-01 defines this as the 'unit for rating impact airborne sound insulation on-site'.

Other information

Noise rating (NR) curves

Noise assessments based on NR curves are often used by building services consultants to predict internal noise levels due to mechanical ventilation systems. However, the BREEAM requirement uses the indoor ambient noise level, $L_{Aeq,T}$ which includes external noise transmitted via the façade as well as internal noise such as that from mechanical ventilation systems. In the absence of strong low frequency noise, $L_{Aeq,T}$ can be estimated from the NR value using the following formula: $L_{Aeq,T} \approx$ NR + 6 dB. Therefore, if the NR value is known, but not the sound pressure levels in the individual frequency bands, an estimate for the indoor ambient noise level $L_{Aeq,T}$ can still be determined from the NR value for the building services noise. The $L_{Aeq,T}$ for the external noise transmitted via the façade must then be combined with the $L_{Aeq,T}$ for the building services.

Hea 06 Accessibility

(all buildings)

Number of credits available	Minimum standards
Building type dependent	Yes (residential only)

Aim

To recognise and encourage effective measures that promote safe and secure use, and access to and from the building.

Assessment criteria

The following is required to demonstrate compliance:

One credit - Safe access

1 Dedicated cycle lanes are provided which meet the following minimum width dimensions:
- 1.a Where pedestrian and cycle routes are shared, the minimum total width of the combined path is 3.0m
- 1.b Where the cycle lane is segregated from both the pedestrian route and carriageway, the minimum width of the cycle path is 2.0m and the pedestrian path is 1.5m
- 1.c Where the cycle route forms a part of the carriageway, the minimum width of the lane is 1.5m.

2 Dedicated cycle paths provide direct access from the site entrances to any cycle storage provided, without the need to deviate from the cycle path and, if relevant, connect to off-site cycle paths (or other appropriate safe route) where these run adjacent to the development's site boundary.

3 Footpaths on site provide direct access from the site entrances to the building entrances and connect to public footpaths off-site (where existing), providing practical and convenient access to local transport nodes and other off-site amenities (where existing).

4 Where provided, drop-off areas are designed off, or adjoining, the access road and provide direct access to pedestrian footpaths, therefore avoiding the need for the pedestrian to cross vehicle access routes.

5 Dedicated pedestrian crossings are provided where pedestrian routes cross vehicle access routes, and appropriate traffic calming measures are in place to slow traffic down at these crossing points.

6 For large developments with a high number of public users or visitors, pedestrian footpaths must be signposted to other local amenities and public transport nodes off-site (where existing).

7 The lighting for access roads, pedestrian routes and cycle lanes is compliant with the external lighting criteria defined in Hea 01 Visual comfort on page 83, i.e. in accordance with the national best practice road lighting guide.

Where vehicle delivery access and drop-off areas form part of the assessed development, the following apply:

8 Delivery areas are not directly accessed through general parking areas and do not cross or share pedestrian and cyclist routes, and other outside amenity areas accessible to building users and the general public.

9 There is a dedicated parking or waiting area for goods vehicles with appropriate separation from the manoeuvring area and staff and visitor car parking.

10 Parking and turning areas are designed for simple manoeuvring according to the type of delivery vehicle likely to access the site, thus avoiding the need for repeated shunting.

11 There is a dedicated space for the storage of refuse skips and pallets away from the delivery vehicle manoeuvring area and staff or visitor car parking (if appropriate given the building type or function).

Inclusive and accessible design (all buildings except residential)

One credit

12 The building is designed to be fit for purpose, appropriate and accessible by all potential users.

13 An access strategy is developed in line with Checklist A3 on page 428. The access strategy addresses, as a minimum, access to and throughout the development for all users, with particular emphasis on the following:
- 13.a Disabled users; addressing and proposing design solutions that remove obstacles that define disability
- 13.b People of different age groups, genders, ethnicity and fitness levels
- 13.c Parents with children (where appropriate to building use or type).

14 Facilities are provided for future building occupants and users (see Compliance notes below) including, where relevant, facilities that can be shared and are accessible to members of the public or community without gaining uncontrolled access to other parts of the building (unless security processes and procedures prohibit this).

Inclusive and accessible design (residential only)

Two credits

15 Where there are national best practice standards or local legislation in place that cover (as a minimum) the Lifetime Homes checklist requirements (see Checklist A4 on page 430), the assessed development must ensure compliance with these standards or legislation.

16 Where the country of assessment does not have a compliant local standard the developer or designer must confirm (using Checklist A4 on page 430) that the assessed development meets all of the Lifetime Homes criteria.

Checklists and tables

None.

Compliance notes

Ref	Terms	Description
Shell and core (non-residential and residential institutions only)		
CN1	Applicable assessment criteria	Both options: All criteria relevant to the building type and function apply. Refer to Appendix D – Shell and core project assessments on page 409 for a more detailed description of the shell and core assessment options.
Residential - Partially fitted and fully fitted		

Ref	Terms	Description
CN2	Applicable assessment criteria - Single dwellings	**Safe access: criteria 1 to 11 on the previous page** Both options: These criteria are not applicable. **Inclusive and accessible design (non-residential only): criteria 12 to 14 on the previous page** Both options: These criteria are not applicable. **Inclusive and accessible design (residential only): criteria 15to 16 on the previous page** Both options: All criteria relevant to the building type and function apply. Refer to Appendix E – Applicability of BREEAM New Construction to single and multiple dwellings, partially and fully fitted on page 412 for a more detailed description of residential assessment options.
CN2.1	Applicable assessment criteria - Multiple dwellings	**Safe access: criteria 1 to 11 on the previous page** Both options: All criteria relevant to the building type and function apply. **Inclusive and accessible design (non-residential only): criteria 12 to 14 on the previous page** Both options: These criteria are not applicable. **Inclusive and accessible design (non-residential only): criteria 15 to 16 on the previous page** Both options: All criteria relevant to the building type and function apply. Refer to Appendix E – Applicability of BREEAM New Construction to single and multiple dwellings, partially and fully fitted on page 412 for a more detailed description of residential assessment options.
General		
CN3	Development does not have any external site areas. See criteria 1 to 11 on the previous page.	The safe access criteria apply only to developments that have areas external to the assessed building and within the boundary of the assessed development (regardless of whether or not that external area is or will be the responsibility of the future building occupant). This includes external parking areas. If the assessed building does not have any external areas and access to the building is direct from the public highway or footpath, i.e. there is no on site vehicle access and parking areas, then the criteria concerning safe access are not applicable. In such instances the two available credits must be assessed and awarded based on compliance with the Inclusive and accessible design criteria.
CN3.1	Covered parking area. See criteria 2 to 11 on the previous page.	Where the assessed building has no external areas but does have a covered parking facility, and cyclists or pedestrians or delivery vehicles access the building via this area, then the relevant safe access criteria apply and this area must be assessed against those criteria.
CN3.2	Delivery access through parking areas (smaller sites and deliveries). See criteria 2 to 11 on the previous page (apart from 8 on page 133).	Criterion 8 on page 133 (delivery access through general parking areas) can be relaxed for smaller sites if it can be confirmed that the building is of an operational type and size which is likely to mean that all deliveries to the building will be made by small vans and not heavy goods vehicles.

Ref	Terms	Description
CN3.3	No vehicle delivery and manoeuvring areas. See criteria 2 to 7 on page 133.	The criteria concerning vehicle delivery access are not applicable where dedicated delivery access and drop-off areas do not form part of the assessed development.
CN3.4	Dedicated footpaths from car parking spaces	Where it is not practical to provide dedicated footpaths from each parking space within a car park, it is expected that design teams take every practical measure to ensure the safety of pedestrians. In general terms, as a minimum, a safe pedestrian route should be provided from the pedestrian exit of the car park to the building entrance. For larger car parks it would be beneficial to provide footpaths at regular intervals across it, to aid safe access from the car to the building entrance, and the design team should demonstrate that they have achieved this as far as is practical.
CN3.5	Shared facilities	No criteria have been set in this respect as the types of space or facilities will vary according to the building size, type, use and consultation feedback. Typical facilities that could be shared with others might include: 1. Sports facilities 2. Meeting and conference rooms 3. Amenity space for staff or visitors (internal or external).
CN3.6	Existing facilities	Where existing facilities are present on site that comply with the shared facilities assessment criteria (including the involvement of users and the community in the consultation stage), the credits can be awarded. These facilities could be within an existing building that does not form part of the assessment, provided the building is accessible to all relevant building users.
CN3.7	Potential users of shared facilities	Potential users of shared facilities are identified as appropriate and can include all or any of the following (if relevant to the building type and use): 1. Extra-curricular users and uses 2. Local authority or other provider of local community services 3. Local residents 4. Adult education 5. Volunteer groups 6. Local businesses 7. Operators or members of clubs and community groups.

Methodology

None.

Evidence

Criteria	Interim design stage	Final post-construction stage
1–11	Design drawings (including a scaled site plan), or relevant sections of the specification highlighting all necessary compliant features and dimensions. Where applicable, confirmation that the minimum requirements as set out in the Approved standards and weightings list are met.	Assessor's building or site inspection and photographic evidence confirming compliance or 'as-built' site plan and design details.
12–14	The access strategy. Design drawings, or relevant section or clauses of the building specification or contract.	BREEAM Assessor's site inspection report and photographic evidence.
15–16	A completed Checklist A4 on page 430 indicating commitment to comply with all applicable points from 1–16, signed by the developer. Drawings or a copy of the specification confirming compliance with items in Checklist A4 on page 430.	A completed as-built Checklist A4 on page 430 indicating compliance with all applicable points from 1–16. BREEAM Assessor's site inspection report and photographic evidence or as-built drawings.

Additional information

Relevant definitions

External site areas

Areas external to the assessed building, but within the development's site boundary, which contain vehicle or pedestrian access roads or pathways to the building, parking, unloading and drop-off areas.

Other information

None.

Hea 07 Hazards

(all buildings)

Number of credits available	Minimum standards
1	No

Aim

To reduce or negate the impact of a natural hazard on the building.

Assessment criteria

The following is required to demonstrate compliance:

One credit

1 A risk assessment is carried out at the outline proposal or Concept Design stage by an appropriate person, or persons, to identify any potential natural hazards in the region of the development.

2 Where a potential hazard is identified, mitigation measures appropriate to the level of risk should be identified by an appropriate person and implemented.

Checklists and tables

None.

Compliance notes

Ref	Terms	Description
Shell and core (non-residential and residential institutions only)		
CN1	Applicable assessment criteria	Both options: All criteria relevant to the building type and function apply. Refer to Appendix D – Shell and core project assessments on page 409 for a more detailed description of the shell and core assessment options.
Residential - Partially fitted and fully fitted		

Ref	Terms	Description
CN2	Applicable assessment criteria - Single and multiple dwellings	Both options: All criteria relevant to the building type and function apply. Refer to Appendix E – Applicability of BREEAM New Construction to single and multiple dwellings, partially and fully fitted on page 412 for a more detailed description of residential assessment options.
General		
CN3	Where no risk is identified or where flooding is identified as the only risk	Where no risks are identified, this issue will not be included in the assessment. Where flooding is the only risk identified, this issue will not be included in the assessment as flooding is addressed in BREEAM issue Pol 03 Surface water run-off on page 378.

Methodology

None.

Evidence

Criteria	Interim design stage	Final post-construction stage
1 on the previous page–2 on the previous page	A copy of the natural hazards risk assessment. A letter from the appropriate person confirming their compliance with the definition of an appropriate person. Confirmation of the timing of the natural hazard assessment within the plan of works.	As design stage.
2 on the previous page	Where applicable, a copy of the natural hazard risk assessment detailing the mitigation measures appropriate to the level of risk for the site AND EITHER A copy of the relevant section of the specification requiring the principal contractor to implement the mitigation measures identified OR A letter from the client or design team member confirming that the specification will require the principal contractor to implement the appropriate person's recommendations.	Assessor's building inspection or site inspection (or as-built drawings) and photographic evidence confirming that the mitigation measures have been implemented in line with the appropriate person's recommendations and specification.

Additional information

Relevant definitions

Appropriate persons

An individual (or individuals) with relevant technical and professional experience suitable to:

- Determine the potential for natural hazards in the region of the development
- Determine the likely impacts on the site, building and locality, and subsequently identify appropriate mitigation measures.

This may be a member (or members) of the design team or a specialist, independent to the design and construction process. This (or these) individuals should practice to, and abide by, a professional code of conduct or similar.

Natural hazard

Natural processes or phenomena occurring in the biosphere or crust that may constitute a damaging event. The list below is not intended to be exhaustive, but provides an indication of the type of hazards that should be considered to meet the definition. Other natural hazards may be relevant under this issue. Relevance will be dependent on local geography, geology, hydrology and climate factors and the assessor should be satisfied that appropriate local expertise has been sought by the client or design team to identify these fully:

1. Floods (addressed in Pol 03 Surface water run-off on page 378)
2. Natural disasters of geological origin such as volcanic eruptions, earthquakes and landslides
3. Natural disasters of climatic or meteorological origin such as droughts, avalanches, wave surges including tsunamis and tidal waves, and wind storms including cyclones, hurricanes, tornadoes, tropical storms, and typhoons
4. Wildfires.

Natural disaster

A serious disruption of the functioning of a community or a society, causing widespread human, material, economic or environmental losses which exceed the ability of the affected community or society to cope using its own resources.

Other information

Please note that this issue is not attempting to define all possible risks and hazards that may be present, but instead encouraging the process of risk identification, assessment and mitigation.

Natural hazard, natural disaster, and risk assessment: The definitions used within this issue are sourced from www.unisdr.org.

Hea 08 Private space

(residential only)

Number of credits available	Minimum standards
1	Yes

Aim

To provide an external space which gives occupants privacy and a sense of wellbeing.

Assessment criteria

The following is required to demonstrate compliance:

One credit

1 The outdoor space (private or semi-private) must comply with the following requirements:
- 1.a Is of a size that allows all occupants to sit outside
- 1.b Is accessible for all occupants, including wheelchair users
- 1.c Is accessible only to occupants of designated dwellings.

2 The outdoor spaces need to be adjacent, or in close proximity to the dwellings and meet the minimum size requirements (see Compliance notes below).

Checklists and tables

None.

Compliance notes

Ref	Terms	Description
Shell and core (non-residential and residential institutions only)		
CN1	Applicable assessment criteria	Both options: This issue is not applicable. Refer to Appendix D – Shell and core project assessments on page 409 for a more detailed description of the shell and core assessment options.
Residential - Partially fitted and fully fitted		

Ref	Terms	Description
CN2	Applicable assessment criteria - Single and multiple dwellings	Both options: All criteria relevant to the building type and function apply. Refer to Appendix E – Applicability of BREEAM New Construction to single and multiple dwellings, partially and fully fitted on page 412 for a more detailed description of residential assessment options.
General		
CN3	Extensions to existing buildings	There are no additional or different requirements to those outlined above specific to extension projects.
CN3.1	Minimum space requirements	Subject to any higher requirements arising from national regulations or established national best practice, these are to be set at a level which is compliant with the following: 1. For private space: 1.5m² per bedroom 2. For semi-private space, i.e. shared access by all dwelling occupants: 1.0m² per bedroom.
CN3.2	Outdoor spaces	The following are representative examples of outdoor spaces: 1. A private garden 2. A communal garden or courtyard, providing a pleasant and secluded environment large enough for all occupants of designated dwellings to share and designed in a way that makes it clear that the space is only to be used by occupants of designated dwellings 3. Balconies 4. Terraces (roof or other) 5. Patios.
CN3.3	Non-compliant outdoor space	'Juliet' balconies generally do not comply with the criteria as they are too small to provide an external space. Enclosed areas, such as conservatories, do not comply with the criteria.
CN3.4	Accessible only to occupants of designated dwellings	The design of the space, its boundaries and its relationship with the designated dwelling should make it clear that the space is only for the use of occupants.

Methodology

None.

Evidence

Criteria	Interim design stage	Final post-construction stage
All	Drawings or a copy of the specification confirming: The number of bedrooms served by the outdoor space That the outdoor space meets the minimum size requirements and is located adjacent or close to the dwelling AND Where a shared outdoor space is provided, details of the security and control arrangements for access.	BREEAM Assessor's site inspection report and photographic evidence or 'as-built' drawings.

Additional information

Relevant definitions

None.

Other information

None.

Hea 09 Water quality

(all buildings)

Number of credits available	Minimum standards
1	Yes (criterion 1 only)

Aim

To minimise the risk of water contamination in building services and ensure the provision of clean, fresh sources of water for building users.

Assessment criteria

The following is required to demonstrate compliance:

One credit

Building services water systems: Minimising risk of contamination

1 All water systems in the building are designed in compliance with the measures outlined in the relevant national health and safety best practice guides or regulations to minimise the risk of microbial contamination, e.g. legionellosis.

2 Where humidification is required, a failsafe humidification system is provided.

Building occupants: Provision of fresh drinking water (excluding residential and residential institutions - long term stay)

3 A wholesome supply of accessible potable drinking water is supplied as follows in the permanently staffed areas:
- 3.a Point-of-use water coolers
- 3.b Provision in each staff kitchenette, or in a suitable location on each floor level, and in a staff canteen (if provided).

Additional for residential institutions - short term stay

4 A wholesome supply of accessible potable drinking water is supplied in public areas:
- 4.a Provision in the foyer or lobby and gym or fitness suite, where present
- 4.b If potable water is available in each bedroom, a point-of-use water cooler is accessible from all key public spaces, i.e. bar, lounge, lobby, entrance hall or reception, restaurant
- 4.c If potable water is not available in each bedroom, a point-of-use water cooler is accessible from all key public spaces, i.e. bar, lounge, lobby, entrance hall or reception, restaurant AND specified in public areas next to key access points (lifts and stairwells) to each bedroom floor or area.

Checklists and tables

None.

Compliance notes

Ref	Terms	Description
Shell and core (non-residential and residential institutions only)		
CN1	Applicable assessment criteria	**Building services water systems: Minimising risk of contamination, criteria 1 and 2 on the previous page** Shell only: These criteria are not applicable. Shell and core: All criteria relevant to the building type and function apply. **Building occupants: Provision of fresh drinking water, criterion 3 on the previous page** Both options: These criteria are not applicable.
Residential - Partially fitted and fully fitted		
CN2	Applicable assessment criteria - Single and multiple dwellings	**Building services water systems: Minimising risk of contamination, criteria 1 and 2 on the previous page** Both options: All criteria relevant to the building type and function apply. **Building occupants: Provision of fresh drinking water, criterion 3 on the previous page** Both options: These criteria are not applicable. Refer to Appendix E – Applicability of BREEAM New Construction to single and multiple dwellings, partially and fully fitted on page 412 for a more detailed description of residential assessment options.
General		
CN3	National health and safety best practice guides	Please refer to the Approved Standards and Weightings List (ASWL) to find the appropriate health and safety best practice guides in the country of assessment. Alternatively, please demonstrate applicability as follows: — The minimum requirements as set out in the Approved standards and weightings list are covered by the proposed documents — Where no appropriate reference document exists for a country, the design team should demonstrate compliance using the UK alternative as listed in each relevant country reference sheet.
CN3.1	Failsafe humidification system	A failsafe humidification system is one where failure of the system that sterilises the water vapour results in the entire humidification system initiating a shut down. This shut down, therefore, avoids any risk of building users being exposed to untreated and potentially contaminated water until the systems failure is corrected. Steam humidification is an example of a failsafe system.

Ref	Terms	Description
CN3.2	New build extensions to existing buildings	If the new-build extension and existing building will share the same services or water systems, then the existing systems must be assessed against the criteria regardless of whether the existing building forms a part of the assessment or not. If the extension is served by independent systems, only these need be assessed against the assessment criteria. If it is the intention that building users of the new extension will use water systems in the existing building, then it must be confirmed that the existing systems comply with the criteria.
CN3.3	Microbial contamination and the BREEAM Assessor's reporting responsibility	The BREEAM Assessor is not required to confirm that the design is compliant with the relevant standards; this is the responsibility of the design team. The assessor is simply required to record, for the purposes of validation, whether or not the design team confirms it has complied.
CN3.4	Non-compliant point-of-use water dispensers	The following types of water dispensers do not comply with the criteria of this BREEAM issue: 1. Drinking water fountains, as they are difficult to keep in a hygienic condition, and do not encourage users to consume adequate fluid intake 2. Mains fed taps in toilet areas (note: taps in kitchen areas are compliant) 3. Bottled water from vending machines or over the counter.

Methodology

None.

Evidence

Criteria	Interim design stage	Final post-construction stage
1–2	The relevant section or clauses of the building specification or contract.	A formal letter of declaration from the design team, principal contractor or installer of the relevant systems confirming compliance. BREEAM Assessor's site inspection report and photographic evidence or as-built drawings.
3	Design drawings.	BREEAM Assessor's site inspection report and photographic evidence or as-built drawings.

Additional information

Relevant definitions

Legionnaires' disease

A type of pneumonia caused by the bacterium Legionella pneumophilia. People catch Legionnaires' disease by inhaling small droplets of water suspended in the air, which contain the bacteria.

Point-of-use water cooler

Water coolers that are plumbed directly into the mains water supply and drainage. The advantage of water coolers is twofold: their appearance is modern and appealing to users and most offer both chilled and ambient temperature water.

Potable water

Water suitable for human consumption that does not contain any micro-organism, parasite or substance at a concentration or value which would constitute a potential danger to human health.

Water systems

For the purpose of this issue, this refers to:

1. Cooling towers
2. Evaporative condensers
3. Domestic hot and cold water systems
4. Other plant and systems containing water which is likely to exceed 20°C and which may release a spray or aerosol during operation or when being maintained, for example:
    a. Humidifiers and air washers
    b. Spa baths and pools
    c. Car or bus washes
    d. Wet scrubbers
    e. Indoor fountains and water features.

Other information

None.

Energy

Summary

This category encourages the specification and design of energy efficient building solutions, systems and equipment that support the sustainable use of energy in the building and sustainable management in the building's operation. Issues in this section assess measures to improve the inherent energy efficiency of the building, encourage the reduction of carbon emissions and support efficient management throughout the operational phase of the building's life.

Category summary table

Issue	Credits	Credit summary
Ene 01 Reduction of energy use and carbon emissions	13	— Recognise improvements in the energy performance of the building above national building regulations in relation to heating and cooling energy demand, primary energy consumption and carbon dioxide emissions. — Encourage steps taken to reduce energy demand through building design and systems specification. — Predict operational energy consumption by end use and promote monitoring and management of risks through construction and commissioning.
Ene 02a Energy monitoring	2	— Energy metering systems are installed to enable energy consumption to be assigned to end uses. — Sub-meters are provided for areas with high or variable energy load, including tenanted areas.
Ene 02b Energy monitoring	2	— Specification of energy display devices.
Ene 03 External lighting	1	— Specification of energy efficient light fittings for external areas of the development and controls to prevent use during daylight hours or when not needed.
Ene 04 Low carbon design	3	— Analysis of the proposed building design and development is undertaken to identify opportunities for and encourage the adoption of passive design solutions. — A feasibility study has been carried out to establish the most appropriate on-site or near-site low or zero carbon (LZC) energy sources for the building or development.
Ene 05 Energy efficient cold storage	3	— The refrigeration system, its controls and components have been designed, installed and commissioned in accordance with appropriate codes and standards and demonstrates a saving in greenhouse gas emissions (kg CO_2-eq) over the course of its operational life.

Issue	Credits	Credit summary
Ene 06 Energy efficient transport systems	3	— An analysis of the transport demand and usage patterns is undertaken to determine the optimum number and size of lifts, escalators, or moving walkways. — Energy efficient installations are specified.
Ene 07 Energy efficient laboratory systems	5	— Client engagement to determine occupant requirements and define laboratory performance criteria to optimise energy demand of the laboratory facilities. — Specification of best practice energy efficient equipment and measures as appropriate.
Ene 08 Energy efficient equipment	2	— Identification of the building's energy-consuming equipment that has a major impact on the total energy demand. — Demonstrate a meaningful reduction in energy demand.
Ene 09 Drying space	N/A	
Ene 10 Flexible demand side response	1 exemplary credit	— The building contains one or more appliances or systems that vary their operation in response to external signals from electricity suppliers.

Ene 01 Reduction of energy use and carbon emissions (all buildings)

Number of credits available	Minimum standards
13	Yes

Aim

To recognise and encourage buildings designed to minimise operational energy demand, primary energy consumption, and CO_2 emissions.

Assessment criteria

This issue is split into the following parts:

- Energy performance
  - Standard route: Use of approved building energy calculation software (up to 9 credits)
  - Basic route: Energy efficient design features (up to 4 credits)
- Prediction of operational energy consumption (4 credits)
- Exemplary level criteria (up to 5 credits)

The following is required to demonstrate compliance:

Energy performance

Up to nine credits – Standard route (option 1): Use of approved building energy calculation software

1 Calculate the Energy Performance Ratio for International New Construction (EPR_{INC}). Compare the EPR_{INC} achieved with the benchmarks in Table 26 below and award the corresponding number of BREEAM credits.

Table 26: Ene 01 EPR_{INC} benchmark scale

		Minimum standards	
BREEAM credits	EPR_{INC}	Rating	Minimum requirements
1	0.1	-	To achieve one or more credits requires an improvement on minimum energy performance reference building level as defined in CN3.3 on page 154.
2	0.2		
3	0.3		

		Minimum standards	
BREEAM credits	**EPR_{INC}**	**Rating**	**Minimum requirements**
4	0.4	Excellent	**Standard route (option 1)**: EPR_{INC} of 0.4 or above. OR 4 credits for prediction of operational energy consumption (where operational energy performance has been substantially improved). **Basic route (option 2):** 4 credits
5	0.5		
6	0.6	Outstanding	EPR_{INC} of 0.6 or above. AND 4 credits for prediction of operational energy consumption.
7	0.7		
8	0.8		
9	0.9		

A description of how the EPR_{INC} is calculated from a building's modelled energy demand, primary energy consumption and CO_2 emissions is provided in the Methodology on page 157.

Up to four credits – Basic route (option 2): Energy efficient design features

No NCM

Where there is no NCM available, and the design team decide against an alternative modelling approach (see CN3.2 on page 154), the energy performance of the building can be determined using Checklist A5 on page 433.

Up to four credits

2 A Suitably qualified energy modelling engineer or accredited professional has used Checklist A5 on page 433 to determine the number of credits awarded for this issue.

3 The Suitably qualified energy modelling engineer or accredited professional has confirmed the items selected within Checklist A5 are appropriate to the building type and local climatic conditions to award up to four credits.

Prediction of operational energy consumption

Four credits – Prediction of operational energy consumption

4 Involve relevant members of the design team in an energy design workshop focusing on operational energy performance at the concept design stage (see Methodology).

5 Undertake additional energy modelling during the design and post-construction stage to generate predicted operational energy consumption figures (see Prediction of operational energy consumption on page 158).

6 Report predicted energy consumption targets by end use, design assumptions and input data (with justifications).

7 Carry out a risk assessment to highlight any significant design, technical, and process risks that should be monitored and managed throughout the construction and commissioning process.

Exemplary level criteria

The following outlines the criteria to achieve up to five exemplary credits for this BREEAM issue:

Up to three exemplary credits – Beyond zero net regulated carbon

8 The building achieves nine credits under the standard route (option 1).

9 The building has been modelled using the standard route (option 1) and the modelling demonstrates that 100% of the building's service energy use plus a percentage of the building's equipment energy use requirements is generated by recognised on-site or near-site LZC technologies with a direct physical connection to the building (see CN3.7 on page 155).

10 Award the exemplary credits based on the percentage of equipment energy use that is met by recognised LZC sources (see Table 27 below).

Table 27: Exemplary performance credits for beyond zero net regulated carbon

Exemplary credits	Percentage of equipment energy use that is met by LZC sources
1	≥ 10%
2	≥ 50%
3	> 100%

Two exemplary credits – Post-occupancy stage

11 Achieve maximum available credits in Ene 02a Energy monitoring on page 165 or Ene 02b Energy monitoring on page 172. In addition, preschools, primary schools, law courts, prisons and multi-residential buildings must meet the requirements of the second credit for sub-metering by functional or tenanted areas.

12 The client or building occupier commits funds to pay for the post occupancy stage. This requires an assessor to be appointed and to report on the actual energy consumption compared with the targets set in criterion 6.

13 The energy model (criterion 5) is saved so that it can be rerun post occupancy. This can be achieved by either:
- 13.a Submitting the model to BRE.
- 13.b The model being retained by the building owner or a named third party.

Checklists and tables

None.

Compliance notes

Ref	Terms	Description
Shell and core (non-residential and residential institution only)		
CN1	Applicable assessment criteria	**Energy performance, criterion 1** Shell only: Calculate an Energy Performance Ratio just for the building's heating and cooling energy demand only (EPR_{ED}). Use the EPR_{ED} achieved as the EPR_{INC} in Table 26 on page 150. **Prediction of operational energy consumption, criteria 4 to 7** Shell only: These criteria are not applicable. Shell and core only: All assessment criteria relevant to the building type and function apply. Refer to Appendix D – Shell and core project assessments on page 409 of this Scheme Document for further description of the above options.
CN1.1	Applicable assessment criteria - Shell only and Shell and core	Where the building services efficiencies are unknown the minimum energy efficiency standards or backstop levels required by the relevant national building regulations should be used. For example, this might occur when the building services are not within the remit of the shell and core developer.
CN1.2	Green fit-out agreement	When modelling Shell only and Shell and core assessments, worst-case assumptions are normally used for the performance of speculative systems where their performance is unknown. These assumptions are based on minimum energy efficiency standards as defined in the national building regulations, or worst-case performance data. Where a Green fit-out agreement on page 162 is used, these worst-case assumptions can be replaced with performance specifications required in the fit-out agreement. The agreement must be contractually binding. Any speculative areas not covered by the agreement must still use worst case assumptions.
CN1.3	Shell only - Installation of building services	In shell only projects, even where installed system(s) will improve the primary consumption and/or CO_2 EPR metrics, only the EPR demand metric will be used. (KBCN00078)
CN1.4	Shell only - No energy demand metric	For Shell only buildings just the energy demand metric is assessed. However, where the NCM is unable to provide the energy demand metric, the available remaining metrics can be used instead. (KBCN0576)
Residential - Partially fitted and fully fitted		

Ref	Terms	Description
CN2	Applicable assessment criteria - Single and multiple dwellings	Both options: All criteria relevant to the building type and function apply. Refer to Appendix E – Applicability of BREEAM New Construction to single and multiple dwellings, partially and fully fitted on page 412 for a more detailed description of residential assessment options.
General		
CN3	Extensions to existing buildings	For an extension that uses the existing building's services, the energy modelling and percentage of improvement must be based on the building fabric of the extension and the building services that will service the extension. This includes any existing, shared, and new plants that will serve the extension. The energy modelling does not have to consider the existing building fabric where it will be out of the scope of the BREEAM assessment. Nor does it have to consider existing service systems not supplying the extension.
CN3.1	Suitably qualified energy modelling engineer or accredited expert	Where a National Calculation Methodology (NCM) requires accredited experts to undertake the energy performance calculations, these accredited professionals are also required to demonstrate compliance with this BREEAM issue. If the NCM does not require accredited experts, or alternative approved building energy calculation software is used, then a Suitably qualified energy modelling engineer or accredited professional must carry out the modelling.
CN3.2	Hierarchy of options	Where there is a NCM in the country of assessment, then the standard route (option 1) must be used to demonstrate compliance with this issue. Where there is no National Calculation Method (NCM) in place OR where the NCM does not allow the design team to undertake an analysis of issues such as lighting or renewable energy generation, the design team may undertake a more thorough analysis of the performance of the building using alternative approved building energy calculation software (see CN3.3 below). The basic route (option 2) is available for design teams if they choose not to carry out energy modelling of their building and where there is no NCM in place. However, because energy modelling is the preferred way to demonstrate that a building is energy efficient, only a maximum of 4 credits are available using the basic route.
CN3.3	Generating a reference building	The reference building will be generated using either: 1. Local building regulations or standards. OR 2. Appendix G Performance Rating Method of ASHRAE Standard 90.1 (for all buildings except low rise residential buildings) or ASHRAE Standard 90.2 (for low rise residential buildings). OR 3. A reference building as defined in the UK's NCM. This option is only available where the building is located in a temperate climate (Köppen Geiger climatic zone Cfb). Options 2 and 3 above are only available in countries where the local regulation is less rigorous than Appendix G of ASHRAE Standard 90.1 or the UK's NCM.

Ref	Terms	Description
CN3.4	Performance metrics	All three performance metrics - demand, primary energy consumption and CO_2-generated by the approved building modelling software should be entered into the BREEAM scoring and reporting tool to calculate the Ene 01 score, even if there are no mandatory requirements related to a particular metric in the country of assessment. For example, if the local building regulations only set a target with respect to primary energy consumption, but the approved software also reports figures for energy demand, both the figures for primary energy consumption and energy demand should be reported in the BREEAM scoring and reporting tool.
CN3.5	Countries with a NCM that does not report on all three performance metrics	The output documents generated by the approved software may not include all three performance metrics required by BREEAM. Where this is the case, all the metrics that are available must be entered into the scoring and reporting tool.
CN3.6	Internal lighting not calculated using approved building energy calculation software	If internal lighting is not included within the modelling calculations, the credits available from modelling will be reduced and the remaining credits awarded for complying with the lighting criteria within Checklist A5 on page 433 as follows: 1. Seven credits will be available for residential buildings, with up to two additional credits available for compliance with the residential lighting criteria within Checklist A5. a. One credit for compliance with criteria 3 and 4. b. Two credits for compliance with criteria 3 to 6. 2. Eight credits will be available for non-residential buildings, with one additional credit available for compliance with the non-residential lighting criteria within Checklist A5 (criteria 1 and 2).
CN3.7	Building assessed as part of a larger development	Where the building under assessment forms part of a larger development and either a new or existing Recognised low or zero carbon (LZC) technologies installation is provided for the whole site, then the amount of LZC energy generation counted for in this issue, and subsequent CO_2 emissions saved, should be proportional to the building's energy consumption compared to the total energy consumption for the site. See On-site LZC – whole site shared connection on page 159.
CN3.8	Energy consumption and carbon emissions of untreated spaces	Where the assessment contains a mix of treated and untreated spaces, untreated spaces can be excluded, and the performance based on the treated spaces only. Where the entire assessment is untreated, the whole of the structure(s) must be assessed on the basis that this issue is critical for certification. (KBCN00049)
CN3.9	Parts of the building not subject to national thermal regulations	Where parts of the assessed building are not subject to national thermal regulations then these should be omitted from the EPR calculation. (KBCN0534)

Ref	Terms	Description
CN3.10	Energy performance assessment for part of a whole building	If the assessment is only covering part of a whole building, the energy performance assessment must be representative of the part of the building being assessed. Simply taking the energy performance assessment of the whole building would not comply, especially if the non-assessed parts of the building were of a different use. (KBCN0596)
Building type specific		
CN4	Residential buildings - Calculation procedure for multiple dwellings	The Ene 01 calculation should be completed for each dwelling or each energy type or each energy group (see CN4.1 below). The energy performance ratio (EPR_{INC}) should then be area averaged for the whole development using the calculation procedure in the Methodology on the facing page for either the standard route (option 1) or the basic route (option 2). Where the advised averaging method is deemed unsuitable for the approved building energy methodology, a new calculation can be approved; please contact BRE Global for guidance. An example is where a NCM considers energy consumption in communal areas as well as per dwelling.
CN4.1	Residential buildings - Energy type	A set of residences on a development are of the same 'energy type' if they have the same approved building energy calculation software outputs for performance data as outlined in the Methodology on the facing page. They will exhibit each of the following: 1. Approximately the same size, built form and construction details. 2. The same space heating, hot water system, and controls. 3. The same orientation and level of over-shading or sheltering. 4. The same assumed or actual air permeability and ventilation system.
CN4.2	Residential buildings - Energy groups	Energy groups only apply when a building contains multiple flats, apartments within the same building envelope, or adjoined dwellings. The performance data outlined in the Methodology on the facing page can be averaged across the whole building provided that the same building services strategy is adopted throughout. These dwellings are defined as an energy group: 1. Where varying servicing strategies (including the provision of renewable energy systems) are adopted in the building, dwellings should be grouped by strategy 2. Each energy group must be treated separately for the purposes of assessment and an average Actual building emission rate and Reference building emission rate are used to calculate the percentage improvement. It is the BREEAM Assessor's choice whether or not to use the energy groups averaging method or to complete the calculation for each individual dwelling. Note: This averaging rule cannot be applied to single dwellings.

Ref	Terms	Description
CN4.3	Non-residential buildings - Energy modelling, BREEAM building use and tenancy arrangement	The legislative criteria for energy modelling may vary according to building size, use, services, and tenancy arrangement. In some instances, modelling may be undertaken for the whole building; in others, modelling may be undertaken for each individual unit or tenanted area within a building. The scope of a BREEAM assessment typically covers the whole building, regardless of whether that building consists of several units to be sublet. Where energy modelling is required for each unit refer to Ene 01 Reduction of energy use and carbon emissions on page 150. Where the development contains conditioned shared or landlord spaces, the area of these spaces, unless otherwise accounted for, should be divided and attributed among the separate units. The proportion of shared areas attributed to each unit must be equivalent to the ratio of each unit as a proportion of the total area of all units. All units, heating systems, and common areas within the assessed building must be included in the assessment of Ene 01.
CN4.4	Retail – shell only – glazing not within scope	Where a retail building envelope is not complete and glazing will be provided by the future tenant(s), there are two options available: 1. Follow the approach of CN1.2 on page 153. 2. The assessment can be based on worst permissible performance under the relevant national building regulations. (KBCN0937)

Methodology

Ene 01 calculation methodology using the standard route (option 1)

The methodology for the EPR_{INC} calculation considers three metrics of modelled building performance when determining the number of credits achieved for this issue. The three metrics are:

1. The building's heating and cooling energy demand
2. The building's primary energy consumption
3. The total resulting CO_2-eq emissions

These three metrics for the actual modelled building performance are compared against the relevant national building regulations compliant standard (i.e. a baseline) and each is expressed as a percentage improvement. The percentage improvements are then compared against modelled building stock and translated into a ratio of performance for each metric. These ratios are weighted for each metric and added together to determine the overall Energy Performance Ratio (EPR_{INC}).

The calculation is determined using the following performance data:

- Building floor area (m^2)
- Reference building heating and cooling energy demand (MJ/m^2)
- Actual building heating and cooling energy demand (MJ/m^2)
- Reference building primary energy consumption (kWh/m^2)
- Actual building primary energy consumption (kWh/m^2)
- Reference building emission rate (kg CO_2-eq/m^2)
- Actual building emission rate (kg CO_2-eq/m^2)

The performance data is extracted from annual energy modelling of the building's specified or designed regulated fixed building services and fabric, as undertaken by an accredited energy assessor or a member of the design team using approved building energy calculation software.

The necessary energy modelling data required to determine building performance is sourced from National Calculation Method compliant energy modelling software, used by the design team to demonstrate building regulation compliance. This data is then entered into the BREEAM Ene 01 calculator to determine the EPR_{INC} and number of credits achieved. The Ene 01 calculator is within the BREEAM assessment scoring and reporting tool, in the Energy section.

The methodology is described in detail in Guidance Note 48, which can be downloaded from the BREEAM website.

Calculating EPR where there are multiple modelling outputs

Where more than one modelling output is produced for a development that is registered as a single assessment, an area-weighted average should be used to calculate the number of credits to be awarded. This does not apply where the 'similar buildings' approach is used.

Each of the energy performance outputs from the documents (actual kg CO_2-eq/m², reference kg CO_2-eq/m² etc.) must be area-weighted to produce area weighted average values which are entered into the scoring and reporting tool. When applying this method, please include your area-weighting calculations and outputs as supporting evidence.

Prediction of operational energy consumption

The Energy Prediction and Post-occupancy guidance defines a methodology to use for design stage energy modelling and subsequent in-use validation to obtain the Ene 01 credits. The aim of the methodology is to incentivise better understanding of energy modelling techniques and reward more accurate predictions of energy use at early stages to support better design and construction of new buildings.

The suitably qualified energy modeller must model several scenarios creating a range of predicted consumptions, informed by a risk assessment of the building energy uses.

These scenarios will consider:

- Weather
- Operating hours for systems
- Occupancy hours
- Management factors

For more information, please refer to Guidance Note 32 *Energy Prediction and Post Occupancy Assessment* provided on the BREEAM website. The purpose of this Guidance Note is to describe the energy performance prediction and subsequent post occupancy monitoring methodology. It relates specifically to the prediction of operational energy consumption criteria (four credits) and the post-occupancy stage criteria (two exemplary credits).

Estimating equipment energy demand for building systems or processes

Where credits have been sought for prediction of operational energy consumption, and operational energy modelling has been carried out (criterion 5), the output of this modelling should be used to estimate the equipment energy demand.

Where such outputs are not available, the following guidance applies:

At present there is no standard or national calculation methodology for modelling equipment energy demands in a building. To demonstrate compliance with the 'exemplary level criteria' the building's modelled operational service energy consumption may be used as a proxy for its equipment energy demand, i.e. equipment energy equals 100% of service energy. While not accurate, this approach enables BREEAM to assess and award credits for buildings that meet a proportion of its energy demand for the building can be accurately predicted, this data can be used to determine the percentage of equipment energy demand met via renewable energy sources. Equipment energy demand can be estimated based on metered data from a similar or the same building type with the same unregulated system or process loads or by using the methodology described in CIBSE TM54 'Evaluating operational energy performance of buildings at the design stage', 2013.

Energy design workshop focusing on operational energy performance

The energy design workshop should focus on setting an energy performance target for the building and considering how the intended energy performance of the building will be maintained from design through to occupation and rating measurement. It should also consider how the energy performance of the building will be affected by future weather patterns, changes of use and variations in the expected usage of the building and consider the resilience of building systems.

Post-occupancy stage

Where the exemplary credits are achieved and the post occupancy stage will be followed, the building owner will need to:

- Report energy consumption for the first 12 months of normal occupancy for all relevant end uses.
- Report energy consumption for the first 12 months, broken down into monthly intervals, for all relevant end uses (see Man 05 Aftercare on page 74).
- Compare reported energy consumption figures with targets set in criterion 6 on page 151.
- Identify causes of discrepancies and the remediation actions required.

On-site LZC – whole site shared connection

To be recognised in BREEAM, the on-site low or zero carbon (LZC) technology must have a direct physical connection to the assessed building.

OR

Where the LZC technology is:

- located on the same site,
- is owned and managed by the same organization as the assessed building, and
- where it is impractical to physically connect the assessed building to the system

It is acceptable to allocate the energy generated from this technology to the assessed building proportionally as a calculation of the building's predicted energy consumption compared to the total energy consumption of the whole site.

To allocate renewable electricity by proportional consumption follow these steps:

1. Obtain the total amount of annual renewable electricity generated on-site.
2. Exclude all renewable electricity which has been exported to the grid.
3. Determine the respective electricity consumption of all buildings on the whole site (predicted for new builds, measured for existing buildings).

Where consumption data is missing, renewable electricity must not be allocated to the assessed building. In this case, it must be assumed that all electricity consumed is sourced from the grid.

Evidence

Criteria	Interim design stage	Final post-construction stage
1	A copy of the report and output documents generated by the approved software for the assessed building at the design stage illustrating: 1. The actual building and reference building performance data. 2. Name of the approved software used to carry out the modelling for calculating the energy performance 3. Confirmation of the expertise and experience of the individual carrying out the modelling in compliance with the requirements of the local building regulations AND Where appropriate, a letter from the person carrying out the modelling confirming: 4. Data used to model the reference building is taken from local building regulations, Appendix G of ASHRAE Standard 90.1, or the UK's National Calculation Methodology. The output documents must be based on the 'as designed' stage of analysis.	Third party documentation, as follows: 1. Actual building energy performance certificate and the output documents of the approved software. This is required as part of demonstrating the as-built building complies with local building regulations, Appendix G of ASHRAE Standard 90.1, or the UK's National Calculation Methodology. 2. As-built drawings to demonstrate that the specification used and modelled at the design stage matches the specification of the completed building 3. Calculations associated with averaging, where it has occurred. The final rating must account for any changes to the specification during construction.
2–3	A completed copy of Checklist A5. The relevant specification clauses confirming details of compliance with each requirement. A letter from the building services engineer confirming items selected from the checklist are appropriate for the building type and local climatic conditions.	As-built drawings and specification demonstrating compliance with the criteria.
4	Workshop minutes, agreed outcomes.	As per interim design stage.
5–7	Predicted energy consumption values, design assumptions, input data and risk assessments reported as detailed in the Energy Prediction and Post-occupancy guidance available from the BREEAM website. Confirmation of suitably qualified energy modeller's qualifications and experience.	As per interim design stage. Where changes to design assumptions and input data have occurred at post-construction stage, the energy modelling should be re-run to consider those changes.

Criteria	Interim design stage	Final post-construction stage
8–10	A copy of a report, calculations or outputs from the manufacturer, supplier, engineer or software modelling confirming: 1. The total energy generation from recognised LZC sources (kWh/year) 2. The sources of the LZC energy 3. The calculated estimate of the 'Equipment energy' consumption from systems or process (kWh/year). 4. The calculated estimate of exported energy surplus.	As required for criteria 1–3 and as per interim design stage.
11–13	The client's commitment to proceed to the post occupancy stage and report the energy consumption. Where the energy model is retained by the building owner or third party, details of the organisation and specific references for the energy model.	As per interim design stage.

Additional information

Relevant definitions

Actual building emission rate

This is the predicted building's CO_2 emission rate that is expressed as kg CO_2-eq/m²/year and calculated by the approved building energy calculation software.

Approved building energy calculation software

Software approved for the purpose of demonstrating compliance with the energy efficiency and carbon emission requirements of the building regulations (and in turn compliance with the Energy Performance of Buildings Directive, EPBD). In countries with an existing National Calculation Methodology (NCM), the tools approved for use under the NCM can be approved as building energy modelling software automatically. These will be confirmed by BRE as part of the Approved standards and weightings list process. Where the design team wishes to use an alternative modelling software package for assessing this issue, please request the Approval for Energy Software from BRE Global to determine whether the software package meets the minimum requirements in terms of the minimum capabilities, design features and testing results. Where those minimum requirements are met, approval from BRE Global will be required (via the Approved standards and weightings list process) before the package can be used for the purposes of demonstrating compliance with Ene 01.

Building regulations

Building regulations set standards for the design and construction of buildings to ensure the safety and health of people in or about those buildings. They also include requirements to ensure that fuel and power is conserved and facilities are provided for people, including those with disabilities, to access and move around inside buildings.

Direct physical connection to the building

To qualify for this issue, the LZC technology must have a direct connection to the building (for electricity, this is often referred to as private wire arrangement). If electricity is generated which is surplus to the instantaneous demand of the building, this electricity may be fed back to the national grid. The carbon benefit associated with any electricity fed into the grid in this manner can only be allocated against an

individual installation or building. In cases where a building is supplied by a communal installation, no carbon benefit can be allocated to buildings which are not connected to the communal installation.

Dynamic simulation model (DSM)

A software tool that models energy inputs and outputs for different types of buildings over time.

Energy demand

The building energy provided for end uses in the building such as space heating, hot water, space cooling, lighting, fan power and pump power. Energy demands are the same as room loads. One of the outputs from the modelling is for heating and cooling energy demand only, not for any other building energy uses. Heating and cooling energy demands are influenced by factors including building fabric heat loss, air permeability, glazing and shading.

Energy Performance Ratio for International New Construction (EPR_{INC})

A metric that is unique to BREEAM and calculated by the BREEAM Ene 01 calculator tool using outputs from the approved building energy calculation software. It is a ratio that defines the performance of an assessed building in terms of its service energy demand, primary energy consumption, and CO_2-eq emissions. This measure of performance is used to determine the number of Ene 01 credits a building achieves in the BREEAM assessment. A description of how the (EPR_{INC}) is defined and calculated is provided in the Methodology on page 157.

Equipment energy

Building energy consumption resulting from systems or processes within the building, other than Service energy (see definition below). This may include energy consumption from systems integral to the building and its operation, e.g. lifts, escalators, refrigeration systems, ducted fume cupboards; or energy consumption from operational-related equipment, e.g. servers, printers, computers, mobile fume cupboards, cooking and other appliances.

Green fit-out agreement

A green fit-out agreement is a formal, legally binding agreement between a building developer or owner and their tenants. As such, a green fit-out agreement (or 'green' clauses or sections in a lease agreement) can be evidence for demonstrating compliance with the relevant BREEAM issue criteria at the interim design and final post-construction stages of assessment. The agreement should refer to the specification requirements or levels claimed and defined in this technical manual.

BREEAM aims to encourage a mutually beneficial relationship between the shell and core developer or owner of a building and its future tenants to ensure the fully fitted operational building achieves performance against the highest possible environmental standards. When an agreement is provided as evidence and it commits the tenant's fit-out to meet the criteria of this BREEAM issue, credits are available to be awarded.

National Calculation Method (NCM)

A National Calculation Methodology (NCM) enables quantification of building operational energy consumption and CO_2-eq emissions resulting from building services or systems and fabric performance. Within Europe, a country's NCM is the methodology used for demonstrating compliance with the EU Energy Performance of Buildings Directive.

Near-site LZC

A recognised LZC source of energy generation located near to the site of the assessed building. The source is most likely to be providing energy for all or part of a local community of buildings, including the assessed building, e.g. decentralised energy generation linked to a community heat network or renewable electricity sources connected via a private wire arrangement.

On-site LZC

A recognised LZC source of energy generation which is located on the same site as the assessed building.

Primary energy consumption

This measures the primary energy content of delivered fuel or other energy sources. It takes account of the energy associated with fuel production, energy transformation (e.g. electricity generation) and distribution

processes, including losses, in addition to the inherent energy content of the fuel or energy source.

Recognised low or zero carbon (LZC) technologies

Technologies eligible to contribute to achieving the requirements of this issue must use energy from the following sources:

- Wind
- Solar radiation (solar thermal and solar photovoltaic)
- Geothermal and hydrothermal energy sources
- Hydropower
- Biomass from waste and biofuels derived from second generation biomass feedstock or waste sources, including landfill gas and sewage treatment gas (see CN5.7 and CN5.8 in Ene 04 Low carbon design)
- Waste heat (see CN5.4 in Ene 04 Low carbon design)
- Heat or electricity from waste incineration (see CN5.6 in Ene 04 Low carbon design)

Reference building

A hypothetical building of the same size, shape, orientation and shading as the actual building, with the same activities, zoning and system types and exposed to the same weather data, but with predefined specified properties for the building fabric, fittings and services.

Reference building emission rate

The reference building emission rate is the minimum energy performance requirement for a new building (kg CO_2-eq/m²/year) as defined by local building regulations or international standards. This is calculated in accordance with approved building energy calculation software and is expressed in terms of the mass of CO_2-eq emitted per year per square metre of total useful floor area of the building (kg CO_2-eq/m²/year).

Service energy

Building energy consumption resulting from fixed internal lighting systems, fixed heating or cooling, hot water service or mechanical ventilation.

Suitably qualified energy modelling engineer or accredited professional

An individual who has:

- A minimum of 3 years relevant experience in building energy modelling within the last 5 years.
- A recognised qualification or chartership such as a building services engineer or building energy modelling engineer.
- Broad expertise to cover all required technical aspects, guaranteeing that the data entry in the energy model is appropriate and the results reflect the actual performance of the building.

This can be someone operating as a sole trader or employed by public or private enterprise bodies.

Other information

Energy model submitted to BRE

The energy model will be submitted to BRE to assist with the quality assurance of the post occupancy stage and the ongoing development of BREEAM. BRE will keep the models secure in our systems and will only release them if required for the post-occupancy stage assessment.

Approved software submission

In countries with an existing National Calculation Methodology (NCM), the tool(s) approved for use under the NCM can be used as approved building energy calculation software without our prior approval, provided that the software conforms the following modelling requirements as set out in Directive 2002/91/EC on the energy performance of buildings (16 December 2002):

1. Thermal characteristics of the building (shell and internal partitions, etc.) which may also include air-tightness;
2. Heating installation and hot water supply, including their insulation characteristics;
3. Air-conditioning installation;
4. Ventilation;
5. Built-in lighting installation;

6. Position and orientation of buildings, including outdoor climate;
7. Passive solar systems and solar protection;
8. Natural ventilation;
9. Indoor climatic conditions, including the designed indoor climate.

Where the design team wishes to use an alternative modelling software package, the assessor should first check the Approved Standards and Weightings List to see if the software is listed there. If the software cannot be found in the ASWL, please download, and fill out the Ene 01 Approval for Energy Software form from BREEAM Projects and submit this to the technical team via the query webform on BREEAM Projects, along with the appropriate evidence.

Ene 02a Energy monitoring

(non-residential, plus residential institutions)

For residential buildings, see Ene 02b Energy monitoring on page 172.

Number of credits available	Minimum standards
Building type dependent	Yes

Aim

To encourage the installation of energy sub-metering to allow monitoring of operational energy consumption. To allow managers and consultants post-handover to compare actual performance with targets in order to inform ongoing management and reduce any performance gap.

Assessment criteria

This issue is split into two parts:

- Sub-metering by end-use (1 credit)
- Sub-metering by functional or tenanted areas (1 credit)

Please note:

- The first credit is applicable to all building types.
- The second credit is not applicable to preschools, primary schools and residential institutions - long-term stay.

The following is required to demonstrate compliance:

One credit - Sub-metering by end-use

1 Energy meters are installed that allow at least 90% of the estimated annual energy consumption of each fuel or energy supply to be assigned to an end-use category (see Methodology on page 168).

2 The energy metering system is appropriate for the size for the building:
- 2.a For buildings with a gross internal area greater than or equal to 1000m², the energy meters are part of an energy monitoring and management system (see Relevant definitions on page 170).
- 2.b For buildings with a gross internal area less than 1000m², the energy meters are either:
  - 2.b.i Part of an appropriate energy monitoring and management system.
  - 2.b.ii Accessible meters with pulsed outputs or other open protocol communication outputs.

3 Building users can identify the end-use category covered by each meter (for example, through labelling).

One credit - Sub-metering by functional or tenanted areas

4 Energy meters are installed that allow energy consumption to be assigned to:
- 4.a Tenanted areas (see Methodology on page 168)
- 4.b Relevant functional areas (see Methodology on page 168)

5 The energy metering system is appropriate for the size for the building:
- 5.a For buildings with a gross internal area greater than or equal to 1000m², the energy meters are part of an energy monitoring and management system (see Relevant definitions on page 170).
- 5.b For buildings with a gross internal area less than 1000m², the energy meters are either:

5.b.i Part of an appropriate energy monitoring and management system.
5.b.ii Accessible meters with pulsed outputs or other open protocol communication outputs.

6 Building users can identify the end-use category covered by each meter (for example, through labelling).

Checklists and tables

Table 28: Examples of relevant functional areas for different building types

Building type	Relevant functional areas
Office buildings	1. Office areas, by floor 2. Catering
Retail buildings	1. Sales area 2. Storage and warehouse 3. Cold storage 4. Offices 5. Catering 6. Tenant units
Industrial units	1. Office areas 2. Operational area 3. Ancillary areas (e.g. canteens)
Hotel buildings	1. Office areas 2. Catering (e.g. kitchen, restaurant) 3. Conference suites 4. Swimming pool or leisure facilities 5. Bedrooms, by floor or core (or similar beneficial grouping)
Education buildings	1. Kitchens (excluding small staff kitchens and food technology rooms) 2. Workshops 3. Lecture halls 4. Conference rooms 5. Drama studios 6. Swimming pools 7. Sports halls 8. Process areas 9. Laboratories 10. High containment suites within laboratories 11. Controlled environment chambers 12. Animal accommodation areas 13. IT server rooms 14. IT work and study rooms (including IT-equipped library space and any space with provision of more than one computer terminal per 5m²) Note: Individual sub-metering of standard classrooms or seminar rooms is not required.

Building type	Relevant functional areas
Hospitals and other healthcare facilities	1. Medical physics facilities 2. Rehabilitation when including hydrotherapy pools 3. Central sterile supplies departments (or equivalent) 4. Process areas (e.g. commercial-scale kitchens and laundries) 5. IT server rooms 6. Pharmacy departments 7. Laboratories 8. Tenanted areas (e.g. catering, retail, laundry) Note: Sub-meters can be provided per floor plate in small healthcare buildings (gross internal floor area less than 1000m²) that have no functional areas with a high energy load.
Other buildings	Other types of single occupancy buildings can use the functional areas above as a guide to the type of areas that may require sub-metering.

Notes:
1. This table lists common functional areas by building type. The lists are not exhaustive and where other areas exist with high or variable energy loads, these should also be considered as part of the overall metering strategy.

Compliance notes

Ref	Terms	Description
Shell and core (non-residential and residential institutions only)		
CN1	Applicable assessment criteria	**Sub-metering by end use, criteria 1 to 3 on page 165** Shell only: These criteria are not applicable. Shell and core: All criteria relevant to the building type and function apply. **Sub-metering of high energy load and tenancy areas, criterion 4 to 6 on the previous page** Shell only: These criteria are not applicable. Shell and core: All criteria relevant to the building type and function apply, subject to the following: Meters must be installed on the energy supply to each separate tenanted unit or floor plate within the assessed development. Refer to Appendix D – Shell and core project assessments on page 409 for a more detailed description of the shell and core assessment options.
Residential - Partially fitted and fully fitted		
CN2	Applicable assessment criteria - Single and multiple dwellings	Both options: This issues does not apply to residential dwellings. Refer to Appendix E – Applicability of BREEAM New Construction to single and multiple dwellings, partially and fully fitted on page 412 for a more detailed description of residential assessment options.

Ref	Terms	Description
General		
CN3	Extensions to existing buildings	Where an existing building is being extended and it has existing building services plant and systems that will be common to both the new extension and existing building, the criteria only apply to the extension. In this case, energy services supplying energy-consuming systems from the existing building shall, as a minimum, be metered at the entry points to the extension, e.g. hot water, chilled water, gas and electricity. However, the best practice approach would usually be to ensure that the energy metering covers the entire building.
Building type specific		
CN4	Buildings situated on campus developments	The systems for buildings situated on campus developments must be monitored using either an appropriate energy monitoring and management system or another automated control system, e.g. outstations linked to a central computer. The criteria only apply to the assessed building. Where energy services are supplied from an existing building on the campus, they shall be metered at the entry points to the assessed building, e.g. hot water, chilled water, gas and electricity. Provision of a pulsed or other open protocol communication output is not sufficient to award the credit for these building types.

Methodology

Overall metering strategy

The overall metering strategy should be developed in line with the guidance for new buildings available in CIBSE TM39 Building energy metering[54].

As described in the guidance, energy consumption does not necessarily need to be separately monitored if the cost to install the monitoring equipment is expected to exceed the likely benefits and savings achieved.

Sub-metering by end-use

The annual energy consumption of each end-use must be estimated and end-uses that collectively account for 90% of the total energy consumption (for each fuel or energy supply) must be covered by sub-meters.

Where a given end use will clearly account for less than 10% of the total annual energy consumption for the fuel type in question , a simple hand calculation or use of benchmark data to demonstrate this is acceptable.

Where it is unclear whether an end use would account for less than 10% of the annual energy consumption for a given fuel type or not, more detailed calculations should be provided, and energy consumption should be estimated based on actual energy consumption. For example, by using the methods described in CIBSE TM54 Evaluating operational energy performance of buildings at the design stage[55]. This should use actual operational inputs (rather than those used for building regulations calculations) and weather data for the local area.

The data on water consumption from Wat 01 Water consumption may be used as inputs for evaluating the energy use of domestic hot water.

Typical energy end-use categories include:

1. Space heating generation
2. Space cooling generation
3. Hot water generation
4. Mechanical ventilation

5. Fans for distributing space heating
6. Fans for distributing space cooling
7. Pumps for space heating
8. Pumps for cooling
9. Pumps for hot water
10. Commercial scale refrigeration or cold storage
11. Internal lighting
12. External lighting
13. Controls and telecommunications
14. IT equipment and small plug in loads
15. Internal transport (lifts and escalators)
16. Other user defined

End-use categories can be combined for sub-metering purposes (see below).

For a worked a worked example of determining end-use categories to be sub-metered, see General Information Leaflet 65: Metering energy use in new non-domestic buildings [56].

Combining end-use categories

End-use categories may be combined for sub-metering purposes where:

- Separate metering is technically unfeasible.
- The cost to install the monitoring equipment is expected to exceed any likely benefits and savings that could be achieved during the operation of the building.

Some common examples of end uses that can be metered together include:

- **Lighting and small power** – lighting and small power can be combined where it is not cost effective to sub-meter lighting and small power separately.
- **Heating and hot water** – space heating and domestic hot water may be combined with a single heat or gas meter where a common plant provides both end-uses (e.g. a boiler) and it is impractical to meter the end uses separately.
- **Heating and cooling** – space heating and space cooling may be combined when both services are provided by a single piece of equipment (e.g. a reversible heat pump).
- **Modular boiler systems** -- Modular boiler systems can be monitored as a whole. A modular boiler system consists of a series of boilers that are linked together to meet a variety of heating demands. They are generally composed of several identical boiler units, sometimes stacked, although a mix of condensing and conventional boilers could be used. They operate in increments of capacity, each at around their full capacity and their peak efficiency, so that the overall part load efficiency is greater than it would be for a single boiler.
- **Multiple fans** – multiple fans may be monitored together (for example, where there are multiple fans within an air handling unit (AHU).

Sub-metering by functional or tenanted areas

Sub-meters must be provided to monitor energy consumption by area when a building has areas with:

- Significantly different energy loads, controls, occupation, or usage patterns.
- Different tenant organisations.
- A single, large, homogenous function that can be split into smaller, discrete, logical areas.

Not every energy end-use category must be sub-metered by area. The sub-metering strategy should prioritise significant energy uses that are controlled by area or vary by area.

For a building with only a single functional area and no tenanted or additional functional areas to be sub-metered, both credits (where applicable to the building type) can be awarded if the first credit has been achieved.

Sub-metering functional areas

All relevant functional areas (see Table 28 on page 166), and any high energy load areas, must be considered when determining the sub-metering strategy for the building.

In large buildings of single occupancy/tenancy where there is only one homogeneous function (e.g. hotel bedrooms, offices), sub-metering should be provided per floor plate or by core (or other similar beneficial grouping). A sub-metering strategy not based on a by-floor-plate basis, is acceptable provided that:

- It provides an equivalent, or more useful level of detail than sub-metering by floor plate.
- It divides the assessment in a logical manner which provides useful information to building management re: energy use.
- The approach does not conflict with requirements for sub-metering other functional areas.

Sub-metering tenanted areas

For tenanted buildings, meters must be installed on the energy supply to each separate tenanted unit or area. For example, by retail unit (in a retail building) or by floor (in an office building).

Sub-metering large functional or tenanted areas

For a development consisting of one or more larger units (gross internal floor area greater than or equal to 250m²) , sufficient sub-metering to allow for monitoring of the relevant functional areas within the unit must be specified, in addition to metering of the unit as a whole.

Sub-metering small functional or tenanted areas by end-use

Small tenanted office, industrial, or retail units do not need additional sub-metering by end-use beyond:

- Heating
- Electricity
- Hot water (where feasible)

For the purpose of this BREEAM issue, a small unit is defined as a unit with a gross internal floor area less than 250m² .

Evidence

Criteria	Interim design stage	Final post-construction stage
All	Relevant section or clauses of the building specification or contract. Design drawings.	BREEAM Assessor's site inspection report and photographic evidence.

Additional information

Relevant definitions

Accessible meters

Energy meters located in an area of the building that allows for easy access to facilitate regular monitoring and readings by the building occupants or facilities manager. Typically this will be the plant room, main distribution room or control room (where a building energy management system (BEMS) is installed).

Building users

The building users are those responsible for monitoring the building's energy consumption (tenants, facility managers, building owner).

Common areas

Developments that have several tenant units, particularly large retail developments, may also share common facilities and access that is not owned or controlled by any one individual tenant, but used by all. Common

areas are typically managed and maintained by the development's owner, i.e. landlord or their managing agent. Examples of common areas include an atrium, stairwells, main entrance foyers or reception or external areas, e.g. parking.

Energy meters

Energy meters measure the amount of energy used on a circuit where energy is flowing. Primary meters measure the main incoming energy and are used for billing by the utility supplier. They include the principal smart and advanced utility meters to a site for electricity and gas.

Sub-meters are the second tier including heat and steam meters and secondary meters installed to measure consumption by specific items of plant or equipment, or to discrete physical areas, e.g. individual buildings, floors in a multi-storey building, tenanted areas, function areas.

Energy monitoring and management system

Examples include Automatic Meter Reading systems (AMR) and Building Energy Management systems (BEMS). Automatic monitoring and targeting (aM&T) is an example of a management tool that includes automatic meter reading and data management.

Energy supply

All types of energy supplied to a building area (function area, department, tenancy, or unit) within the boundary of the assessed development. This includes electricity, gas, heat or other forms of energy or fuel that are consumed as a result of the use of, and operations within, each relevant area.

Other information

None.

Ene 02b Energy monitoring

(residential only)

For non-residential buildings and residential institutions, see Ene 02a Energy monitoring on page 165.

Number of credits available	Minimum standards
2	No

Aim

To recognise and encourage monitoring of energy consumption through the use of energy display devices.

Assessment criteria

The following is required to demonstrate compliance:

One credit

1 Current electricity OR primary fuel consumption data are displayed to occupants through a compliant energy display device.

Two credits

2 Current electricity AND primary fuel consumption data are displayed to occupants through a compliant energy display device.

Checklists and tables

None.

Compliance notes

Ref	Terms	Description
Shell and core (non-residential and residential institutions only)		
CN1	Applicable assessment criteria	Both options: This issue is not applicable. Refer to Appendix D – Shell and core project assessments on page 409 for a more detailed description of the shell and core assessment options.
Residential - Partially fitted and fully fitted		

Ref	Terms	Description
CN2	Applicable assessment criteria - Single dwellings	Partially fitted: This issue is not applicable Fully fitted: All criteria relevant to the building type and function apply. Refer to Appendix E – Applicability of BREEAM New Construction to single and multiple dwellings, partially and fully fitted on page 412 for a more detailed description of residential assessment options.
CN2.1	Applicable assessment criteria - Multiple dwellings	Partially fitted: This issue is not applicable Fully fitted: All criteria relevant to the building type and function apply. Refer to Appendix E – Applicability of BREEAM New Construction to single and multiple dwellings, partially and fully fitted on page 412 for a more detailed description of residential assessment options.
General		
CN3	Utility company energy monitoring equipment	Energy meters installed by a utility company that can provide the future homeowner or tenant with accurate and regular energy usage information per dwelling, can comply with this issue.
CN3.1	Electricity is the primary fuel	Where the primary fuel is electricity and current electricity consumption data are displayed to occupants through a compliant energy display device, which includes heating or cooling, two credits can be awarded.
CN3.2	Community heating, cooling or solid fuel systems	If it is not possible to measure the energy consumption based on the incoming mains supply using a compliant energy display device, a heat meter is required to be installed to measure the heat energy. The heat meter must calculate the energy consumption in kilowatt hours (kWh) which can then be transmitted to a compliant energy display device.

Evidence

Criteria	Interim design stage	Final post-construction stage
All	Relevant section or clauses of the building specification or contract. Design drawings.	BREEAM Assessor's site inspection report and photographic evidence of the installed and functioning meter.

Additional information

Relevant definitions

Compliant energy display device

This is a system comprising a self-charging sensor fixed to the incoming mains supply or supplies, to measure and transmit energy consumption data to a visual display unit in an accessible location. As a minimum the visual display unit must be capable of displaying the following information:

1. Local time
2. Current (real time) energy consumption (kilowatts and kilowatt hours)
3. Current (real time) estimated emissions (g/kg CO_2)
4. Current (real time) tariff

5. Current (real time) cost (per hour)
6. Visual presentation of data (i.e. non-numeric) to allow consumers to easily identify high and low levels of usage
7. Historical consumption data so that consumers can compare their current and previous usage in a meaningful way. This should include cumulative consumption data in all of the following forms: day, week or month billing period. The data must be stored internally for a minimum of two years or be connected to a separate device with automatic upload from the energy display device.

Primary fuel

The fuel used to provide the majority of heating or cooling to the dwelling under assessment.

Self-charging sensor

A sensor or transmitter powered by the mains supply to the building that transmits energy consumption data to a visual display unit. Long-life batteries, with a minimum life expectancy of seven years, can be used in place of a self-charging sensor or transmitter where the functionality of the system is demonstrated to be maintained by the assessor.

Other information

None.

Ene 03 External lighting

(all buildings)

Number of credits available	Minimum standards
1	No

Aim

To recognise and encourage the specification of energy efficient light fittings for external areas of the development.

Assessment criteria

The following is required to demonstrate compliance:

One credit

1 The building has been designed to operate without the need for external lighting (which includes on the building, signs and at entrances).

OR

2 The average initial luminous efficacy of all the external light fittings within the construction zone at least 70 luminaire lumens per circuit watt.

3 All external light fittings are automatically controlled for prevention of operation during daylight hours and fitted with presence detection in areas of intermittent pedestrian traffic.

Checklists and tables

None.

Compliance notes

Ref	Terms	Description
Shell and core (non-residential and residential institutions only)		
CN1	Applicable assessment criteria	Both options: All criteria relevant to the building type and function apply. Refer to Appendix D – Shell and core project assessments on page 409 for a more detailed description of the shell and core assessment options.
Residential - Partially fitted and fully fitted		

Ref	Terms	Description
CN2	Applicable assessment criteria - Single and multiple dwellings	Both options: All criteria relevant to the building type and function apply. Refer to Appendix E – Applicability of BREEAM New Construction to single and multiple dwellings, partially and fully fitted on page 412 for a more detailed description of residential assessment options.
General		
CN3	Single building assessments on larger developments or campuses (and extensions to existing buildings)	Where the building being assessed forms part of a larger development (or is an extension to an existing building) containing common areas and other buildings, the scope of the external lighting criteria applies only to external new and existing lighting within the construction zone of the assessed building.
CN3.1	Temporary lighting, decorative lighting, and floodlighting	Temporary external lighting (such as theatrical, stage, and local display installations) is excluded from the assessment. Decorative, security, and floodlighting must be included in the assessment.
CN3.2	Lighting for external plant	Manually activated lighting which is only used when maintenance work is being carried out on external plant is excluded from this assessment.
CN3.3	Emergency lighting	Maintained systems featuring emergency light fittings which are also used for normal operation, are assessed for this issue. Non-maintained lighting which is only activated in an emergency can be excluded from the assessment. (KBCN0185)
CN3.4	Automatic controls - External lighting inside wider building	Where the building undergoing assessment is located inside another building, for example a retail unit within a shopping centre, criterion 3 should be applied to prevention of operation outside the occupation hours of the wider shopping centre rather than during daylight hours . Any external lighting located outside of the wider shopping centre should be assessed as stated in the criteria. (KBCN0906)
CN3.5	Automatic controls - Night-time operation	Projects which operate at night-time can adapt or omit the requirement to provide controls or presence detection to align with the building's hours of operation. (KBCN1048)

Methodology

Average initial luminous efficacy of the external light fittings

The individual luminous fluxes of all luminaires within the construction zone are summed (in lumens), then divided by the total circuit watts for all the luminaires.

For lamps other than LED lamps, the luminous flux of a luminaire using those lamps can be determined by multiplying the sum of the luminous fluxes produced by all the lamps in the luminaire by the light output ratio of the luminaire (as confirmed by the luminaire manufacturer).

Note: LED lamps are typically integral to the luminaire (LED luminaires). As such, the manufacturers' literature will encompass both lamp and luminaire as a whole. For RGB (red, green, blue) LED lamps the average luminaire lumens per circuit watt across all three colours should be used.

Evidence

Criteria	Interim design stage	Final post-construction stage
All	The relevant section or clauses of the building specification or contract. Design drawings.	BREEAM Assessor's site inspection report and photographic evidence or as-built drawings. Manufacturers' product details.
1	Night-time lighting levels report or any other relevant study.	BREEAM Assessor's site inspection report and photographic evidence or as-built drawings. Night-time lighting levels report or any other relevant study.

Additional information

Relevant definitions

Automatic control

An automatic external lighting control system that prevents operation during daylight hours through either a time switch or a daylight sensor (a manually switched lighting circuit with daylight sensor or time switch override is also acceptable) in addition to providing presence detection in areas of intermittent traffic.
Note: for external lighting not fitted with presence detectors, time switches must provide automatic switch off of lighting after a specified curfew hour, except in cases where there is a specific requirement for lighting to be left on all night.

Construction zone

For the purpose of this issue the construction zone is defined as the site which is being developed for the BREEAM-assessed building and its external site areas, i.e. the scope of the new works.

Daylight sensor

A type of sensor that detects daylight and switches lighting on at dusk and off at dawn.

Luminous efficacy (in luminaire lumens per circuit watt)

The ratio between the luminous flux produced by an entire luminaire (light fitting) (in lumens) and the total power consumed by the lamps and the control gear contained within the luminaire (in watts).

Presence detector

A sensor that can turn lighting on when a presence is detected in the scanned area, and off after a preset time when no presence is detected. Presence detectors must be compatible with the lamp type used as very frequent switching can reduce the life of some lamp types.

Time switch

A switch with an inbuilt clock which will allow lighting to be switched on and off at programmed times.

Other information

None.

Ene 04 Low carbon design

(all buildings)

Number of credits available	Minimum standards
3	No

Aim

To encourage the adoption of design measures which reduce building energy demand - and associated carbon emissions - and maximize on-site renewables.

Assessment criteria

This issue is split into two parts:

- Passive design (up to 2 credits)
- Low or zero carbon technologies (1 credit)

The following is required to demonstrate compliance:

Passive design

1 The first credit within issue Hea 04 Thermal comfort on page 114 has been achieved to demonstrate the building design can deliver appropriate thermal comfort levels in occupied spaces.

2 The project team carries out an analysis of the site and proposed development during the Concept Design stage and identifies opportunities for the implementation of passive design solutions that reduce building energy demand (see CN3 on page 180).

One credit

3 Passive design measures which reduce the overall building energy demand by at least 5% are implemented, in line with the findings of the passive design analysis.

Two credits

4 Passive design measures which reduce the overall building energy demand by at least 10% are implemented, in line with the findings of the passive design analysis.

Low and zero carbon technologies

One credit - Low zero carbon feasibility study and implementation

5 A feasibility study has been carried out by the completion of the Concept Design stage by an energy specialist (see Relevant definitions on page 186) to establish the most appropriate recognised local (on-site or near-site) low or zero carbon energy sources for the building or development (see CN4 on page 180).

6 One or more local LZC technologies have been specified for the building or development in line with the recommendations of this feasibility study.

Checklists and tables

None.

Compliance notes

Ref	Terms	Description
Shell and core (non-residential and residential institutions only)		
CN1	Applicable assessment criteria	**Passive design analysis, criteria 1 to 4** Shell only: All criteria relevant to the building type and function apply. Note: For criterion 1, although Hea 04 is not applicable to Shell only assessments, to achieve Ene 04 Passive design credits, compliance with Hea 04 criteria 1, 2 and 3 must be demonstrated. This should be based on a typical layout and equipment specification for the relevant building type. Where Hea 04 is not applicable to the building type and options selected (for example, an industrial building with no office areas), criterion 1 of Ene 04 is not applicable. **LZC feasibility study, criteria 5 to 6 on the previous page** Shell only: All criteria relevant to the building type and function apply. Note: The LZC feasibility study must be completed as part of the shell only design, based on the expected building use and loads specified in the design brief or, where these are not specified, for likely scenarios. The built form should allow for the future installation of cost effective LZC options and this can be achieved by demonstrating that: sufficient space and clearance for the installation of future LZCs has been considered, the built form is suitably sited, and that mass and orientation are optimised for the future systems. Shell and core: All criteria relevant to the building type and function apply. Refer to Appendix D – Shell and core project assessments on page 409 for a more detailed description of the shell and core assessment options.
Residential - Partially fitted and fully fitted		
CN2	Applicable assessment criteria - Single and multiple dwellings	Both options: All criteria relevant to the building type and function apply. Refer to Appendix E – Applicability of BREEAM New Construction to single and multiple dwellings, partially and fully fitted on page 412 for a more detailed description of residential assessment options.
Passive design analysis		

Ref	Terms	Description
CN3	Passive design analysis - Coverage	As a minimum, the passive design analysis should consider: 1. Site location 2. Site weather 3. Microclimate 4. Building layout 5. Building orientation 6. Building form 7. Building fabric 8. Thermal mass or other fabric thermal storage 9. Building occupancy type 10. Daylighting strategy 11. Ventilation strategy 12. Adaptation to climate change.
CN3.1	Passive design analysis - Approved building energy modelling software	The design team must use a modelling software package that has been approved for assessing this issue, please refer to the Approved Standards and Weightings List (ASWL) to determine whether the modelling software package has already been approved by BRE Global. If the software package has not been approved the assessor will need to submit an approval request on the "Ene 01 Approval for Energy Software" for before the package can be used for demonstrating compliance with Ene 04.
CN3.2	Passive design analysis – Modelling the standard building when existing building elements are retained	In circumstances where an existing building element (e.g., a facade) is being retained it is acceptable to incorporate them into the modelling of the 'standard building' baseline, for the purpose of undertaking passive design analysis. All other building elements should be modelled with fabric performance equivalent to that of the local building regulations reference building and without the passive design measures where feasible, i.e., building orientation is likely to be fixed. (KBCN1270)
LZC feasibility study		
CN4	LZC feasibility study	The LZC study should cover as a minimum: 1. Energy generated from LZC energy source per year 2. Carbon dioxide savings from LZC energy source per year 3. Life cycle cost of the potential specification, accounting for payback 4. Local planning criteria, including land use and noise 5. Feasibility of exporting heat or electricity or both from the system 6. Identification of any available grants 7. All technologies appropriate to the site and energy demand of the development 8. Reasons for excluding other technologies 9. Where appropriate, connecting the building to an existing low carbon community energy scheme.

Ref	Terms	Description
CN4.1	LZC feasibility study - Timing	When undertaking a feasibility study later than the Concept Design stage the report must highlight any local LZC energy sources which could not be included in the project due to late consideration and the reason for their omission. If the feasibility study discounted all local LZC as unfeasible due to the late stage in the project that the study was commissioned, then the credit for the feasibility study must be withheld. If the feasibility study was commissioned at the Concept Design stage or earlier, and in the unlikely event the study concluded that the specification of any local LZC technology was unfeasible, the LZC credit could still be awarded.
CN4.2	LZC feasibility study – LZC energy sources discounted	When sufficient information can be provided to justify that LZC energy sources are not feasible for the development, the LCC analysis, for those LZC sources, do not need to be included in the feasibility study. (KBCN0606)
CN4.3	LZC feasibility study – Planning conditions and restrictions	Where a mandatory planning condition exists (e.g., to attach to a district heating scheme), this will clearly affect the number of options available in a feasibility study. In such cases, compliance can still be achieved where evidence of the planning condition restrictions is provided. The feasibility study will still need to be carried out to cover the remaining energy needs of the building (e.g., electrical and lighting load in the case of a district heating scheme). (KBCN0535)
CN4.4	LZC feasibility study – Comparison of LZC technologies	It is acknowledged that for some LZC technologies the level of information available may differ and it may not always be possible to make a detailed like for like comparison across all feasibility considerations. The feasibility study must make a comparison across all LZC that are feasible for the development (see CN4.2 above) technologies based on the information that is available so that it can be demonstrated, with a reasonable level of certainty, that the chosen LZCs are the most appropriate of those available. (KBCN0563)

Ref	Terms	Description
CN4.5	LZC feasibility study – Energy centre or other LZCs connected at a later stage	If a project specifies LZCs that have been proposed in the feasibility report will be connected to a site-wide energy centre operational at a later stage of the phased development, after the Post Construction Stage review has been submitted, this issue can be assessed as follows: In a phased development where the primary heating system will be upgraded at a later stage than the building being assessed, a commitment to install the new heating source must be made in the General Contract Specification (as per the BREEAM requirements). BREEAM does not specify a particular time for phasing as it is difficult to set parameters, however as a rule, building users should have to wait the least time possible before they can use the upgraded heating source. For the quality audit, two energy model outputs must be produced at the final stage - one with the actual interim system installed and one for the BREEAM assessment which can include the predicted energy from the proposed energy centre. Additionally, the legally binding general contract specification for the new heating source must be submitted with details of the timescales proposed for the completion of the second phase of work. Where this approach is to be followed BREEAM must be consulted in each case to ensure that the arrangements are sufficiently robust to award the credits. (KBCN0267)
CN4.6	LZC feasibility study - District heating system using multiple fuels	Where the feasibility study is considering connection to a district heating system and this burns a mixture of fossil and renewable fuels, only the proportion of output generated from eligible renewable fuels (see CN5 on the facing page, recognised LZC energy sources) For instance, a system burning a 25:75 mix of compliant biofuel:fossil fuels, only 25% of heat is considered to be from a LZC technology. As fuel mixes may vary over time, at least one year or more of historical information must be provided to balance out any seasonal variations. Where the system is new or proposed, robust evidence must be provided of the anticipated fuel mix. The fuel mix must be calculated based on the energy content of the input fuels in kWh. (KBCN0885)
CN4.7	LZC feasibility study - Countries with national energy strategy heavily based on renewables	One credit can be awarded by default where: The building is located in a country where the energy supply from the mains grid is highly de-carbonised, due to this supply being generated from renewable sources. AND The feasibility study considers the use of energy from the grid in addition to all other fuel types used within the building. AND The feasibility study clearly confirms that the introduction of local LZC technologies on site would have an adverse effect on the overall related emissions.

Ref	Terms	Description
CN4.8	LZC feasibility study - Technologies already available on site	For developments where there is an existing LZC energy source that can supply a compliant percentage of energy to the assessed building, a feasibility study will still have to be carried out to demonstrate that the existing technology is the most appropriate for the assessed building or development. The study should also seek to identify whether any additional LZC energy sources are feasible. To qualify, the energy from existing LZC energy sources must be additional to the energy that is already being supplied to other buildings or infrastructure entities.
LZC technologies		
CN5	LZC technologies - Recognised 'local' LZC technologies	Technologies eligible to contribute to achieving the requirements of this issue must use energy from the following sources: — Wind — Solar radiation (solar thermal and solar photovoltaic) — Geothermal and hydrothermal energy sources — Hydropower — Biomass from waste and biofuels derived from second generation biomass feedstock or waste sources, including landfill gas and sewage treatment gas (see CN5.7 and CN5.8) — Waste heat (see CN5.4) — Heat or electricity from waste incineration (see CN5.6) Note: Heat pumps are now a standard technology and heat from heat pumps is not considered to be an LZC technology for Ene 04.
CN5.1	LZC technologies – Appropriate installation	Where the country of assessment has an independent national certification scheme for installers of local renewable energy systems, these technologies must be certified in accordance with the national scheme. Where independent accreditation schemes do not exist in the country of assessment, the design team must demonstrate they have investigated the competence of the installer selected to install the LZC technology and that they are confident the installers have the skill and competence to install the technology appropriately.

Ref	Terms	Description
CN5.2	LZC technologies – Connection to building	To be recognised in BREEAM, the LZC technologies must have a direct physical connection to the assessed building. OR Where the LZC technology is: — located on the same site — is owned and managed by the same organisation as the assessed building, and — where it is impractical to physically connect the assessed building to the system it is acceptable to allocate the energy generated from this technology to the assessed building proportionally as a calculation of the building's predicted energy consumption compared to the total energy consumption of the whole site. To allocate renewable electricity by proportional consumption follow these steps: 1. Obtain the total amount of annual renewable electricity generated on-site; 2. Exclude all renewable electricity which has been exported to the grid; 3. Determine the respective electricity consumption of all buildings on the whole site (predicted for new builds; measured for existing buildings). Where consumption data is missing, renewable electricity must not be allocated to the assessed building. In this case, it is assumed that all electricity consumed is sourced from the grid. (KBCN1424)
CN5.3	LZC technologies - Other technology not listed	Other systems may be acceptable as part of a LZC strategy under this issue. Acceptability will be dependent on the nature of the system proposed and the carbon benefits achieved. The BREEAM Assessor must confirm acceptability with BRE Global if in doubt.
CN5.4	LZC technologies - Waste heat from a building-related operational process	Waste heat from an operational process that takes place within the assessed building (or on the assessed site) can be considered as 'low carbon' for the purpose of this BREEAM issue provided that the generation of the heat from the process is integral to the assessed building. Examples of operational processes and functions include manufacturing processes, high temperature oven or kiln, compressors serving process plant, microbrewery, crematorium, testing and commissioning boilers for training or manufacture, and data centres. It does not include waste heat from IT or server rooms, which could be used as part of conventional heat recovery measures.
CN5.5	LZC technologies - Community and near-site schemes	'Local' does not have to mean on site; community schemes (near site) can be used as a means of demonstrating compliance, providing they meet the direct (private wire) connections requirements.

Ref	Terms	Description
CN5.6	LZC technologies - Waste incineration	Waste heat from an incineration plant can only be considered as low carbon for the purpose of this BREEAM issue under the following circumstances: 1. All other LZC technologies have been considered and discounted in the feasibility study and; EITHER 2. The local authority or region in which the incineration plant is located is demonstrably meeting its annual waste reuse and recycling targets and waste management policies; OR 3. There is no further capacity for reusing and recycling waste in the local authority or region where the incineration plant is located; OR 4. There is a near-site or on-site facility connected to the building, via a private wire arrangement, which is demonstrably removing reusable and recyclable waste material prior to incineration.
CN5.7	LZC technologies - First generation biomass feedstock	BREEAM does not reward building systems fuelled by biofuels manufactured from first generation (food) crop feedstocks, e.g. biofuels manufactured from sugars, seeds, grain, animal fats etc. where these are grown or farmed for the purposes of biofuel production. This is because of the uncertainty over their impact on biodiversity, global food production, and their life cycle greenhouse gas savings.
CN5.8	LZC technologies - Second generation biomass feedstock and biofuels from waste streams	BREEAM *may* recognise systems using biofuels generated from second generation (non-food) feedstocks or biofuels manufactured from biodegradable waste materials, e.g. biogas, waste vegetable oil or locally and sustainably sourced solid biofuels, e.g. woodchip, wood pellets. Further details about the biomass source, the supply chain and the installed plant would be required for review by BRE Global prior to confirmation of acceptability. The details provided should include: 1. Type, provenance and sustainability of the biomass feedstock 2. Avoidance or minimisation of fossil fuel use in extracting the biofuel 3. Minimising fossil fuel use in transporting the biomass or biofuel 4. Presence of a supply agreement and a robust supply chain 5. Compatibility of the biofuel with the specified boiler or plant and manufacturer's warranty issues. BREEAM does not define the term 'locally sourced' or specify a minimum supply contract. However, the assessor must determine and demonstrate that these are reasonable for the particular application.

Methodology

Passive design analysis

Any savings resulting from the incorporation of passive design measures should be demonstrated by comparing the energy demand for the building with and without the proposed passive design measures adopted, as identified in the passive design analysis.

To enable a baseline for comparison to be established, a 'standard building' must be modelled. The standard building should have the same floor area, be of the same building type, and contain the same mix of functional areas as the actual building. It should be of a construction and layout that is typical for the building type with fabric performance that meets local building regulations. The location and orientation of the standard building on the site, and the distribution of the glazing should be typical for the building type. The building services and occupancy patterns for the standard building must be the same as those for the actual building.

Any savings in energy demand should then be calculated by comparing the respective outputs from the two building models representing the proposed building specification, the actual building, and the 'standard building' specification.

These calculations should be carried out by a building services engineer or by an accredited energy assessor (see Ene 01 Reduction of energy use and carbon emissions – Relevant definitions).

Low and zero carbon feasibility study

The demand reduction from low or zero carbon (LZC) technologies is demonstrated by comparing:

- Regulated carbon dioxide (CO_2) emissions of the actual building including the specified/installed LZC technologies vs.
- Regulated carbon dioxide (CO_2) emissions of the actual modelled building without LZCs.

When the CO_2 savings are compared for different technologies, they may be estimated separately from the building energy model where appropriate, e.g., by using manufacturers' data, simple hand calculations or spreadsheets.

For the specified technologies the demand reductions are modelled using dynamic simulation modelling. The energy supply used for the without case is mains gas and grid electricity. If mains gas were not available at the site, then oil may be used instead. The base case includes any passive design or free cooling measures adopted for the first two credits.

Evidence

Criteria	Interim design stage	Final post-construction stage
1–4	The passive design analysis report. Evidence confirming the meaningful reduction in the building energy demand.	As design stage AND BREEAM Assessor's site inspection report and photographic evidence or as-built drawings.
5–6	Results from a dynamic simulation model demonstrating reductions in CO_2-eq emissions from the specified low and zero carbon technology.	As per interim design stage.

Additional information

Relevant definitions

Energy specialist

An individual who has acquired substantial expertise by undertaking LZC assessments for at least 3 years, a recognised qualification for undertaking assessments, designs and installations of LZC solutions in the building sector and is not professionally connected to a single LZC technology or manufacturer.

Near-site LZC

Refer to Ene 01 Reduction of energy use and carbon emissions – Near-site LZC on page 162.

On-site LZC

Refer to Ene 01 Reduction of energy use and carbon emissions – On-site LZC on page 162.

Payback period

The period of time needed for a financial return on an investment to equal the sum of the original investment.

Suitably qualified energy modelling engineer

Refer to Ene 01 Reduction of energy use and carbon emissions – Suitably qualified energy modelling engineer or accredited professional on page 163.

Other information

Passive design aim

Unlike Ene 01 Reduction of energy use and carbon emissions on page 150 (which is focused on demonstrable and robust performance improvement), Ene 04 Low carbon design aims to encourage project teams to adopt a passive design approach.

In relation to the passive design credit, this is mostly reflected in criterion 2; the passive design analysis which is intended to encourage project teams to proactively consider the ways in which the building could benefit from passive design measures (such as those listed in CN3 on page 180).

However, to ensure that the analysis results in constructive outcomes, a minimum 5% reduction of the overall building energy demand is required to achieve one credit and a 10% reduction is required to achieve two credits.

LZC feasibility study

The LZC feasibility study in BREEAM is intended to encourage the study to be done early in the project, not just before construction starts, so that the most appropriate solutions can be adopted. Also, this credit does not permit technologies that are not best practice or sustainable or cannot be modelled with a robust method.

Ene 05 Energy efficient cold storage (non-residential only)

Number of credits available	Minimum standards
3	No

Aim

To recognise and encourage the installation of energy efficient refrigeration systems, thereby reducing operational greenhouse gas emissions resulting from the system's energy use.

Assessment criteria

The following is required to demonstrate compliance:

One credit - Energy efficient design, installation, and commissioning

1 With respect to the refrigeration system, its controls and components:
- 1.a A strategy for the design and installation has been produced and implemented by a Suitably qualified engineer on page 193 from Concept Design stage onwards. The strategy is multidisciplinary and includes both an aim and a method to achieve the lowest feasible environmental impact including energy use, carbon emissions, and refrigerant impact.
- 1.b The design team has demonstrated that the cold store and the building has been designed to minimise heat loads through high levels of insulation, reduced air infiltration and minimisation of auxiliary heat loads, e.g. fans and pumps, lighting, people and machinery.
- 1.c At least 50% of the relevant energy efficient design features (listed in Table 29 on the facing page) have been specified or installed.
- 1.d Control systems have been installed to minimise refrigerant temperature lifts by providing controls that optimise evaporator temperature levels and avoid head pressure control.
- 1.e Energy sub-metering has been installed to provide adequate central monitoring of operating parameters and collection of data on plant performance, temperature levels and energy consumption. This does not necessarily require the 'energy monitoring' credits to have been awarded.
- 1.f The design has minimised the requirement for manual override of plant controls and equipment in normal operating conditions through the specification of central automatic controls, anti-tamper controls, automatic lighting controls, fixed set-point temperature and temperature dead bands.
- 1.g The design specification details appropriate commissioning and test procedures to be undertaken at completion.
- 1.h The installation adheres to the design specification and any necessary changes have been carried out with the approval of the Suitably qualified engineer and are formally documented.

2 The refrigeration system has been commissioned as follows:
- 2.a In compliance with criteria 5–6 for commissioning outlined in BREEAM issue Man 04 Commissioning and handover on page 66. This does not necessarily require the 'Commissioning' credits to have been awarded
- 2.b Documentation has been provided showing due diligence and compliance with test and commissioning procedures relevant to the installation, such as pressure testing, leakage testing and validation to specification.

One credit - Energy efficiency criteria

3 The refrigeration system uses robust and tested components that meet published energy efficiency criteria (refer to CN3.1 on page 191).

One credit - Reducing lifetime greenhouse gas emissions from energy use

4 Criteria 1 and 2 on the previous page are achieved.

5 The installed refrigeration system demonstrates a saving in greenhouse gas emissions (kg CO_2-eq) compared to a standard system specification. The greenhouse gas emissions have been calculated using the equation defined in the Methodology on page 191.

Checklists and tables

Table 29: Energy efficient design features

Ref	Energy efficient design feature
1	Fit energy efficient lighting with suitable controls and high efficiency fans on evaporators.
2	Minimise loss of cold air through access doors by minimising frequency of door opening or by fitting air curtains, self-closing doors, door strips, etc.
3	Optimise evaporator temperature levels to keep suction or evaporation temperatures as high as possible.
4	Specify high efficiency compressors.
5	Provide controls on anti-sweat heaters on doors to minimise electrical consumption outside of operational hours.
6	Condensing temperatures that are as low as possible, including avoiding head pressure control.
7	Design evaporators and condensers for easy cleaning and safe access.
8	Optimise defrosting methods to minimise energy consumption and avoid electric heater defrost.
9	High evaporating temperature cabinets (large coils) with single evaporating temperatures across the refrigeration pack for supermarket display cases.
10	Provision of heat recovery in the design such as de-superheating to domestic hot water, condensing to hot water for heating. (If specified this must not lead to condensing conditions that are artificially inflated to deliver the heat recovery.)
11	Use of wet condensing-based systems.
12	Use of re-manufactured items that are still of an energy efficient nature where they do not compromise the optimal energy efficiency of the cold storage equipment.

Compliance notes

Ref	Terms	Description
Shell and core (non-residential and residential institutions only)		
CN1	Applicable assessment criteria	Shell only: This issue is not applicable. Shell and core: Where cold storage systems are specified or installed, all assessment criteria relevant to the building type and function apply. Refer to Appendix D – Shell and core project assessments on page 409 for a more detailed description of the shell and core assessment options.
Residential - Partially fitted and fully fitted		
CN2	Applicable assessment criteria - Single and multiple dwellings	Both options: This issue is not applicable to residential dwellings. Refer to Appendix E – Applicability of BREEAM New Construction to single and multiple dwellings, partially and fully fitted on page 412 for a more detailed description of residential assessment options.
General		
CN3	Scope of this BREEAM issue	This issue is applicable only in instances where commercial or industrial-sized refrigeration and storage systems that are integral to the building are specified, for example: 1. Storage and refrigeration of food in supermarkets. 2. Cold storage facilities in industrial, laboratory, healthcare, and other buildings. The criteria do not apply to: 1. Residential-scale refrigeration. 2. Commercial sized refrigeration for kitchen and catering facilities that consist of self-contained, off-the-shelf units (e.g. large freezers or fridges) and that are delivered and installed with their own refrigeration systems. These types of installation are covered within BREEAM issue Ene 08 Energy efficient equipment on page 204. If the building contains no refrigeration systems (or only refrigeration systems that are not integral to the building and are not served by the building services), then this issue is not applicable to the assessment.

Ref	Terms	Description
CN3.1	Published energy efficiency criteria. See criterion 3 on page 189.	Please refer to the Approved Standards and Weightings List (ASWL) to locate the appropriate published energy efficiency criteria in the country of assessment. If the energy efficiency criteria you wish to use are not listed in the ASWL, you will need to contact BRE Global to get the criteria approved and added. BRE Global assesses energy efficiency criteria on the following points: 1. Is the scale/criteria reviewed and updated annually or every two years? 2. Is the author/owner/assessor of the scale/criteria independent with no ulterior motive? 3. Is the assessment of products and subsequent eligibility and/or rating independent? 4. Is there a clearly defined set of criteria against which a product is tested/judged? 5. Is the scale relevant to cold storage? 6. Is the scheme certified by a third party? This list can also be found in the ASWL document. An example of suitable published energy efficiency criteria is the Energy Technology List (ETL): etl.beis.gov.uk.
CN3.2	Extensions to existing buildings	If the assessed building is an extension to an existing building and there is cold storage plant in the existing building that will serve the new extension, then this plant must meet the criteria in order to achieve any available credits.

Methodology

Calculating lifetime reduction in greenhouse gas emissions from operational energy use

This issue only considers the greenhouse gas emissions from operational energy use. Greenhouse gas emissions from fugitive refrigerants are assessed in Pol 01 Impact of refrigerants on page 362.

The following equation must be used to calculate the lifetime impact of the energy consumption of the system:

$$\textbf{Lifetime carbon emissions} = n \times E_{annual} \times \beta$$

Where:

Term	Description (and unit)
Lifetime carbon emissions	Total equivalent warming impact (kg CO_2-eq)
n	System operating time (yr)
E_{annual}	Energy consumption (kWh/yr)
β	CO_2 emission factor for the relevant energy source (kg CO_2-eq/kWh).

Calculations must be carried out by a Suitably qualified engineer on the facing page (e.g. a building services engineer), including calculations to justify the assumptions and methodologies for savings in greenhouse emissions.

Energy efficient design features

Where features are excluded from consideration the suitably qualified engineer must provide written justification for determining which are unachievable.

Evidence

Criteria	Interim design stage	Final post-construction stage
1–4	The relevant section or clauses of the building specification or contract or other documentary evidence, such as a letter from the design team. Where not all energy efficient design features are relevant to the project, written justification of why they have been excluded from the suitably qualified engineer.	As design stage.
2–4	Evidence as outlined under BREEAM issue Man 01 Project brief and design on page 44 for the relevant criteria.	As design stage.
3	A letter from the manufacturer or supplier, or copies of their technical literature confirming that the specific components meet published energy efficiency criteria or a print out of the ETL (or equivalent) listing the specific products.	As design stage.
5	Documentary evidence confirming the type of technology specified and estimated savings in indirect greenhouse emissions, including a description of how this saving is achieved. Calculations should be carried out by the suitably qualified engineer including justifications for assumptions and methodologies for savings in indirect greenhouse emissions.	As design stage plus confirmation of installed technology.

Additional information

Relevant definitions

Energy Technology List (ETL)

The Energy Technology List (ETL) is a list of energy efficient equipment that details the energy efficient criteria for each type of technology, and lists those products in each category that meet them. It has been produced by the UK Government and is annually reviewed by the Department for Business, Energy and Industrial Strategy (BEIS).

Greenhouse gas emissions from operational energy use

These are greenhouse gas emissions that result from the production of energy used to power the refrigeration system's cooling plant. This includes the emissions from the production of grid electricity or an on-site source of energy generation (for example, gas CHP).

Suitably qualified engineer

An individual achieving all the following items can be considered to be 'suitably qualified' for the purposes of this BREEAM issue:

1. Has the authority to make decisions on the final design.
2. Holds a degree or equivalent qualification in building services engineering or a relevant related subject.
3. Has a minimum of five years relevant design experience (within the last seven years). Such experience must clearly demonstrate a practical understanding of factors affecting the design of cold storage and include related CPD.

Other information

None.

Ene 06 Energy efficient transport systems (all buildings)

Number of credits available	Minimum standards
3	No

Aim

To recognise and encourage the specification of energy efficient transport systems.

Assessment criteria

The following is required to demonstrate compliance:

One credit - Energy consumption

1 Where lifts, escalators, or moving walkways (transport types) are specified:
- 1.a An analysis of the transport demand and usage patterns for the building has been carried out to determine the optimum number and size of lifts, escalators, or moving walkways.
- 1.b The energy consumption has been estimated in accordance with ISO 25745 Energy performance of lifts, escalators and moving walks, Part 2: Energy calculation and classification for lifts (elevators) or Part 3: Energy calculation and classification for escalators and moving walks, for one of the following:
  - 1.b.i At least two types of system (for each transport type required); OR
  - 1.b.ii An arrangement of systems (e.g. for lifts, hydraulic, traction, machine room-less lift (MRL)); OR
  - 1.b.iii A system strategy which is 'fit for purpose'.
- 1.c The use of regenerative drives should be considered, subject to the requirements in CN6 on page 196
- 1.d The transport system with the lowest energy consumption is specified.

Two credits - Energy efficient features

2 Criterion 1 is achieved.

Lifts

3 For each lift, the following three energy efficient features are specified:
- 3.a The lifts operate in a standby condition during off-peak periods. For example, the power side of the lift controller and other operating equipment such as lift car lighting, user displays and ventilation fans switch off when the lift has been idle for a prescribed length of time.
- 3.b The lift car lighting and display lighting provides an average lamp efficacy (across all fittings in the car) of greater than 70 lamp lumens per circuit watt.
- 3.c The lift uses a drive controller capable of variable speed, variable-voltage, and variable-frequency (VVVF) control of the drive motor.

4 Where the use of regenerative drives is demonstrated to save energy, they are specified.

Escalators or moving walkways

Each escalator or moving walkway complies with at least one of the following:

5 It is fitted with a load sensing device that synchronises motor output to passenger demand through a variable speed drive.

OR

6 It is fitted with a passenger sensing device for automated operation (auto walk), so the escalator operates in standby mode when there is no passenger demand.

Checklists and tables

None.

Compliance notes

Ref	Terms	Description
Shell and core (non-residential and residential institutions only)		
CN1	Applicable assessment criteria	Shell only: This issue is not applicable. Shell and core: All criteria relevant to the building type and function apply. Refer to Appendix D – Shell and core project assessments on page 409 for a more detailed description of the shell and core assessment options.
Residential - Partially fitted and fully fitted		
CN2	Applicable assessment criteria - Single and multiple dwellings	Both options: All criteria relevant to the building type and function apply. Refer to Appendix E – Applicability of BREEAM New Construction to single and multiple dwellings, partially and fully fitted on page 412 for a more detailed description of residential assessment options.
General		
CN3	Scope of this issue	The criteria relating to lifts apply to any lifting device with a rated speed greater than 0.15 m/s, inclusive of goods lifts, vehicle lifts, and passenger lifts. This means that lifts in single dwellings, or those installed in other low-rise buildings, specifically for the use of persons with impaired mobility are usually excluded from the assessment.
CN4	Transport analysis - Disabled access and goods lifts	The transport analysis can be in the form of a written statement justifying the lift selection for the following conditions: where a single lift is provided in a low rise building for the purpose of providing disabled access only; or where a goods lift is selected based on the size of the goods it is intended to carry.
CN4.1	Transport analysis – Carried out by lift manufacturer	BREEAM recognises that lift manufacturers / suppliers are often engaged to provide such specialist advice. Where the assessor is satisfied that the analysis has been carried out correctly, the analysis can be submitted as compliant evidence. (KBCN0232)
CN5	Building has no lifts, escalators, or moving walkways	This issue will be filtered out where a building contains no lifts, escalators or moving walkways with a rated speed greater than 0.15 m/s. Where only one of the transport systems is present, the two credits can be awarded where the one system is compliant with the relevant criteria.

Ref	Terms	Description
CN6	Lifts - Regenerative drives. See criteria 1.c and 4.	A regenerative drive should only be considered where it produces an energy saving greater than the additional standby energy used to support the drives. Regenerative drives will typically be appropriate for lifts with high travel and high intensity use. However, where it can be demonstrated that this is not financially viable, accounting for payback over the service life of the installation, this option can be discounted.
CN6.1	Lifts - Counterbalancing ratio fixed	The requirement to analyse the counterbalancing ratio can be omitted if the project team can provide a statement confirming that it has been set by the manufacturer due to existing standards and to maximise efficiency. The remaining criteria must be met. (KBCN0327)
CN6.2	Lifts - Extending a lift shaft	Where the scope of works regarding a lift only includes extending the lift shaft to other floors, then assessment of this lift is not appropriate. Where changes are made to the lift system, then assessment is required. Where changes to lift systems are made, these lifts need to be included in the assessment to encourage specification of energy efficient transport systems. (KBCN0802)
CN6.3	Lifts - Evacuation lifts	Evacuation lifts, which will be used during an emergency only, can be excluded from the relevant BREEAM criteria. However, if these lifts are used during the normal operation of the building, then they still need to be assessed. (KBCN0437)
CN6.4	Lifts - New build extension using existing lifts	Where the assessment is only of a new build extension (and not the existing building), lifts present in the existing building fall outside the scope of Ene 06 and do not need to be assessed. The applies only when the lifts are not being renewed or undergoing a major refurbishment. (KBCN0444)

Methodology

None.

Evidence

Criteria	Interim design stage	Final post-construction stage
1	Professional report or study of transport analysis or calculations.	As design stage.

Criteria	Interim design stage	Final post-construction stage
3 – 6	The relevant section or clauses of the building specification or contract AND Manufacturer's product details OR A formal letter of commitment from the system's manufacturer or supplier AND Where the regenerative drive unit is to be excluded as an energy efficient feature, written confirmation from the electricity utility supplier and the design team giving reasons for its exclusion.	Manufacturer's product details. BREEAM Assessor's site inspection report and photographic evidence or as-built drawings.

Additional information

Relevant definitions

Idle condition

A condition when a lift is stationary at a floor following a run before the standby mode is entered (ISO 25745-1: 2012).

Machine room-less lift (MRL)

All equipment is contained in the lift well, not in a separate machine room.

Standby condition - lifts

A condition when a lift is stationary at a floor and may have reduced the power consumption to a lower level set for that particular lift (from ISO 25745-1: 2012). The period between when a lift was last used and when a standby condition is entered is defined in ISO 25745-1 as 5 minutes.

Standby condition - escalators and moving walkways

A condition when the escalator or moving walkway is stationary and powered on, and it can be started by authorised personnel.

Other information

ISO 25745 - Energy performance of lifts, escalators and moving walks

ISO 25745 consists of three parts, under the general title "Energy performance of lifts, escalators and moving walks":

- Part 1: Energy measurement and verification
- Part 2: Energy calculation and classification for lifts (elevators)
- Part 3: Energy calculation and classification for escalators and moving walks.

In Part 1, it has been estimated that approximately 5% of a building's total energy consumption can be attributed to the operation of lifts and a large proportion of this can be attributed to standby mode in many situations.
ISO 25745 Parts 2 and 3 have been prepared in response to the rapidly increasing need to ensure and support the efficient and effective use of energy, providing:

1. A method to estimate energy consumption on a daily and an annual basis for lifts, escalators and moving walks
2. A method for energy classification of new, existing or modernised lifts, escalators and moving walks
3. Guidelines for reducing energy consumption that can be used to support building environmental and energy classification systems.

Ene 07 Energy efficient laboratory systems (non-residential only)

Number of credits available	Minimum standards
Building type dependent	No

Aim

To recognise and encourage laboratory areas that are designed to be energy efficient and minimise the CO_2 emissions associated with their operational energy consumption.

Assessment criteria

This issue is split into three parts:

- Prerequisite
- Design specification (1 credit)
- Best practice energy efficient measures (up to 4 credits, depending on the relative size of the laboratory)

The following is required to demonstrate compliance:

Prerequisite

1 Hea 03 Safe containment in laboratories: Criterion 1 has been achieved.

One credit - Design specification

2 Client engagement is sought through consultation during the preparation of the initial project brief to determine occupant requirements and define laboratory performance criteria. Performance criteria must include as a minimum the following aspects:
- 2.a Description of purpose
- 2.b Occupant or process activities
- 2.c Containment requirements and standards
- 2.d Air change requirements
- 2.e Ventilation system performance and efficiencies
- 2.f Heating and cooling requirements (including heat recovery)
- 2.g Interaction between systems
- 2.h Flexibility and adaptability of laboratory facilities.

3 The design team demonstrates that the energy demand of the laboratory facilities has been minimised as a result of achieving the defined design performance criteria. This has informed the right-sizing (see Relevant definitions on page 202) of the services system equipment (including ventilation supply and extract).

Laboratory containment devices and containment areas (criteria only applicable to buildings containing these facilities)

4 Fume cupboards and other containment devices have a specification that is compliant with criteria 2 and 3 on page 111 of Hea 03 Safe containment in laboratories on page 111, as appropriate to the containment device specification.

5 Where ducted fume cupboards are newly specified or present:
- 5.a Compliance with item A on the facing page in Table 30 on the facing page

5.b The measurement of volume flow rate should be taken in the exhaust duct (at the boundary of the laboratory) to take account of reductions in (inward) volume flow rate from fume cupboard leakage

5.c A reduction in air flow does not compromise the defined performance criteria and therefore does not increase the health and safety risk to future building occupants.

Up to four credits - Best practice energy efficient measures

The following criteria are applicable where the laboratory area accounts for at least 10% of the total building floor area (see Relevant definitions on page 202).

6 Criteria 1 to 5 on the previous page are achieved (or criteria 1 to 4 on the previous page where ducted fume cupboards are not specified).

7 Laboratory plant and systems are designed, specified and installed to promote energy efficiency, demonstrated through compliance with items B on the next page to L on page 201 in Table 30 below (see 7.a below and 7.b below for how credits are awarded):

7.a Up to two credits: the laboratory area (see Relevant definitions on page 202) accounts for at least 10% (but less than 25%) of the total gross internal floor area of the building; OR

7.b Up to four credits: the laboratory area accounts for 25% or more of the total gross internal floor area of the building.

8 The measures implemented must result in a reduction in the total energy consumption of the laboratory of at least 2%. This must be demonstrated by calculations or modelling.

9 The energy efficient measures specified do not compromise the defined performance criteria, and therefore do not increase the health and safety risk to future building occupants.

Checklists and tables

Table 30: Best practice energy efficient measures in laboratories

Ref	Category	Description	Credits [1]
A	Fume cupboard reduced volume flow rates	An average design air flow rate in the fume cupboards specified no greater than 0.16 m³/s per linear metre (internal width) of fume cupboard workspace.	-
Additional measures			

<table>
<tr><th>Ref</th><th>Category</th><th>Description</th><th>Credits [1]</th></tr>
<tr><td>B</td><td>Fan power</td><td>Specification and achievement of best practice fan power figures (as shown below) for all air handling units (AHUs), laboratory extract systems, local extract ventilation, containment area extracts (where applicable), and fume cupboard extracts (where applicable).

<table><tr><th>Laboratory system</th><th>Best practice specific fan power (W/(L/s))</th></tr><tr><td>General laboratory supply air AHU with heating and cooling</td><td>1.5</td></tr><tr><td>General laboratory extract systems</td><td>1.2</td></tr><tr><td>Laboratory local extract ventilation - ducted</td><td>1.0</td></tr><tr><td>Containment area extract, without high efficiency particulate absorption (HEPA) filtration</td><td>1.5</td></tr><tr><td>Containment area extract, with HEPA filtration</td><td>2.5</td></tr><tr><td>Fume cupboard extract</td><td>1.5</td></tr></table></td><td>1</td></tr>
<tr><td>C</td><td>Fume cupboard volume flow rates (further reduction)</td><td>An average design air flow rate of < 0.12 m³/s per linear metre (internal width) of fume cupboard workspace.</td><td>0.5</td></tr>
<tr><td>D</td><td>Grouping or isolation of high filtration or ventilation activities</td><td>Minimisation of room air change rates and overall facility ventilation flows by grouping together or isolating activities and equipment with high filtration or ventilation requirements.</td><td>0.5</td></tr>
<tr><td>E</td><td>Energy recovery - heat</td><td>Heat recovery from exhaust air (where there is no risk of cross-contamination) or via refrigerant or water cooling systems.</td><td>0.5</td></tr>
<tr><td>F</td><td>Energy recovery - cooling</td><td>Cooling recovery via exhaust air heat exchangers (where there is no risk of cross-contamination) or via refrigerant or water cooling systems.</td><td>0.5</td></tr>
<tr><td>G</td><td>Grouping of cooling loads</td><td>Grouping of cooling loads to enable supply efficiencies and thermal transfer.</td><td>0.5</td></tr>
</table>

Ref	Category	Description	Credits [1]
H	Free cooling	Specification of free cooling coils in chillers or dry air coolers related to laboratory-specific activities.	0.5
I	Load responsiveness	Effective matching of supply with demand through modularity, variable speed drives and pumps, and other mechanisms.	0.5
J	Clean rooms	Specification of particle monitoring systems, linked to airflow controls.	0.5
K	Diversity	Achievement of high levels of diversity in central plant sizing and laboratory duct sizing, where compatible with safety.	0.5
L	Room air change rates	Reducing air change rates by matching ventilation airflows to environmental needs and demands of containment devices.	0.5

Notes:
1. Only whole credits can be awarded in this issue. Half credits must be rounded down to the nearest whole number. Therefore, to achieve a credit for items C to L (above) the laboratory must comply with at least two of the items.

Compliance notes

Ref	Terms	Description
Shell and core (non-residential and residential institutions only)		
CN1	Applicable assessment criteria	Both options: All criteria relevant to the building type and function apply. Refer to Appendix D – Shell and core project assessments on page 409 for a more detailed description of the shell and core assessment options.
Residential - Partially fitted and fully fitted		
CN2	Applicable assessment criteria - Single and multiple dwellings	Both options: This issue is not applicable Refer to Appendix E – Applicability of BREEAM New Construction to single and multiple dwellings, partially and fully fitted on page 412 for a more detailed description of residential assessment options.
General		
CN3	Scope of this BREEAM issue	This issue is not applicable for school buildings (primary and secondary level). The laboratory criteria within issue Hea 03 Safe containment in laboratories on page 111 should be followed for assessing laboratories and containment devices in these building types.

Methodology

None.

Evidence

Criteria	Interim design stage	Final post-construction stage
1, 4	Evidence as required for compliance with the relevant Hea 03 Safe containment in laboratories on page 111 criteria.	Evidence as required for compliance with the relevant Hea 03 Safe containment in laboratories on page 111 criteria.
2–3	Agenda or minutes from client consultation meetings. Suitable evidence demonstrating that the design team have considered consultation feedback and any subsequent actions. The relevant section or clauses of the building specification or contract showing defined laboratory facility performance criteria.	BREEAM Assessor's site inspection report and photographic evidence or as-built drawings. Supplier or manufacturers', or design team documentation for as-built specification.
5–9	Drawings, and the relevant section or clauses of the building specification or contract. Modelling results or calculations or manufacturers' information. Formal correspondence from the design team.	As design stage, but for as-built information. BREEAM Assessor's site inspection report and photographic evidence or as-built drawings. A commissioning report or similar demonstrating that the design containment performance and airflows have been achieved..

Additional information

Relevant definitions

Laboratory areas

Laboratory areas are defined as highly serviced (temperature, ventilation, humidity or containment controlled) spaces where physical, biological, chemical processing or testing is carried out. Such areas will have inherently high energy demands. In order to maintain controlled conditions to enable experiments and comply with health and safety standards, typically laboratories:

1. Contain various exhaust and containment devices (such as fume cupboards and microbiological safety cabinets).
2. Are heavily serviced to circulate air and to supply heating, cooling, humidity, and clean air.
3. Often require 24-hour access and failsafe redundant backup systems and uninterrupted power supply or emergency power to enable irreplaceable experiments.

Therefore, for the purpose of assessing this BREEAM issue, the definition of laboratory areas excludes any laboratory support areas such as:

1. Write up or offices
2. Meeting rooms
3. Storage
4. Ancillary and other support areas with lower servicing requirements.

Teaching and other laboratory workshops with a limited amount of fume cupboards or other containment devices, or no energy intensive process equipment specified are excluded, unless the design team can provide evidence that their consumption is at least 50% higher than a typical office due to the laboratory process-related activities. Benchmarks for general offices can be found in Table 30 on page 199 in CIBSE TM46[57] Energy benchmarks. Typically, in buildings where 40% of the floor area is laboratory related, only 10% will actually constitute laboratory areas as per the BREEAM definition. Different types of laboratories have different requirements for HVAC, plug load for small power equipment and access. This can lead to enormous variations in energy and water requirements. The main types of laboratories include.

1. Wet laboratories - where chemicals, drugs or other material or biological matter are tested and analysed requiring water, direct ventilation and specialised piped utilities. They typically include chemical science laboratories. These laboratories require specially designed facilities.
2. Dry laboratories - contain dry stored materials, electronics, or large instruments with few piped services. They typically include engineering or analytical laboratories that may require accurate temperature and humidity control, dust control, and clean power.
3. Microbiological and clinical laboratories - often involve working with infectious agents. They typically require higher levels of primary containment and multiple secondary barriers including specialised ventilation systems to ensure directional air flow, air treatment systems to decontaminate or remove agents from exhaust air, controlled access zones, airlocks as laboratory entrances, or separate buildings or modules to isolate the laboratory.
4. In vivo laboratories - these require highly controlled environments for the care and maintenance of flora and fauna. The facilities are complex, and expensive to build and to operate. Tight environmental control over the facility is required to avoid the introduction of contaminants or pathogens, and prevent the possibility of infectious outbreaks, and avoid the transmission of odours.
5. Teaching laboratories - unique to academic institutes, they require space for teaching equipment, storage space for student belongings and less instrumentation than research labs.
6. Clean rooms - refers to a controlled environment (air quality, temperature and humidity) which prevent contamination and require the regulating of environmental conditions, to facilitate accurate research and production needs. They are typically used in universities for nanotechnology, medical and pharmaceutical research or studies and microelectronics applications.

Right-sizing

Right-sizing principles encourage the use of better estimates in equipment loads from which services equipment is sized in comparison to traditional methods of estimates based on rated data obtained from manufacturers' literature or design assumptions from previous projects. This can result in construction cost savings in addition to life cycle cost benefits, while taking account of the need for appropriate contingency.

Other information

Synergy with BREEAM issue – Reduction of energy use and carbon emissions

This BREEAM issue has been developed to recognise improvements made to new laboratory areas or buildings that are not currently fully recognised in the National Calculation Methodology, used to assess and award credits in Ene 01 Reduction of energy use and carbon emissions on page 150.

Ene 08 Energy efficient equipment

(all buildings)

Number of credits available	Minimum standards
2	No

Aim

To recognise and encourage procurement of energy efficient equipment to ensure optimum performance and energy savings in operation.

Assessment criteria

The following is required to demonstrate compliance:

Two credits

1 Identify energy using equipment that is included within the scope of this issue and estimate its contribution to the total annual equipment energy consumption of the building, assuming a typical or standard specification.

2 Identify the items of equipment and systems that collectively account for a significant proportion of the total annual equipment energy consumption.

3 Demonstrate a meaningful reduction for all equipment that accounts for a significant proportion of the total energy consumption.

Checklists and tables

Table 31: Solutions deemed to comply with the criteria for the reduction of equipment energy load from significantly contributing systems

Ref	Function or equipment	Criteria
A	Small power, plug-in equipment	The following equipment meets the criteria for, or has been awarded with, a rating from a national or international energy efficient equipment scheme: 1. Office equipment on page 209 2. Other small powered equipment 3. Supplementary electric heating. For domestic-scale white goods, the criteria listed in item E on the facing page apply.

Ref	Function or equipment	Criteria
B	Swimming pool	1. Where automatic or semi-automatic pool covers, or 'liquid' pool covers with an automatic dosing system, are fitted to ALL pools, including spa pools and hot tubs (if relevant). 2. The covers envelop the entire pool surface when fully extended. 3. Where the air temperature in the pool hall can be controlled so that it is 1°C above the water temperature.
C	Communal laundry facilities with commercial-sized appliances	At least one of the following can be demonstrated for commercial-sized appliances: 1. Specification of heat recovery from waste water 2. Use of greywater for part of the washing process. This may be recycled from the final rinse and used for the next pre-wash.
D	IT-intensive operating areas	1. Uses a natural ventilation and cooling strategy as standard, with forced ventilation only to be used when the internal temperature exceeds 20°C and active cooling only when the internal temperature exceeds 22°C. 2. There is a mechanism to achieve automatic power down of equipment when not in use, including overnight.
E	Domestic-scale appliances (individual and communal facilities) - see CN3.5	Domestic-scale appliances have the following ratings (or better) under a national or international energy efficient white goods scheme equivalent to the **updated** EU Energy Efficiency Labelling Scheme (March 2021): — Fridges, fridge-freezers: E rating — Washing machines: B rating — Dishwashers: D rating — Washer-dryers and tumble dryers: D rating And for domestic scale air conditioners, the following rating (or better) under a national or international energy efficient white goods scheme equivalent to the **original** EU Energy Efficiency Labelling Scheme — Air conditioners: B rating

Ref	Function or equipment	Criteria
F	Commercial kitchen and catering facilities	The project has incorporated at least two thirds of the energy efficiency measures outlined in the following sections of CIBSE Guide TM50[58] (where relevant to the installation): — Section 8 (Energy controls - specifically controls relevant to appliances) — Section 9 (Drainage and kitchen waste removal) — Section 10 (Water temperatures, taps, faucets and water saving controls) — Section 13 (Appliance specification - not fabrication or utensil specifications) — Section 14 (Refrigeration) — Section 15 (Warewashing: dishwashers and glasswashers) — Section 16 (Cooking appliance selection) Note: Refrigeration for kitchen and catering facilities should be assessed here (not in Ene 05 Energy efficient cold storage on page 188).

Compliance notes

Ref	Terms	Description
Shell and core (non-residential and residential institutions only)		
CN1	Applicable assessment criteria	Both options: This issue is not applicable. Refer to Appendix D – Shell and core project assessments on page 409 for a more detailed description of the shell and core assessment options.
Residential - Partially fitted and fully fitted		
CN2	Applicable assessment criteria - Single dwellings	Partially fitted: This issue is not applicable. Fully fitted: All criteria relevant to the building type and function apply. Refer to Appendix E – Applicability of BREEAM New Construction to single and multiple dwellings, partially and fully fitted on page 412 for a more detailed description of residential assessment options.
CN2.1	Applicable assessment criteria - Multiple dwellings	Partially fitted: This issue is not applicable. Fully fitted: All criteria relevant to the building type and function apply. Refer to Appendix E – Applicability of BREEAM New Construction to single and multiple dwellings, partially and fully fitted on page 412 for a more detailed description of residential assessment options.
General		

Ref	Terms	Description
CN3	Refrigeration equipment	The criteria in Small power, plug-in equipment on page 204 apply to the following refrigeration equipment (where present): 1. Air-cooled condensing units 2. Cellar cooling 3. Commercial service cabinets 4. Curtains or blinds for refrigerated display cabinets 5. Refrigeration compressors 6. Refrigeration system controls 7. Refrigerated display cabinets.
CN3.1	Cold storage	The criteria apply to commercial kitchen refrigeration, but not to other commercial or industrial-sized refrigeration and cold storage systems (which are covered within the scope of Ene 05 Energy efficient cold storage on page 188).
CN3.2	Lifts, escalators and moving walks	This issue does not apply to lifts, escalators and moving walkways. These systems are covered within the scope of Ene 06 Energy efficient transport systems on page 194.
CN3.3	Laboratory systems	This issue does not apply to laboratory ducted fume cupboards. These systems are covered within the scope of Ene 07 Energy efficient laboratory systems on page 198.
CN3.4	Reuse of equipment	Reuse of electrical equipment does not comply by default, as it may not be the most energy efficient option. However, the credit could be awarded if reusing the equipment would be more energy efficient, over its lifetime, than specifying new equipment.
CN3.5	Equivalent ratings schemes for energy efficient white goods	Energy rating certifications other than the EU labelling scheme will be accepted, providing the energy efficiency performance is equivalent to the EU labelling scheme. This can be any internationally recognised energy efficiency labelling scheme for white goods or a national scheme developed for use in the country of assessment, for example: Energy Label (in the EU), Energy Star (in the USA), or The Appliance Energy Rating Scheme (in Australia). A statement confirming that the scheme is nationally recognised and can be regarded as equivalent to the EU labelling scheme is required for use.
CN3.6	Equipment to be provided later by the tenant/occupier	The efficiency of equipment to be provided as part of a subsequent fit-out falls outside the scope of this issue. Likewise, in a fully fitted but speculative office, where an unknown future tenant will be providing, for example, their own computers, these computers are to be excluded from the assessment. (KBCN0609)
CN3.7	Communal laundry facilities – Domestic or commercial washing machines	For multi-residential projects (or other building types containing laundry facilities), the BREEAM assessor should use their judgement to determine whether the appliance is commercial or domestic, and justification of the category selected must be provided. For instance, commercial and domestic sized washing machines could be defined based on load size or power rating. (KBCN0613)

Ref	Terms	Description
CN3.8	Measures in CIBSE TM50 for kitchen and catering facilities	The measures are listed in the section summaries (blue boxes) in the guide. The sections that follow each summary in the Guide are explanations of the measures. Discount any energy efficiency measures which are not applicable to the project or are specifically excluded in the criteria. Many measures in TM50 require consideration of what is the best option or specification so it must be demonstrated that these measures have been considered by the relevant specialist and have informed the design and specification of the catering facilities. (KBCN0663)
CN3.9	No unregulated energy consumption in the building	Where there are no items contributing to equipment energy consumption in the building, these credits will be filtered out. (KBCN00066)
CN3.10	Office equipment – mobile devices	Mobile devices such as smartphones and tablets, which are generally used without connection to an electrical power source, should be excluded from the assessment of the energy efficient equipment issue. (KBCN00041)
CN3.11	Re-used electrical equipment	If it can be demonstrated that such existing electrical appliances meet the criteria for inclusion in the relevant national or international energy efficient equipment schemes, these can be considered compliant. If new equipment is procured in addition to the re-use of the old equipment, the existing equipment may be excluded from this assessment. In these situations the assessor must be satisfied that the new equipment would make a meaningful reduction to overall unregulated energy consumption. (KBCN0325)

Methodology

Estimating annual equipment energy consumption

A method should be used that estimates actual energy use, based on expected equipment loads and hours of operation. The energy uses may be estimated by using simple hand calculations, benchmark data or by the methods described in CIBSE TM54 Evaluating operational energy performance of buildings at the design stage[59].

Estimating a significant proportion of annual equipment energy consumption

This methodology is used to estimate which energy uses make up a significant proportion of the equipment energy uses and so detailed calculations are not required. The approach should focus on identifying the larger energy uses that should be included and the small energy uses that can be excluded. As a guide, energy uses making up at least 90% of the estimated total annual energy consumption should typically be included.

Calculating a meaningful reduction in energy consumption

For equipment that makes up a significant proportion of the annual equipment energy consumption, demonstrate that a meaningful reduction in energy consumption has been achieved. Equipment types which met the criteria listed in Table 31 on page 204 are deemed to achieve a meaningful reduction without further justification or calculation.

For equipment types not listed in Table 31, or where alternative solutions are provided for equipment listed in Table 31, calculations must be provided that demonstrate that when combined these lead to a 5% reduction in energy consumption compared to equipment with typical or standard specifications.

Evidence

Criteria	Interim design stage	Final post-construction stage
All	The following where appropriate: — The relevant section or clauses of the building specification or contract. — Manufacturers' product details. — Documentation confirming compliance with the relevant scheme or standard outlined in the criteria. — Design drawings or calculations.	The following where appropriate: — BREEAM Assessor's site inspection report and photographic evidence. — Manufacturers' product details. — Documentation confirming the installed equipment complies with the relevant scheme or standard outlined in the criteria.
3 (for commercial kitchen and catering facilities using TM50)	A letter or document to be produced confirming how each measure has been considered along with justification for how this has informed the specification. Where the measures require training , then relevant training materials could be used as evidence.	Any type of general evidence deemed appropriate by the assessor would be sufficient to confirm the specified measures have been installed

Additional information

Relevant definitions

IT-intensive areas

These include computer areas where more than one computer per 5m² is provided, e.g. training suites, design studios, libraries' IT areas and other areas with a high density of computing devices.

Office equipment

Computer monitors, desktop computers, scanners, photocopiers, printers, workstations etc.

Other energy efficient equipment

For the purpose of this BREEAM issue, the term 'other energy efficient equipment' refers to equipment that is not covered under Ene 03 (external lighting), Ene 05 (cold storage), Ene 06 (transport systems) and Ene 07 (laboratory systems).

The following is a non-exhaustive list of some types of equipment that are covered under this issue:

- Small power loads and plug in equipment
- Domestic scale refrigeration, washing, and drying appliances
- Commercial kitchens
- Swimming pools
- IT-intensive areas
- Communal laundries

White goods and small power equipment

Domestic appliances, for example washing machines, fridges, freezers, fridge-freezers, tumble dryers, washer-dryers, air movement fans or heaters, etc.

Ene 09 Drying space

Not assessed as a standalone issue within BREEAM International New Construction.

Ene 10 Flexible demand side response

(all buildings)

Number of credits available	Minimum standards
1 exemplary credit	No

Aim

To recognise and encourage flexible demand side response capability for electricity. Reducing carbon emissions by enabling electricity demand profiles to better match the availability of renewable electricity generation sources.

Assessment criteria

The following is required to demonstrate compliance:

Exemplary level criteria

The following outlines the exemplary level criteria to achieve one exemplary credit for this BREEAM issue:

One exemplary credit

1 The building is fitted with at least one smart appliance or smart control system that is able to modify the operation of the appliance or system in response to external signals from electricity suppliers.

OR

2 The building incorporates electricity or hot water storage facilities that are able to modify their charging or discharging cycles in response to external signals from electricity suppliers. This energy storage can be at the building level or across multiple buildings.

Checklists and tables

None.

Compliance notes

Ref	Terms	Description
Shell and core (non-residential and residential institution only)		
CN1	Applicable assessment criteria	Both options: All criteria relevant to the building type and function apply. Refer to Appendix D – Shell and core project assessments on page 409 of this Scheme Document for further description of the above options.
Residential - Partially fitted and fully fitted		
CN2	Applicable assessment criteria - Single and multiple dwellings	Both options: All criteria relevant to the building type and function apply. Refer to Appendix E – Applicability of BREEAM New Construction to single and multiple dwellings, partially and fully fitted on page 412 for a more detailed description of residential assessment options.
General		
CN3	Single building assessments on larger developments or campuses (and extensions to existing buildings)	Where the building being assessed forms part of a larger development (or is an extension to an existing building) containing common areas and other buildings, the scope of the flexible demand side response criteria applies only to external new and existing elements within the construction zone of the assessed building.

Methodology

None.

Evidence

Criteria	Interim design stage	Final post-construction stage
All	The relevant section or clauses of the building specification or contract. Design drawings.	BREEAM Assessor's site inspection report and photographic evidence or as-built drawings. Manufacturers' product details.

Additional information

Relevant definitions

Construction zone

For the purpose of this issue the construction zone is defined as the site which is being developed for the BREEAM-assessed building and its external site areas, i.e. the scope of the new works.

Energy storage

For the purpose of this issue energy storage is defined as systems that store energy during times where there is little demand for energy or an over production of energy, which can then be used later where there is high demand for energy. To qualify for this issue, these systems must be equipped to receive signals from energy suppliers to automatically start or stop storing energy.

Examples of energy storage include, but are not limited to:

- Electric vehicle charging points
- Large scale battery storage
- Liquified air storage systems

Smart appliances

For the purpose of this issue smart appliances are defined as appliances that automatically regulate their energy consumption based on the signals they receive from energy suppliers, also known as demand side response. An example of how they can do this is by reducing their energy demand at peak times.

Examples of smart appliances include, but are not limited to:

- Smart cold storage systems (for example, refrigerators or freezers)
- Smart washing machines
- Smart dish washers

Other information

None.

Transport

Summary

This category encourages better access to sustainable means of transport for building users. Issues in this section focus on the accessibility of public transport and other alternative transport solutions (cyclist facilities, provision of amenities local to a building) that support reductions in car journeys and, therefore, congestion and CO_2 emissions over the life of the building.

Category summary table

Issue	Credits	Credit summary
Tra 01 Public transport accessibility	Up to 5 credits	— Recognition of developments in close proximity to good public transport networks, thereby helping to reduce transport-related pollution and congestion.
Tra 02 Proximity to amenities	Up to 2 credits	— Recognition of developments in close proximity of, and accessible to, local amenities which are likely to be frequently required and used by building occupants.
Tra 03a Alternative modes of transport	Up to 2 credits	— Provision of facilities to encourage travel using low carbon modes of transport and to minimise individual journeys.
Tra 03b Alternative modes of transport		
Tra 04 Maximum car parking capacity	Up to 2 credits	— Recognition of developments that limit car parking capacity.
Tra 05 Travel plan	1	— To promote sustainable reductions in transport burdens by undertaking a site specific travel assessment or statement and developing a travel plan based on the needs of the particular site.
Tra 06 Home office	1	— To provide necessary space and services to be able to work from home and reduce the need to commute to work.

Tra 01 Public transport accessibility

(all buildings)

Number of credits available	Minimum standards
Building type dependent	No

Aim

To recognise and encourage development in proximity of good public transport networks, thereby helping to reduce transport-related pollution and congestion.

Assessment criteria

This issue is split into two parts:

- Accessibility Index (up to 5 credits - building type dependent)
- Dedicated bus service (1 credit)

The following is required to demonstrate compliance:

Up to five credits - Accessibility Index

1 The public transport Accessibility Index (AI) for the assessed building is calculated and BREEAM credits awarded in accordance with the building types, AI benchmarks and BREEAM credits in Table 32 on the next page

2 The Accessibility Index is determined by entering the following information in to the BREEAM Tra 01 calculator:
- 2.a The distance (m) from the main building entrance to each compliant public transport node
- 2.b The public transport types serving the compliant node, e.g. bus or rail
- 2.c The average number of services stopping per hour at each compliant node during the operating hours of the building for a typical day (see compliance notes and Table 33 on page 220

OR

One credit - Dedicated bus service

3 For buildings with a fixed shift pattern, i.e. where building users will predominantly arrive or depart at set times, one credit can be awarded where the building occupier provides, or commits to providing a dedicated bus service to and from the building at the beginning and end of each shift or day.

This credit is only available in cases where a development is unable to achieve any of the available credits using the Accessibility Index criteria (i.e. its location has a low public transport Accessibility Index).

Checklists and tables

Table 32: Credits available for each building type relating to the public transport Accessibility Index (AI) score

Accessibility Index	≥ 0.5	≥ 1	≥ 2	≥ 4	≥ 8	≥ 10	≥ 12	≥ 18
Building type	**BREEAM credits available**							
Offices, Industrial, Long term residential institutions, Other building - Staffed	-	-	1	2	3	-	-	-
Preschool, School	-	-	1	2	3	-	-	-
Retail, Higher education - Off campus, Hotels and short term residential institutions, Other building - Visitors	-	-	1	2	3	3	4	5
Higher education - On campus	-	-	1	2	3	4	5	-
Rural location sensitive buildings, Other buildings - Rural,	-	-	1	2	-	-	-	-
Residential dwellings	1	2	3	4	-	-	-	-

Compliance notes

Ref	Terms	Description
Shell and core (non-residential and residential institutions only)		
CN1	Applicable assessment criteria	Both options: All criteria relevant to the building type and function apply. Refer to Appendix D – Shell and core project assessments on page 409 for a more detailed description of the shell and core assessment options.
Residential - Partially fitted and fully fitted		
CN2	Applicable assessment criteria - Single and multiple dwellings	Both options: All criteria relevant to the building type and function apply. Refer to Appendix E – Applicability of BREEAM New Construction to single and multiple dwellings, partially and fully fitted on page 412 for a more detailed description of residential assessment options.
General		

Ref	Terms	Description
CN3	Campus developments. See criterion 1 on page 215	Where 80% or more of the buildings on a campus style development, e.g. further or higher education sites, are within 1000m of the campus's main entrance, then the campus main entrance can be used as the reference point for the assessment of distance to compliant public transport nodes for this issue. The campus main entrance is that which is accessed by the majority of the assessed building's staff or students or visitors. A site may have more than one main entrance which between them account for the majority of staff, students and visitors that access the site. In such a case either entrance can be used as the basis for the calculation. Where less than 80% of the buildings on the campus development are within 1000m of the campus main entrance, the assessed building's main entrance must be used as the reference point for the assessment of distance to compliant public transport nodes for this issue. This rule implies that for large campus developments, when distances are too great to be comfortably covered by walking, the needs of the building users would be served better by locating the public transport nodes inside or on the periphery of the campus. Where the building is not part of a centralised campus then its main entrance must be used as the reference point for the assessment of this issue.
CN3.1	Dedicated bus services. See criterion 3 on page 215.	The credit for the provision of a dedicated bus service is available for any building type with a fixed shift pattern; examples could include schools, offices, retail, factories etc. The bus must provide transfer to the local population centre, public transport interchange or be a door-to-door service. The credit is provided as an alternative, where the AI of the building is too low to achieve any BREEAM credits, but where the building users will have the option of a dedicated bus service. However, a dedicated bus service can be included in the public transport Accessibility Index calculation as a means of contributing towards achieving credits via this method (regardless of the shift pattern). Where this is the case, the distance from the main building entrance to the drop-off or pick-up point (the transport node) of the service should be used.
CN3.2	Phased developments. See criterion 3 on page 215.	In the case of a large phased development where new transport facilities will be provided, but at a later stage than the building being assessed, the assessment can consider such facilities provided that a commitment has been made to provide transport facilities within the shortest of the following periods: 1. The transport facilities will be available for use by the time 25% of all phases have been completed and are ready for occupation OR 2. The transport facilities will be available for use within 25% of the total build time for the phase in which the assessed building forms a part, measured from the completion date of that phase. The most appropriate rule for the development in question must be used, ensuring that the time building users have to wait before having use of the transport facilities is as short as possible. Where the transport facilities will not be available for use within a period of five years from occupation of the building, they cannot be considered for determining compliance with the BREEAM criteria.

Methodology

Calculating the average number of services

For the purpose of the calculation, the frequency of public transport is the average number of services per hour. This is calculated by determining the number of stopping services at the node during the peak arrival or departure times for the building or the building's typical day's operating hours (see definition 'operating hours'), divided by the number of hours within that period. For example: the average number of services for an assessment of a building that operates between 08:00 - 19:00 hrs (11 hours) and is within proximity of a bus stop with 35 stopping services during this period is 3.2 (equivalent to an average service frequency of approximately 20 minutes).

Multiple services

Services that operate from more than one node within proximity of the building, i.e. two separate bus stops served by the same bus, must be considered only once; at the node in closest proximity to the building. Different services at the same node can be considered as separate.

Bidirectional routes

Routes will be bidirectional; however for the purpose of calculating the index, consider only the direction with the highest frequency.

Evidence

Criteria	Interim design stage	Final post-construction stage
1, 2	Scale map highlighting the location of the building and all public transport nodes in proximity of the building. Timetables for each service at each public transport node considered. The calculated Accessibility Index below for the building. Where appropriate, information about the dedicated bus service. A completed copy of the Tra 01 calculator.	As design stage. Where relying on a calculation carried out at the design stage to demonstrate compliance post-construction, if the period between the design and post-construction stage reporting is greater than 12 months, then the AI must be recalculated using up-to-date public transport timetable information. As interim design stage.
3	A formal letter from the future building occupier confirming provision of and details for the dedicated bus services.	As interim design stage.

Additional information

Relevant definitions

Accessibility Index

A measure that provides an indicator of the accessibility and density of the public transport network at a point of interest (in the case of BREEAM, a building). The index is influenced by the proximity and diversity of the public transport network and the level or frequency of service at the accessible node. For example, a building that has a single public transport node 500m from its main building entrance with one service stopping every 15 minutes, i.e. four services per hour on average, will score an AI of approximately 1.90.

Alternatively, the same node with one service every 15 minutes, but 300m from the building entrance will achieve an AI of 2.26. The same node with two services stopping every 15 minutes will score an AI of 2.85. The greater the number of compliant nodes, services and their proximity to the building, the higher the AI.

Additional building type classifications

Higher education

Education that continues beyond the compulsory level, e.g. colleges and universities.

Higher education - Off campus

Higher education buildings located on a campus where less than 25% of students are resident on the campus or within 1km radius from the campus main entrance.

Higher education - On campus

Higher education buildings located on a campus where 25% or more of the students are resident on the campus or within 1km radius from the campus's main entrance.

Other building - Staffed

A building predominantly occupied by staff or employees with occasional business related visitors.

Other building - Visitors

A building occupied by a number of core staff or employees with a larger number of consistently frequent visitors or users (either resident or non-resident).

Other building - Rural

Building types specifically required to be located rurally as a result of their function, i.e. a building which would never be located within an urban area, e.g. a national park visitor centre (see definition of rural and rural location sensitive buildings location).

BREEAM Tra 01 Calculator tool

A spreadsheet-based calculator used to determine the Accessibility Index for the assessed building and the number of BREEAM credits achieved.

Compliant transport node

A compliant node includes any bus service with a stop within 650m and any railway station within 1000m of the assessed building's main entrance, measured via a safe pedestrian route (not 'as the crow flies'). The service stopping at each node must provide transport from, or onward travel to, either an urban centre, major transport node or a community focal point, e.g. doctor's surgery, library, school or village centre. Only local services should be assessed and any national public transport services should be excluded from the analysis, unless such a service can be said to provide a local commuter service.

Main building entrance

The main building entrance is the entrance to the assessed building which is directly connected to the main building reception, circulation routes, lifts or stairs and is available to the majority of the building's staff and visitors on arrival. It is not the site entrance (unless the site entrance is also the building entrance, e.g. building with a boundary on a public highway).

Operating hours

BREEAM seeks to define the building's accessibility to the public transport network for the period during which the majority of building users will travel to and from the building. In most cases the normal operating hours of the building can be used. Where shift patterns see the majority of building users (over 80%) arriving or leaving during a certain period, for example an office building where the majority of office workers arrive between 8.00-10.00, then that period can be used as an alternative to the operating hours of the building. This accounts for some building types that operate a 24-hour day and on a shift work basis. During what typically would be deemed unsociable hours, and therefore periods where there is little if any public transport operating, such periods are not required to be accounted for in the assessment of this issue. Where the assessed building operates on a 24-hour basis or the operating hours are unknown at the time of assessment, then refer to and use the table of default operating hours, which can be found in the additional information section of this issue.

Rural location (Urban location)

A rural location is defined in this context as a site clearly not within or on the boundary of a small, medium or large urban cover. An urban cover will have a population of 3000 people or more, located within a tract of continuously built-up urban land extending 20 hectares or more. Therefore, the definition of rural includes village locations, green field sites or small urban centres with a population of less 3000 people within a tract of land no greater than 20 hectares. Such locations will most likely be on a local bus route to larger urban areas or other local towns and may have local shops and other facilities.

Rural location sensitive buildings

This definition includes any of the building types (listed below) where there is a demonstrable social or economic need from a rural population for the service or demand, which the new building is intended to meet; and therefore locating the building at an alternative site which could have higher public transport accessibility levels, i.e. within an urbanised area, is unfeasible. The following building types are examples of those that may fall into this category.

1. Offices where providing services to the local community
2. Industrial where providing services to the local community
3. Retail where providing services to the local community
4. Preschool, primary and secondary school where providing services to the local community
5. Residential dwellings where providing accommodation to the local community.

Typical day

The typical day is that which represents the period when travel to and from the building by its users and visitors will be at its highest. For most buildings this should be taken as a midweek day. In choosing a typical day the assessor should check that timetabled information for that day is, within reason, representative of the public transport provision for the entire operating week (excluding Sundays).

Other information

Table 33: Default hours of operation by building type for a typical day

Building type	Default hours
Commercial	08:00 - 19:00
Preschool, school	07:30 -10:00,15:00 - 17:30
University, Higher education	08:00 - 19:00
Retail: Shopping centre	09:00 - 19:00
Retail: Supermarket	08:00 - 22:00
Retail: Service provider	08:00 - 18:00
Retail: Convenience store	07:00 - 22:00
Retail: DIY or retail park	08:00 - 20:00
Retail: shop	08:30 - 17:30
Residential dwellings and residential institutions	08:00 - 19:00
Hotel	08:00 - 19:00

Building type	Default hours
24-hour use building	07:00 - 20:00
Note: These hours are provided as a guideline: differing hours can be used, where justified by the assessor, as a result of regional or national culture, customs or routine.	

Tra 02 Proximity to amenities

(all buildings)

Number of credits available	Minimum standards
Building type dependent	No

Aim

To encourage and reward a building location that facilitates easy access to local services and so reduces the environmental, social and economic impacts resulting from multiple or extended building user journeys, including transport-related emissions and traffic congestion.

Assessment criteria

The following is required to demonstrate compliance:

Up to two credits

1 All building types, except Type 6, must be located within the stated proximity of at least two accessible core amenities ('C' in Table 34 below).

2 The remaining number of amenities required, in Table 34 below, must be met using any other applicable amenities (including any remaining core amenities).

Checklists and tables

Table 34: Credits available for Tra 02 for different building types

Criteria	Building type					
	Type 1	Type 2	Type 3	Type 5 (Two credits available)		Type 6
No. of BREEAM credits	1	1	1	1	1	1
No. of amenities required	3	3	4	4	7	2
Proximity (metres)	500	500	500	500	1000	500
Appropriate food outlet	C	C	C	C	C	✔
Access to cash	C	C	C	C	C	✔

Criteria	Building type					
	Type 1	Type 2	Type 3	Type 5 (Two credits available)		Type 6
Access to a recreation or leisure facility for fitness or sports	C	C	C	✔	✔	✔
Access to an outdoor open space (public or private, suitably sized and accessible to building users)	✔	✔	✔	C	C	✔
Publicly available postal facility	✔	✔	✔	✔	✔	✔
Community facility	✔	✔	✔	✔	✔	✔
Over the counter services associated with a pharmacy	✔	✔	✔	✔	✔	✔
Public sector doctor's surgery or general medical centre	-	-	✔	✔	✔	✔
Child care facility or school	✔	-	✔	✔	✔	✔

Key:
C - Core amenity for building type
✔ - Amenity relevant to building type.

Building types:
Type 1: Offices, retail, industrial
Type 2: Preschool, schools
Type 3: Higher education and university
Type 4: Healthcare (requires a bespoke assessment)
Type 5: Residential dwellings and residential institutions - long term stay (two credits are available and each can be awarded independently of the other)
Type 6: Hotels, residential institutions - short term stay, and other non-standard buildings

Compliance notes

Ref	Terms	Description
Shell and core (non-residential and residential institutions only)		

Ref	Terms	Description
CN1	Applicable assessment criteria	Both options: All criteria relevant to the building type and function apply. Refer to Appendix D – Shell and core project assessments on page 409 for a more detailed description of the shell and core assessment options.
Residential - Partially fitted and fully fitted		
CN2	Applicable assessment criteria - Single and multiple dwellings	Both options: All criteria relevant to the building type and function apply. Refer to Appendix E – Applicability of BREEAM New Construction to single and multiple dwellings, partially and fully fitted on page 412 for a more detailed description of residential assessment options.
General		
CN3	Collective amenities	One type of amenity may also exist within or as part of other types of amenities, e.g. a grocery store in a petrol station, cash point or pharmacy in a supermarket etc. It is not a requirement of this issue that each amenity is 'standalone'.
CN3.1	Amenities within the assessed building or on site	An amenity within the building or on the same site as the proposed development, e.g. where the assessed building is part of a campus, retail or business park or centre, complies with the assessment criteria.
CN3.2	Phased developments	The guidance provided in BREEAM issue Tra 01 Public transport accessibility on page 215 concerning phased developments also applies to this issue.

Methodology

None.

Evidence

Criteria	Interim design stage	Final post-construction stage
All	Marked-up site plan or map highlighting: — Location of assessed building — Location and type of amenities — The route to the amenities — Plan or map scale.	Assessor's building or site inspection and photographic evidence confirming: — The existence of the local amenities — The route and distance to the amenities.

Criteria	Interim design stage	Final post-construction stage
All	Where the amenities do not currently exist, but are due to be developed, a letter from the client or developer confirming: — The location and type of amenities to be provided — The timescale for development of the amenities.	Evidence as outlined at the design stage of assessment OR As above where amenities developed, or under development at the time of post-construction review or assessment.

Additional information

Relevant definitions

Accessible amenities

Amenities (as listed) that are within the required proximity (distance in metres) of the building and accessible via safe pedestrian routes, e.g. pavements or paths and safe crossing points or, where provided, dedicated pedestrian crossing points. The distance should not be measured in a straight line.

Access to an outdoor open space (public or private, suitably sized and accessible to building users)

A space that enables building users to take an appropriate break from internal building activities, for example, an office building would benefit from a space to sit outside and have lunch. These spaces will need to be suitably sized to ensure that the space supports a reasonable number of building users associated with the project and should not form a part of the public highway.

Access to a recreation or leisure facility

A facility that will allow building users to exercise and maintain a healthy lifestyle. This could include a local leisure centre, tennis courts, an on site gym or, for a school, a local playground.

Appropriate food outlet

A means of accessing a food supply that is affordable to the majority of the building's users, as well as being appropriate for their day-to-day needs. For example, a small office building would benefit from having a small shop selling sandwiches or snacks, a residential dwelling and a residential institution would benefit from having a restaurant in the local area.

Child care or school

The intention of this amenity is to provide child support for potential building users; this could include a nursery, child minding facilities or a school local to the development. A school cannot be considered an amenity to a BREEAM assessment of the same school.

Community facility

An internal space that is inclusive to the majority of building users who will occupy the assessed building or development. The facility will serve to facilitate community activities for the assessed building and its users. For example, for a residential dwelling or a residential institution this could be a community hall or for an office building, a public house.

Other information

None.

Tra 03a Alternative modes of transport (non-residential, plus residential institutions)

For residential buildings, see Tra 03b Alternative modes of transport on page 235.

Number of credits available	Minimum standards
2	No

Aim

To provide facilities which encourage building users to travel using low carbon modes of transport and to minimise individual journeys.

Assessment criteria

The following is required to demonstrate compliance:

Up to two credits

One of the following options has been implemented:

Option	Criteria	Applicable building types	Credits
1	1 During the preparation of the brief the design team has consulted with the local authority on the state of the local cycling network and how the development could contribute to improving it. 2 One proposition has been chosen in agreement with the local authority and implemented. This proposition must be additional to what would have been done by the local authority without the support from the project and must have a significant impact on the local cycling network.	All	2
2	3 Negotiations with local bus companies have resulted in an increase of the local service provision in the development's local area. 4 This increase in public transport service has improved the existing AI by at least 1.00 (see Tra 01 Public transport accessibility on page 215).	All	2

Option	Criteria	Applicable building types	Credits
3	5 Electric recharging stations have been provided for at least 3% of the total car parking capacity for the building. 6 The design team can demonstrate electric vehicles using these charging points will have lower CO_2 emissions than their petrol or diesel counterparts.	All	2
4	7 A car sharing group or facility has been set up to facilitate and encourage building users to sign up to a car sharing scheme. 8 Marketing material has been developed to help raise awareness of the system and will be communicated to the tenants where applicable. 9 Priority spaces for car sharers are provided for at least 5% of the total car parking capacity for the building. 10 Priority spaces are located in the nearest available spaces in the nearest available parking area to the main building entrance on site.	All	2
5	11 Compliant cycle storage spaces that meet the minimum levels set out in Table 35 on the next page (see Checklists and tables on the next page) are installed.	All	1
	12 Criterion 11 above is achieved. 13 At least two of the following compliant facilities must be provided for the building users: 13.a Compliant showers 13.b Compliant changing facilities and lockers for clothes 13.c Compliant drying space for wet clothes.	Office, industrial, preschool, school, higher education, university, other building type 1 and 2, retail, hotel, other building type 3	1

Exemplary level criteria

The following outlines the exemplary level criteria to achieve an innovation credit for this BREEAM issue.

6. Two of the options above have been fully implemented.

Checklists and tables

Table 35: Cycle storage criteria for each building type

Building type	No. spaces per unit of measure	Unit of measure	Notes
Commercial			
Offices, Industrial	1	10 staff	
Retail			
Large retail	1	10 staff	The number of staff refers to the maximum number of employees working in the building at any time or shift. Both staff and customer cycle storage spaces must be provided in order to meet the criteria. Although they do not need to be separate, this is encouraged. A minimum of 10 customer cycle spaces is required. Where at least 50 customer cycle storage spaces are provided, this will comply with the criteria for the customer cycle spaces.
	1	20 public car parking spaces	
Small retail	10	Total	The spaces must be publicly accessible within the proximity of a main building entrance. Compliant cyclist facilities are intended for staff only, i.e. it is not a requirement of compliance to provide facilities for customers.
Education			
Preschool	1	10 staff	
Primary school	5	Per class in year group	For example: where a primary school has been designed to accommodate three classes per year, a total of 15 compliant cycle storage spaces are provided for the whole school. Where there are varying numbers of forms or classes per year, the calculation must be based on the year with the greatest number of classes or forms.
Secondary schools and higher education	1	10 staff and pupils or students total	Student numbers must account for both under- and post-graduates, as well as PhD students and post-doctorates.
Residential institutions			

Student residences	1	10 staff	The requirement is subject to a minimum of one compliant space being provided.
	1	2 residents	
Sheltered housing, care homes, supported living facility*	1	10 staff	* Or spaces specified in accordance with the number required as identified by the likely resident profile. Where the resident profile is not the elderly or physically disabled or impaired then, where appropriate, the requirement for wheelchair or electric buggy spaces should be changed to compliant cycle spaces.
	1 compliant wheelchair or electric buggy storage space	10 residents*	
Other buildings			
Other building - Staffed*	Use the criteria defined for office buildings.		
Other building - Visitors*	1	10 staff	
	1	10 visitors or beds	
Other buildings - Rural*	1	20 staff	A single credit can be awarded where spaces for staff only are provided as well as the appropriate compliant cyclist facilities. The compliance note allowing a reduction in the cyclist provision in rural locations has been accounted for in the unit of measure for this transport type. It should not therefore be applied again.
	1	20 building visitors or beds	

*See relevant definitions in the BREEAM issue Tra 01 Public transport accessibility on page 215 for classification of other buildings - Staffed, Visitors and Rural.

Compliance notes

Ref	Terms	Description
Shell and core (non-residential and residential institutions only)		
CN1	Applicable assessment options	Both options: All criteria relevant to the building type and function apply. Refer to Appendix D – Shell and core project assessments on page 409 for a more detailed description of the shell and core assessment options.
Residential - Partially fitted and fully fitted		

Ref	Terms	Description
CN2	Applicable assessment criteria - Single and multiple dwellings	Both options: This issue is not applicable to residential dwellings. Refer to Appendix E – Applicability of BREEAM New Construction to single and multiple dwellings, partially and fully fitted on page 412 for a more detailed description of residential assessment options.
General		
CN3	Number of building occupants unknown	If it is not possible to confirm the number of building occupants commuting to the development, possibly due to the speculative nature of the building, then the default occupancy rates given in the table in the Additional information section of BREEAM issue Tra 04 Maximum car parking capacity on page 240 can be used to help determine a default number of users. Alternatively, the number of building occupants in an existing development of similar type and size can be used (the assessor needs to justify or validate the number used in their certification report).
CN3.1	Building types	Please see BREEAM issue Tra 01 Public transport accessibility on page 215 to determine the building type. If assessing a bespoke building, please see the bespoke criteria appendix for confirmation.
CN3.2	More onerous requirements	Where local authorities require more onerous requirements than BREEAM (i.e. number of electric recharging stations or cycle spaces), these must be met in order to award the credits.
CN3.3	Existing compliant facilities and extensions to existing buildings	For assessments of new buildings on an existing site, where there are existing compliant facilities, such facilities can be assessed against the requirements of this issue. The number of existing compliant facilities must be large enough to cater for the building users of the assessed building, in addition to the users from any existing buildings.
CN3.4	Building locations with a high level of public transport accessibility	For sites where at least 50% of the available credits for BREEAM issue Tra 01 Public transport accessibility on page 215 have been awarded (rounded to the nearest whole credit), the number of compliant cycle spaces can be reduced by 50%. This reduction will also reduce the requirement for compliant shower or lockers by the same margin.

Ref	Terms	Description
CN3.5	Public bicycle sharing systems	Bicycle sharing systems are increasingly popular and diverse systems that have appeared over the past few years in major cities whereby a number of bicycles are made available for shared use among people who do not own a bicycle. The central concept of many of the systems is free or affordable access to bicycles for city transport in order to reduce the use of automobiles for short trips inside the city thereby diminishing traffic congestion, noise and air pollution. Up to 50% of the BREEAM cycle spaces requirement may be provided by a public bicycle sharing system where it complies with the following: 1. The programme is implemented by the municipality or through a public–private partnership 2. The system must be open to casual users who wish to use them for one-way rides to work, education or shopping centres 3. Bicycles are available at unattended urban locations; and they operate in a manner that could be seen as 'bicycle transit' 4. Service terminals must be available throughout the city 5. The average distance between service terminals is 500m maximum in inner city areas 6. A service terminal is available within 500m of the main building entrance 7. The bicycle terminals do not need to comply with the design requirements listed in the definition of Compliant cycle storage on page 234. The number of compliant facilities is calculated based on the total number of cycle spaces required. For retail projects, public bicycle spaces can also count towards the number of customer cycle spaces required.
CN3.6	Rural locations	For sites in rural locations, where the average building user commuting distances are likely to be greater than 16 km, the number of compliant cycle spaces can be reduced by 50%. This reduction will also reduce the requirement for compliant showers and lockers by the same margin. A 50% reduction in this context cannot be applied in addition to either the 50% reduction due to the building's Public Transport Accessibility level (as described in CN3.4 on the previous page). A rural location is defined in BREEAM issue Tra 01 Public transport accessibility on page 215
CN3.7	Minimum number of facilities	Where more than the minimum number of compliant cycle spaces is provided, it is not necessary to also provide more than the minimum number of showers or lockers or changing facilities.
Building type specific		
CN4	Hotel	Where the term 'building visitors' is used this does not include guests staying at the hotel. However, it would include visitors to the conference facilities or restaurant or gym, etc. who are not staying in the hotel (where present).

Methodology

Sliding scale of compliance

To recognise the increased confidence in availability that occurs where there is larger scale provision of facilities, it is acceptable to reduce the provision requirement for building users by increasing the standard unit of measure (defined in Table 35 on page 228

1. For buildings with more than 200 users but less than 300, the unit of measure can be increased by a ratio of 1.5.
2. For buildings with more than 300 users but less than 400, the unit of measure can be increased by a ratio of 2.
3. For buildings with more than 400 users, the unit of measure can be increased by a ratio of 2.5.

The calculation starts from the first 200 building users, with no ratio, and keeps going considering the ratio only for the remaining building users.

For example, an office building with 800 users would be required to provide the following number of cycle storage spaces:

- 1–200 users @ 1 space per 10 users = 20 spaces PLUS
- 201–300 users @ 1 space per 15 users (standard unit of measure x 1.5) = 7 spaces PLUS
- 301–400 users @ 1 space per 20 users (standard unit of measure x 2) = 5 spaces PLUS
- 401+ users @ 1 space per 25 users (standard unit of measure x 2.5) = 16 spaces
- Total compliant cycle storage spaces required = 48 spaces.

The sliding scale of compliance does not apply to the following building types: small and large retail, primary schools, and residential institutions.

Minimum cycle storage provision

Where the calculated number of required cycle storage spaces is less than four, total provision should be based on the lower of the following:

1. A minimum of four compliant storage spaces must be provided OR
2. One space per user (staff and where appropriate other user groups).

Provision of cycle storage and facilities on site with multiple buildings

Where a new or infill building is constructed on an existing site, or multiple new buildings are to be constructed on the same site, compliance with this issue may be assessed based on the standalone building or on a site-wide basis. How this is determined depends on the configuration of the proposed cycle storage, cycle facilities and the interpretation and justification of the assessor.

Standalone approach

Where cycle storage and associated facilities are being provided for the assessed building only, the following applies:

Cyclist storage:

- The number of cycle storage spaces is compliant based on the number of users in the assessed building.
- All storage spaces provided must be BREEAM compliant and these must be located within, or in close proximity to the assessed building. It is clear from access arrangements, demarcation and positioning that the cycle storage provided is clearly associated with the assessed building only.
- The sliding scale of compliance can be applied when determining the number of storage spaces required.

Cyclist facilities:

- All new and existing facilities may be included provided they are BREEAM compliant.
- Facilities should be located within the assessed building, or in an accessible adjacent building and for the sole use of the assessed building's users.

Site-wide approach

Where cycle storage and associated facilities are provided and these would be accessible to all users of the entire site, or where there is a distinct group of local buildings within a site that would share facilities, the following applies:

Cyclist storage:

- The number of cycle storage spaces is compliant based on the number of users on site or within a group of local buildings.
- All new storage spaces must be BREEAM compliant. Existing storage spaces may also be counted, provided they allow bikes to be easily stored and removed with the ability to be locked securely to a compliant cycle space (see point 2 of compliant cycle storage, in the Relevant definitions on the next page).
- The sliding scale of compliance can be applied when determining the number of storage spaces required.

Cyclist facilities:

- The number of cyclist facilities is compliant based on the number of users on site who would be able to use these facilities.
- Cyclist facilities may be located anywhere on site. However, the total route that cyclists must take to access the nearest cycle storage, cyclist facilities and building entrances must be no greater than 200m via a safe and convenient route, as measured from the first to the last point on the route. Where possible, different types of cyclist facilities should be grouped together in designated areas for ease of access and use.
- All new and existing facilities may be included provided they are BREEAM compliant and conform to the 200m requirement above.

Combination of the two approaches

A mixture of the two approaches can be applied where cycle storage is delivered as a site-wide approach and facilities are being met for the assessed building only. However, a mixed approach cannot be applied where facilities are delivered as a site-wide approach and storage spaces are being met for the assessed building only.

Evidence

Criteria	Interim design stage	Final post-construction stage
All	Design drawings or relevant sections or clauses of the building specification or contract. Plus the following where relevant to the options selected: — Assumptions and calculations used to determine the number of public users — Consultation documentation — Responses or actions to consultation feedback — Marketing material — Evidence or calculations supporting that CO_2 emissions from electric vehicles are lower than their petrol or diesel counterparts.	As design stage evidence. Assessor's building or site inspection and photographic evidence confirming the installation of the compliant facilities. Plus timetables where relevant to the options selected. Where changes have occurred since the design stage that could affect compliance, full details of the changes are required to demonstrate compliance.

Additional information

Relevant definitions

Additional building type classifications

See the BREEAM issue Tra 01 Public transport accessibility on page 215.

Compliant cycle storage

Compliant cycle storage facilities are those that meet the following:

1. Cycles can be secured within spaces, with fixings for one or more cycles. The fixings should allow both the wheel and frame to be locked securely. Spaces are covered overhead and the cycle spaces are set in or fixed to a permanent structure (building or hardstanding). Alternatively the cycle storage may be located in a locked structure fixed to, or part of, a permanent structure with appropriate surveillance
2. The distance between each cycle space, and cycle space and other obstructions, e.g. a wall, allows for appropriate access to the cycle storage space to enable bikes to be easily stored and accessed
3. The facilities are in a prominent site location that is viewable or overlooked from either an occupied building or a main access to a building. In the scenario where cycle storage spaces are within the building, prominent signage should be provided to advertise their location to building users and cyclists.
4. The cycle storage facility has adequate lighting; this could be demonstrated with the lighting criteria defined in BREEAM issue Hea 01 Visual comfort on page 83. The lighting must be controlled to avoid out-of-hours use and operation during daylight hours, where there is sufficient daylight in or around the facility.

Compliant showers

Compliant showers are defined as those that meet the following:

1. Provision of one shower for every 10 cycle storage spaces, subject to a minimum provision of one shower for staff. For secondary schools, a minimum of two spaces, one male and one female, for students is also required.
2. Any building providing eight showers or more will comply regardless of the number of cycle storage spaces provided
3. Both male and female users must be catered for, i.e. either separate showers within shared gender-specific facilities (required provision split 50-50) or single shower cubicles and changing space for mixed use
4. The showers do not need to be dedicated to cyclists and can be those shared with other users or uses.

Compliant changing facilities

Compliant changing facilities are defined as those that meet the following:

1. Appropriately sized for the likely or required number of users. The assessor should use their judgment to determine whether the changing area is appropriately sized given the number of cycle storage spaces or showers provided
2. Changing areas must include adequate space and facilities to hang or store clothing and equipment while changing or showering, e.g. bench seat or hooks
3. Toilet or shower cubicles cannot be counted as changing facilities.

Compliant lockers

Compliant lockers are defined as those that meet the following:

1. The number of lockers is at least equal to the number of cycle spaces required
2. Lockers are either in, or adjacent to, compliant changing rooms, where provided
3. The lockers are sized appropriately for the storage of a cyclist's equipment.

Compliant drying spaces

A compliant drying space is defined as a space that is specifically designed and designated with adequate heating or ventilation for the drying of wet clothes. A plant room, for example, is not a compliant drying space.

Tra 03b Alternative modes of transport (residential only)

For non-residential buildings and residential institutions, see Tra 03a Alternative modes of transport on page 226.

Number of credits available	Minimum standards
2	No

Aim

To provide facilities which encourage building users to travel using low carbon modes of transport and to minimise individual journeys.

Assessment criteria

The following is required to demonstrate compliance:

Up to two credits

One of the following options has been implemented:

Option	Criteria	Credits
1	1 During the preparation of the brief, the design team has consulted with the local authority on the provision or condition of the local cycling network and how the development could contribute to improving it. 2 One proposition has been chosen in agreement with the local authority and implemented. This proposition must be additional to what would have been done by the local authority without the support from the project and must have a significant impact on the local cycling network.	2
2	3 Negotiations with any local bus, tram or train companies have resulted in an increase of the local service provision in the development's local area. 4 This improvement in public transport provision has increased the pre-development AI by at least 1.00 (see Tra 01 Public transport accessibility on page 215).	2
3	5 Electric recharging stations have been provided for the dwelling occupants. Table 37 on page 237 illustrates how credits are achieved. 6 The design team can demonstrate electric vehicles using these charging points will have lower CO_2 emissions than their petrol or diesel counterparts.	Up to 2 (see Table 37 on page 237)

Option	Criteria	Credits
4	7 A communal 'car club' is created where the members share the use of a locally based fleet of vehicles. 7.a The use of the vehicles should be charged on a 'pay-as-you-drive' basis. 7.b The club should be introduced to residents in sales literature and during sales or open days. 7.c Details of the scheme including costs and how to join should be provided to each dwelling.	2
5	8 Cycles are stored in a compliant individual or communal cycle storage space. This has to be safe, secure, convenient, weather-proof and with easy and direct access. 9 Table 36 below illustrates how credits are achieved.	Up to 2 (see Table 36 below
Note: When both option 3 and option 5 meet the requirement for one credit, two credits in total can be achieved under this assessment issue.		

Exemplary level criteria

The following outlines the exemplary level criteria to achieve an innovation credit for this BREEAM issue.

6. Two of the options above have been fully implemented.

Checklists and tables

Table 36: Number of cycle spaces per dwelling and number of credits available

Size of dwelling	1 cycle space for every 2 dwellings	1 cycle space per dwelling	2 cycle spaces per dwelling	4 cycle spaces per dwelling
	Credits available			
Studio or one bedroom	1	2	2	2
2–3 bedrooms	0	1	2	2
4 or more bedrooms	0	0	1	2

Table 37: Number of electric recharging stations per dwelling and number of credits available

Size of dwelling	1 electric recharging station every 2 dwellings	1 electric recharging station per dwelling	2 electric recharging stations per dwelling
	Credits available		
Studio or one bedroom	1	2	2
2 or more bedrooms	0	1	2

Compliance notes

Ref	Terms	Description
Shell and core (non-residential and residential institutions only)		
CN1	Applicable assessment criteria	Both options: This issue is not applicable to non-residential and residential institutions. Refer to Appendix D – Shell and core project assessments on page 409 for a more detailed description of the shell and core assessment options.
Residential - partially fitted and fully fitted		
CN2	Applicable assessment criteria - Single and multiple dwellings	Both options: All criteria relevant to the building type and function apply. Refer to Appendix E – Applicability of BREEAM New Construction to single and multiple dwellings, partially and fully fitted on page 412 for a more detailed description of residential assessment options.
General		
CN2.1	Existing compliant facilities and extensions to existing buildings	Please refer to issue Tra 03a Alternative modes of transport on page 226.
CN2.2	Building types	Please refer to issue Tra 03a Alternative modes of transport on page 226.
CN2.3	Access to the cycle store	Access from the cycle store to the public right of way must not be through the residence, i.e. where cycles are stored in a shed in the back garden of a mid-terraced home and there is no back garden gate, this is non-compliant. In blocks of flats and multi-dwellings with communal areas, communal cycle stores have to be located within 100m from the front door or the main entrance. If for strategic reasons (outside the control of the developer) the store cannot be located within the required distance, exceptions to the rule may be allowed. Full details must be provided and BRE Global consulted prior to awarding credits.

Ref	Terms	Description
CN2.4	Storage space within the dwelling	Where cycles are to be stored inside the dwelling, the credit cannot be achieved (unless within a porch of adequate space as defined in minimum space requirements).
CN2.5	Folding cycles	The provision of space for folding cycles stored within the dwelling would not achieve the credit. Folding cycles would be a temporary provision whereas the provision of cycle storage is a permanent feature.

Methodology

Minimum cycle storage provision

Where the calculated number of required cycle storage spaces is less than four, total provision should be based on the lower of the following:

1. A minimum of four compliant storage spaces must be provided OR
2. One space per user.

Provision of cycle storage on site with multiple buildings

Where a new or infill building is constructed on an existing site, or multiple new buildings are to be constructed on the same site, compliance with this issue may be assessed based on the standalone building or on a site-wide basis. How this is determined depends on the configuration of the proposed cycle storage, cycle facilities and the interpretation and justification of the assessor.

Standalone approach

Where cycle storage is being provided for the assessed building only, the following applies:

Cyclist storage:

- The number of cycle storage spaces is compliant based on the number of users in the assessed building.
- All storage spaces provided must be BREEAM compliant and these must be located within, or in close proximity to, the assessed building. It is clear from access arrangements, demarcation and positioning that the cycle storage provided is clearly associated with the assessed building only.

Site-wide approach

Where cycle storage is provided and this would be accessible to all users of the entire site, or where there is a distinct group of local buildings within a site that would share facilities, the following applies:

Cyclist storage:

- The number of cycle storage spaces is compliant based on the number of users on site or within a group of local buildings.
- All new storage spaces must be BREEAM compliant. Existing storage spaces may also be counted, provided they allow bikes to be easily stored and removed with the ability to be locked securely to a compliant cycle space (see point 2 of compliant cycle storage, in the Relevant definition).

Combination of the two approaches

A mixture of the two approaches can be applied where cycle storage is delivered as a site-wide approach and facilities are being met for the assessed building only. However, a mixed approach cannot be applied where facilities are delivered as a site-wide approach and storage spaces are being met for the assessed building only.

Evidence

Criteria	Interim design stage	Final post-construction stage
All	Design drawings and relevant sections or clauses of the building specification or contract. Plus the following where relevant to the options selected: — Assumptions and calculations used to determine the number of public users — Consultation documentation — Responses and actions to consultation feedback — Marketing material — Evidence or calculations supporting that CO_2 emissions from electric vehicles are lower than their petrol or diesel counterparts.	As design stage evidence. Assessor's building and site inspection and photographic evidence confirming the installation of the compliant facilities. Plus timetables where relevant to the options selected. Where changes have occurred since the design stage that could affect compliance, full details of the changes are required to demonstrate compliance.

Additional information

Relevant definitions

Compliant cycle storage spaces

Compliant cycle storage facilities are those that meet the following:

1. Cycles can be secured within spaces, with fixings for one or more cycles. The fixings should allow both the wheel and frame to be locked securely. Spaces are covered overhead and the cycle spaces are set in or fixed to a permanent structure (building or hardstanding). Alternatively the cycle storage may be located in a locked structure fixed to, or part of, a permanent structure with appropriate surveillance
2. The distance between each cycle space, and cycle space and other obstructions, e.g. a wall, allows for appropriate access to the cycle storage space to enable bikes to be easily stored and accessed
3. The facilities are in a prominent site location that is viewable or overlooked from either an occupied building or a main access to a building. In the scenario where cycle storage spaces are within the building, prominent signage should be provided to advertise their location to building users and cyclists.
4. The cycle storage facility has adequate lighting; this could be demonstrated with the lighting criteria defined in BREEAM issue Hea 01 Visual comfort on page 83. The lighting must be controlled to avoid out-of-hours use and operation during daylight hours, where there is sufficient daylight in or around the facility.

Other information

None.

Tra 04 Maximum car parking capacity

(non-residential and residential institutions only)

Number of credits available	Minimum standards
2	No

Aim

To encourage the use of alternative means of transport other than the private car to and from the building, thereby helping to reduce transport-related emissions and traffic congestion associated with the building's operation.

Assessment criteria

The following is required to demonstrate compliance:

Up to two credits - Car parking capacity

1. The building's car parking capacity is compared to the maximum car parking capacity benchmarks in Table 38 below and the relevant number of credits awarded.
   For most building types, except those where stated, the benchmarks vary according to the building's public transport Accessibility Index (AI; determined in accordance with BREEAM issue Tra 01 Public transport accessibility on page 215). Therefore, for these building types the AI must be determined prior to assessing this issue. This is required to ensure that the building's car parking capacity is relative to the development's accessibility to the public transport network.

Checklists and tables

Table 38: Credits available in Tra 04 Maximum car parking capacity for different building types

Building's Accessibility Index	Criteria			Credits
	< 4	≥ 4 - < 8	≥ 8	
Building type	Max. parking capacity 1 space per x building users, where x is:			
Office, industrial, student residences	3	4	5	1
	4	5	6	2

Building's Accessibility Index	Criteria			Credits
	< 4	≥ 4 - < 8	≥ 8	
Sheltered accommodation, care homes and supported living facility	4	5	6	1
	5	6	7	2
University and higher education	15	20	25	1
	20	25	30	2
Other building – Staffed and Visitors	3	4	5	1
	4	5	6	2
Preschool, schools, retail, other building – Rural	Issue not assessed for these building types.			

Compliance notes

Ref	Terms	Description
Applicable assessment criteria		
Shell and core (non-residential and residential institutions only)		
CN1	Applicable assessment criteria	Both options: All assessment criteria relevant to the building type and function apply. Refer to Appendix D – Shell and core project assessments on page 409 for a more detailed description of the shell and core assessment options.
Residential - Partially fitted and fully fitted		
CN2	Applicable assessment criteria - Single and multiple dwellings	Both options: This issue is not applicable. Refer to Appendix E – Applicability of BREEAM New Construction to single and multiple dwellings, partially and fully fitted on page 412 for a more detailed description of residential assessment options.
General		

Ref	Terms	Description
CN3	Exclusions	Parking spaces set aside for the following building users can be excluded provided these spaces are dedicated for that use, i.e. sized accordingly with the appropriate signage or markings: 1. Disabled 2. Parent and baby 3. Motorbike 4. Car share. In the case of excluding car share spaces, the future building occupier will need to confirm they have an enforceable car share policy.
CN3.1	Parking shared with other buildings	Where the assessed building forms part of a wider site, e.g. campus, business park, hospital, and parking is not designated to individual buildings, then the assessor has two options: 1. Assess compliance on the basis of parking capacity for the whole development, accounting for all existing and new users and parking spaces 2. Assess compliance using a pro-rata of parking capacity to building users, e.g. if the assessed building is occupied by 20% of the development's total occupants, then attribute 20% of the total parking spaces to the assessed building for the purpose of the assessment.

Methodology

None.

Evidence

Criteria	Interim design stage	Final post-construction stage
All	A site plan or copy of the specification. Relevant documentation or correspondence from the design team or client confirming the number of building users. Confirmation of the building's AI (as per Tra 01 Public transport accessibility on page 215).	As design stage. Assessor's building or site inspection and photographic evidence.

Additional information

Relevant definitions

Accessibility Index

Refer to Tra 01 Public transport accessibility – Accessibility Index on page 218.

Building users

Where the term building users is referenced in this BREEAM issue it refers to the following, where relevant to the building type:

1. Staff (who will work within the building)
2. Students (who will access the building for work or study during a typical academic term time or semester day)
3. Residents (who will reside permanently or for a short period of time in the building).

If known, or can be reasonably estimated, project specific occupancy figures should be used. If this is not possible, for example where the building is a speculative project, use the default occupancy rates given in Table 39 below to determine the number of users. Where the number of building users is variable, provision of parking spaces should be based on the maximum number of building users likely to be using the building at any time during a typical day.

Care homes

For the purpose of BREEAM, care homes are defined as buildings with residential accommodation and meals, and have residents that require a level of personal care such as eating, cleaning and a level of medical care.

Sheltered housing

Sheltered housing can be defined as self-contained accommodation, usually with an emergency alarm system, communal facilities and a resident warden.

Other building types

See the BREEAM issue Tra 01 Public transport accessibility on page 215 for a definition of Other building Staffed, Visitors and Rural.

Other information

Table 39: Default occupancy rates by building type

Building type and function area	Occupant density (person/m²)	Building type and function area	Occupant density (person/m²)
Business		**University and higher education**	
Office area (including reception areas)	0.111	Resident's bedroom	0.120
Food preparation area (staffed)	0.108	Classroom	0.203
Small workshop or category laboratory space	0.068	Food preparation area	0.096
Industrial		Hall, lecture theatre, assembly area	0.202
Food preparation area	0.213	Computer laboratory	0.231
Industrial process area	0.022	Laboratory	0.106
Laboratory	0.107	Laundry	0.105
Reception	0.110	Reception	0.112
Warehouse storage	0.009	Workshop (small-scale)	0.068
Generic office area	0.108	Office and consulting areas	0.098

Building type and function area	Occupant density (person/m²)	Building type and function area	Occupant density (person/m²)
Care homes		**Hotels and other short stay accommodation**	
Reception	0.152	Bedroom	0.094
Food preparation area	0.161	Food preparation area	0.108
Physiotherapy studio	0.200	Reception	0.105
Bedroom unit	0.105	Generic office area	0.106
Laundry	0.117	**Other spaces or buildings**	
Assembly areas and halls	1.000	Data centre or server room	0.096
Hydrotherapy pool hall	0.100		
Office and consulting areas	0.195		

Notes for Table 39 on the previous page of default occupancy rates:

1. The net floor area for each function must be multiplied by the equivalent occupant density to determine an overall occupancy for the function area.
2. Not all potential building areas are listed, only those required to reflect estimated building occupancy for the building type. For example, an office building may have a canteen but it will be the staff that predominantly uses the canteen. The office staff numbers will be estimated using the default occupancy rate for the office area; therefore to include the canteen would result in double counting of occupancy.
3. If a building type is not listed, occupancy rates for a similar building type or function area may be used.
4. The above occupancy rates have been sourced from the activity database of the UK Simplified Building Energy Model (SBEM).

Tra 05 Travel plan

(non-residential, residential institutions, and multiple dwellings only)

Number of credits available	Minimum standards
1	No

Aim

To recognise the consideration given to accommodating a range of travel options for building users, thereby encouraging the reduction of reliance on forms of travel that have the highest environmental impact.

Assessment criteria

The following is required to demonstrate compliance:

One credit

1 A travel plan has been developed as part of the feasibility and design stages.

2 A site-specific travel assessment or statement has been undertaken to ensure the travel plan is structured to meet the needs of the particular site and covers the following (as a minimum):
- 2.a Where relevant, existing travel patterns and opinions of existing building or site users towards cycling and walking so that constraints and opportunities can be identified
- 2.b Travel patterns and transport impact of future building users
- 2.c Current local environment for walkers and cyclists (accounting for visitors who may be accompanied by young children)
- 2.d Disabled access (accounting for varying levels of disability and visual impairment)
- 2.e Public transport links serving the site
- 2.f Current facilities for cyclists.

3 The travel plan includes a package of measures to encourage the use of sustainable modes of transport and movement of people and goods during the building's operation and use.

4 If the occupier is known, they must be involved in the development of the travel plan and they must confirm that the travel plan will be implemented post-construction and be supported by the building's management in operation.

Checklists and tables

None.

Compliance notes

Ref	Terms	Description
Shell and core (non-residential and residential institutions only)		
CN1	Applicable assessment criteria	Both options: All assessment criteria relevant to the building type and function apply. Refer to Appendix D – Shell and core project assessments on page 409 for a more detailed description of the shell and core assessment options.
Residential - Partially fitted and fully fitted		
CN2	Applicable assessment criteria - Single dwellings	Both options: This issue is not applicable. Refer to Appendix E – Applicability of BREEAM New Construction to single and multiple dwellings, partially and fully fitted on page 412 for a more detailed description of residential assessment options.
CN2.1	Applicable assessment criteria - Multiple dwellings	Both options: All criteria relevant to the building type and function apply. Refer to Appendix E – Applicability of BREEAM New Construction to single and multiple dwellings, partially and fully fitted on page 412 for a more detailed description of residential assessment options.
General		
CN3	Existing travel plan. See criterion 3 on the previous page.	The credit can be awarded if the assessed building is part of a site that has an existing up-to-date organisational travel plan that is compliant with BREEAM, is applicable to all building users (in existing and assessed new buildings) and accounts for the additional travel resulting from users of the new building.
CN3.1	Travel assessment or statement. See criterion 2 on the previous page.	A travel assessment (also referred to as transport assessment) will be required where a proposed development is likely to have significant transport and related environmental impacts. The study area for a transport assessment related to a proposed development should be determined in discussions between the developer and appropriate authorities. A transport statement is required where the proposed development is not likely to have a significant transport impact. A transport statement is suitable to demonstrate compliance with BREEAM when the proposed development is expected to generate relatively low numbers of trips or traffic flows, with minor transport impacts. For further guidance refer to planning guidance.planning portal.gov.uk

Ref	Terms	Description
CN3.2	Travel plan measures. See criterion 3 on page 245	The following measures could be considered as part of the travel plan for development: — Providing parking priority spaces for car sharers — Providing dedicated and convenient cycle storage and changing facilities — Lighting, landscaping and shelter to make pedestrian and public transport waiting areas pleasant — Negotiating improved bus services, i.e. altering bus routes or offering discounts — Restricting or charging for car parking — Criteria for lobby areas where information about public transport or car sharing can be made available — Pedestrian and cycle friendly (for all types of user regardless of the level of mobility or visual impairment) by the provision of cycle lanes, safe crossing points, direct routes, appropriate tactile surfaces, well-lit and signposted to other amenities, public transport nodes and adjoining off-site pedestrian and cycle routes — Providing suitable taxi drop-off or waiting areas — Ensuring that rural buildings are located with appropriate transport access to ensure that they adequately serve the local community (where procured to do so, e.g. community centre).
CN3.3	Where the end user or occupier is not known	A travel plan is still required, even if the end user or occupier is not known, albeit that it may only be an interim travel plan or one that broadly addresses all the issues covered in the assessment criteria. The developer must confirm that they will hand over a copy of the travel plan to the building's future tenants or owner or occupiers, so that it may inform their own travel plan or strategy.

Methodology

None.

Evidence

Criteria	Interim design stage	Final post-construction stage
1–4	A copy of the travel plan. A copy of the site-specific transport survey or assessment.	As design stage.

Criteria	Interim design stage	Final post-construction stage
3 on page 245	A marked-up copy of the site plan demonstrating examples of design measures, implemented in support of the travel plan's findings OR Where a detailed site plan is not available, a formal letter from the client confirming that measures will be implemented into the final design in support of the travel plan's findings.	Assessor's building or site inspection and photographic evidence confirming the installation of measures that support the travel plan.
4 on page 245	A letter of confirmation from either the building's occupier, or in the case of a speculative development, the developer.	As design stage.

Additional information

Relevant definitions

Building users

Where the term 'building users' is used, this refers to the following, as appropriate to building type:

1. Staff (commuter journeys and business travel)
2. Pupils and students
3. Visitors
4. Customers
5. Community users
6. People who make deliveries or collections to and from the development
7. Contractors and service providers, who regularly work at and access the building or development
8. Residents of residential dwellings and residential institutions.

Travel plan

A travel plan is a strategy for managing all travel and transport within an organisation, principally to increase choice and reduce reliance on the car by seeking to improve access to a site or development by sustainable modes of transport. A travel plan contains both physical and behavioural measures to increase travel choices and reduce reliance on single occupancy car travel.

Other information

Guidance on how to produce a travel plan can be found at the following locations:

1. The Essential Guide to Travel Planning
2. TfL Travel Planning Guidance

While these documents have been written for UK property development, the principles can be applied internationally.

Tra 06 Home office

(residential only)

Number of credits available	Minimum standards
1	No

Aim

To reduce the need to commute to work by providing residents with the necessary space and services to be able to work from home.

Assessment criteria

The following is required to demonstrate compliance:

One credit

1 A home office has been provided within each dwelling with adequate space and services, as follows:
- 1.a For dwellings with one or two bedrooms or studio homes, space is provided in the living room, one of the bedrooms or any other suitable area in the home such as a large hall or dining area
- 1.b For dwellings with three or more bedrooms, sufficient working space is provided within a room other than the kitchen, living room or master bedroom or bathroom
- 1.c In all cases, the room is large enough not to prevent the intended use of that room, i.e. a home office set up in the main bedroom does not compromise the ability for a double bed and other necessary furnishing to be contained within that room.

2 Sufficient services must include as a minimum:
- 2.a Two double power sockets
- 2.b Two telephone points (or double telephone point) or one telephone point where the dwelling is connected to a cable or broadband service available at the address
- 2.c Adequate daylight, the room chosen to be the nominated home office must have a compliant average daylight factor, see Hea 01 Visual comfort: Table 10 on page 84
- 2.d Adequate ventilation, either through an openable window or alternative ventilation such as passive stack, mechanical ventilation, etc.

Checklists and tables

None.

Compliance notes

Ref	Terms	Description
Shell and core (non-residential and residential institutions only)		
CN1	Applicable assessment criteria	Both options: This issue is not applicable to non-residential and residential institutions. Refer to Appendix D – Shell and core project assessments on page 409 for a more detailed description of the shell and core assessment options.
Residential - Partially fitted and fully fitted		
CN2	Applicable assessment criteria - Single and multiple dwellings	Partially fitted: This issue is not applicable. Fully fitted: All criteria relevant to the building type and function apply. Refer to Appendix E – Applicability of BREEAM New Construction to single and multiple dwellings, partially and fully fitted on page 412 for a more detailed description of residential assessment options.
General		
CN3	Sufficient space	This is defined as the minimum size (1.8m wall length) to: 1. Allow a desk, chair and filing cabinet or bookshelf to be installed 2. Allow space to move around the front and side of the desk 3. Use the chair appropriately and operate the filing cabinet safely. The 1.8m wall size requirement can, in some circumstances, be altered if drawings can prove that a desk can be fitted in any other type of arrangement, i.e. alcove or similar, fulfilling all the above criteria.
CN3.1	Adequate ventilation	Rooms intended to be used as a home office must meet the requirements in Hea 02 Indoor air quality: Criterion 6

Methodology

None.

Evidence

Criteria	Interim design stage	Final post-construction stage
All	Scaled drawings or a copy of the specification.	As-built drawings or assessor's site inspection report confirming the details required at the design stage.

Additional information

Relevant definitions

None.

Other information

None.

Water

Summary

This category encourages sustainable water use in the operation of the building and its site. Issues in this section focus on identifying means of reducing potable water consumption (internal and external) over the lifetime of the building and minimising losses through leakage.

Category summary table

Issue	Credits	Credit summary
Wat 01 Water consumption	5	— Reducing the demand for potable water through the provision of efficient sanitary fittings, rainwater collection and water recycling systems.
Wat 02 Water monitoring	1	— Specification of water meters on the mains water supply to encourage water consumption management and monitoring to reduce the impacts of inefficiencies and leakage.
Wat 03 Water leak detection and prevention	3	— Recognition of leak detection systems capable of detecting a major water leak on the mains water supply — Flow control devices that regulate the supply of water to each WC area or facility to reduce water wastage — Easily accessible leak isolation valves, to allow leaks to be stopped and then fixed quickly and with minimum water wastage.
Wat 04 Water efficient equipment	1	— Identify a building's water demand from uses other than domestic-scale drinking and sanitary components and mitigate or reduce their consumption.

Wat 01 Water consumption

(all buildings)

Number of credits available	Minimum standards
5	Yes

Aim

To reduce the consumption of potable water for sanitary use in new buildings from all sources through the use of water efficient components and water recycling systems.

Assessment criteria

The following is required to demonstrate compliance:

Up to five credits

1 An assessment of the efficiency of the building's domestic water-consuming components is undertaken using the BREEAM Wat 01 calculator.

2 The water consumption (L/person/day) for the assessed building is compared against a baseline performance and BREEAM credits awarded based upon Table 40 on the next page.

3 The efficiency of the following 'domestic-scale' water-consuming components must be included in the assessment (where specified):
- 3.a WCs
- 3.b Urinals
- 3.c Taps (wash hand basins and where specified kitchen taps and waste disposal unit)
- 3.d Showers
- 3.e Baths
- 3.f Dishwashers (domestic and commercial-sized)
- 3.g Washing machines (domestic and commercial or industrial sized).

The BREEAM Wat 01 calculator defines the building types and activity areas for which the above components must be assessed.

4 Where a greywater or rainwater system is specified, its yield (L/person/day) is used to offset non-potable water demand from components that would otherwise be supplied using potable water.

5 Any greywater systems must be specified and installed in compliance with the national best practice standard.

Checklists and tables

Table 40: BREEAM credits available for percentage improvement over baseline building water consumption

No. of BREEAM credits	Percentage improvement		
	Precipitation zone 1	Precipitation zone 2	Precipitation zone 3
1	12.5%	12.5%	12.5%
2	25%	25%	25%
3	40%	35%	35%
4	50%	45%	40%
5	55%	55%	50%
Exemplary	65%	65%	60%

Please refer to compliance note CN3.1 and Figure 5 on page 263 for information on BREEAM precipitation zone classifications. Also, please note that for some building types an alternative approach to compliance must be used to award credits (for further information please refer to Methodology on page 256 and the BREEAM Wat 01 calculator).

Compliance notes

Ref	Terms	Description
Shell and core (non-residential and residential institutions only)		
CN1	Applicable assessment criteria	**All criteria** Shell only: This issue is not applicable. Shell and core: This issue is applicable subject to CN1.1 below Refer to Appendix D – Shell and core project assessments on page 409 for a more detailed description of the shell and core assessment options.
CN1.1	Shell and core assessments	**Shell and core** Compliance for this issue must be assessed on the basis of all water-consuming components and greywater or rainwater systems specified and installed by the developer. Components or systems listed in the criteria and sited within tenant areas that are not being specified by the developer, but will be specified by the tenant do not need to be assessed for a shell and core project.
Residential - Partially fitted and fully fitted		

Ref	Terms	Description
CN2	Applicable assessment criteria - Single and multiple dwellings	Partially fitted: All criteria relevant to the building type and function apply subject to CN2.1 below. Fully fitted: All criteria relevant to the building type and function apply. Refer to Appendix E – Applicability of BREEAM New Construction to single and multiple dwellings, partially and fully fitted on page 412 for a more detailed description of residential assessment options.
CN2.1	Water efficiency and partially fitted dwellings	Compliance for this issue must be assessed on the basis of all water-consuming components and greywater or rainwater systems specified and installed by the developer. Components or systems listed in the criteria that are not being specified and installed by the developer, but will be specified by the new homeowner, do not need to be assessed. The minimum standard is still applicable. Where the homeowner will be responsible for installing all of their own water fittings and components, no credits can be awarded, and the minimum standard is not applicable.
General		
CN3	No fittings present	Where a project under assessment contains none of the specified components, the performance specification for components provided in facilities in an adjacent and accessible building must be used in the calculation, i.e. those facilities most likely to be used by the occupants and visitors of the assessed building. This rule also applies where a project under assessment consists solely of an extension to an existing building, i.e. where the extended building contains no new sanitary facilities because there are facilities present within the existing building.
CN3.1	Precipitation Zones (by Köppen)	Please refer to Figure 5 on page 263 for information on the BREEAM precipitation zone classification. 1. Precipitation zone 1: corresponds to Köppen's precipitation regions f (fully humid) and m (monsoonal). 2. Precipitation zone 2: corresponds to Köppen's precipitation regions s (summer dry) and w (winter dry). 3. Precipitation zone 3: corresponds to Köppen's precipitation regions S (steppe) and W (desert). For more information and guidance on the Köppen climate classification refer to Scope of BREEAM International New Construction on page 23.
Country specific		

Ref	Terms	Description
CN4	National best practice standard for specifying and installing greywater and rainwater systems	Please refer to the country reference sheet to locate the appropriate national best practice standards in the country of assessment. Alternatively, please demonstrate applicability as follows: — The minimum requirements as set out in the Approved standards and weightings list are covered by the proposed documents OR — Where appropriate standards do not exist for a country, the design team should demonstrate compliance with the UK or European standards as listed in each relevant country reference sheet.
Building specific		
CN5	Hotel type	Please use 'Other buildings type calculator' tab within the Wat 01 calculator tool. The alternative Wat 01 method (see Methodology below) should be used for the assessment of a hotel.

Methodology

A building's water efficient performance is determined using the BREEAM Wat 01 calculator in one of two ways, using either the standard approach (common building types) or alternative (other building type) approach. Each approach is summarised below.

Standard Wat 01 method

The standard BREEAM method determines water efficiency (measured in L/person/day and m³/person/yr) for a building based on the building's actual component specification and default usage patterns for the building type and its activity areas. This modelled output is compared with the same output for a baseline component specification and the percentage improvement used to determine the number of BREEAM credits achieved.

The baseline component specification is equivalent to the water efficiency of industry standard components (see Table 41 on page 258), steered by the minimum levels required by the Water Supply (Water Fittings) Regulations. The BREEAM percentage improvement benchmarks have then been determined based on progressively more efficient standards for water-consuming components and, for the higher levels of performance, the specification of greywater and rainwater systems.

The standard approach is the default method for calculating water efficiency of a BREEAM-assessed building and is that used for most of the common building types, where usage data are available. For buildings types where usage data are not available, and therefore the standard approach for determining performance cannot be used, an alternative approach to compliance must be used (described below). Refer to the BREEAM Wat 01 calculator for the current list of building types which can be assessed using the standard approach.

Alternative Wat 01 method

Where it is not possible to use the standard approach to determine the building's water consumption total (L/person/day) the assessment can be completed on an elemental basis, as follows.

1. Using the list of applicable domestic-scale water-consuming components (see criterion 3 on page 253), determine those that are specified or present in the assessed building.
2. Compare the actual specification for each component type with the table of water efficient consumption levels by component type (Table 41 on page 258) to determine the level of performance for each type. Note that the volumes quoted are maximums for that level and the % WC or urinal flushing demand is a minimum for that level.

3. Define each component's level of performance in the 'Other building type calculator' worksheet of the BREEAM Wat 01 calculator.
   a. For the alternative approach, the calculator applies a building type specific weighting to each component level to reflect its 'in-use' consumption relative to the other components present. A component with high 'in-use' water consumption therefore has a larger weighting than one with lower 'in-use' consumption and contributes relatively more to the building's overall level of performance under this BREEAM issue.
   b. The weightings are derived from data on actual water consumption per day from non-domestic buildings, sourced from BNWAT22[60]. They can be found in the BREEAM Wat 01 calculator.
4. Based upon the performance categorisation of each component type and the component weighting, the calculator will determine an overall level of performance and award the relevant number of BREEAM credits as follows:

	Greywater or rainwater level achieved			
		Precipitation zones 1 and 2		Precipitation zone 3
Overall component level	_	4	5	5
Baseline	0 credits	1 credit	2 credits	1 credit
Level 1	1 credit	2 credits	3 credits	2 credits
Level 2	2 credits	3 credits	4 credits	3 credits
Level 3 or 4	3 credits	4 credits	5 credits	4 credits
Level 5	4 credits	5 credits	5 credits	5 credits

Note:

1. An innovation credit for exemplary level performance can be awarded where the component specification achieves level 5 and > 95% of WC or urinal flushing demand is met using recycled non-potable water.
2. Due to the use of the weightings, the overall component level achieved will not necessarily be a whole number, e.g. component level 4. Where this is the case the methodology will always round down to the nearest component level and therefore BREEAM credits level, e.g. if the component specification achieved is 3.6 credits, the actual number of credits awarded is 3 credits (the methodology will not round up to 4 credits because the performance specification for 4 credits has not been achieved).
3. Where the assessed building development has multiple specifications for the same water-consuming component type, the number of fittings and component level achieved for each specification can be entered in the 'Other building type calculator'. Using this information, the calculator will determine the building's aggregated performance level for that component type.

Please note: while attempts have been made to align the benchmarking of both methodologies described above, they determine performance in different ways. The number of BREEAM credits awarded by each method could therefore differ for the same water component specification. This could lead to variation in the credits achieved when applying BREEAM New Construction to a number of different building types that form a part of the same overall development.

Component type

Table 41 on the next page outlines the standards, by component type, used to define the performance levels set in BREEAM. These defined levels of efficiency have been steered by a range of published sources of information (see references[61]) and therefore reflect robust levels of typical, good, best and exemplary practice.

Table 41: Water efficient consumption levels by component type

Component		Performance levels (quoted numbers are minimum performance required to achieve the level)						
		Base	1	2	3	4	5	Unit
WC		6	5	4.5	4	3.75	3	Effective flush volume (litres)
Wash hand basin taps		12	9	7.50	4.50	3.75	3	litres/min
Showers		14	10	8	6	4	3.50	litres/min
Baths		200	180	160	140	120	100	litres
Urinal (2 or more urinals)		7.50	6	3	1.50	0.75	0	litres/bowl/hour
Urinal (1 urinal only)		10	8	4	2	1	0	litres/bowl/hour
Greywater or rainwater system	Precipitation zone 1	0%	0%	0%	25%	50%	75%	% of WC or urinal flushing demand met using recycled non-potable water
	Precipitation zone 2	0%	0%	0%	0%	25%	50%	
	Precipitation zone 3	0%	0%	0%	0%	0%	15%	
Kitchen tap: kitchenette		12	10	7.50	5	5	5	litres/min
Kitchen taps: restaurant (pre-rinse nozzles only)		10.30	9	8.30	7.30	6.30	6	litres/min
Domestic sized dishwashers		17	13	13	12	11	10	litres/cycle
Domestic sized washing machines		90	60	50	40	35	30	litres/use
Waste disposal unit		17	17	0	0	0	0	litres/min
Commercial-sized dishwashers		8	7	6	5	4	3	litres/rack
Commercial or industrial sized washing machines		14	12	10	7.50	5	4.50	litres/kg

Please note that specifying components for a building in accordance with the above levels will result, in most cases, in the corresponding number of BREEAM credits being achieved. However, please bear in mind that the component specifications above are akin to thresholds between each level. Therefore caution should be exercised when defining a component specification for a BREEAM-assessed building using exactly the same levels as the threshold levels. It is

recommended that, where Wat 01 BREEAM credits are being targeted, the performance of a particular building's component specification is verified using the BREEAM Wat 01 calculator before committing to a particular specification and ordering or installing components. This will provide greater assurance that the component specification achieves the targeted number of BREEAM credits.

Water-consuming components - data requirements

Table 42: This table defines for each component type the appropriate data that will need to be collected from manufacturers' product information to complete the assessment

Domestic component	Data requirements
WCs	Actual maximum or, where dual flush, effective flush volume in litres/use.
Urinals	Flush volume in litres/use for single use flush urinals. For cistern fed systems, the flushing frequency/hour and cistern capacity in litres.
Taps	Flow rate of each tap, at full flow rate in litres per minute measured at a dynamic pressure: For high pressure (Type 1) taps: 3 - 0.2 bar (0.3 - 0.02 MPa) OR For low pressure (Type 2) taps: 0.1 - 0.02 bar (0.01 - 0.002 MPa). (EN 200:2008, Sanitary tapware, single taps and combination taps for supply systems of type 1 and 2. General technical specifications). This includes any reductions achieved with flow restrictions.
Showers	Flow rate of each shower at the outlet using cold water (T 30^{o}C), in litres per minute measured at a dynamic pressure: For high pressure (Type 1) supply systems: 3 - 0.2 bar (0.3- 0.02 MPa) OR For low pressure (Type 2) supply systems: 0.1 - 0.05 bar (0.01 - 0.005 MPa) (EN 1112:2008, Sanitary tapware. Shower outlets for sanitary tapware for water supply systems type 1 and 2. General technical specifications).
Kitchen taps	Maximum flow rate litres/minute.
Baths	Capacity to overflow in litres. Taps on baths should not be included in the calculation, as the water consumption from bath taps is taken account of in the use factor for baths. The calculation of water consumption for baths will assume 40% of the capacity to the overflow. This is to reflect that: 1. Users tend not to fill the bath to overflow; and 2. The displacement effect the user has on the actual volume of water required for a bath.
Dishwasher	Litres/cycle for domestic applications or appliances or litres/rack for commercial applications or appliances.
Washing machine	Litres/use for domestic applications (for a typical wash cycle) or appliances, or litres/kg for commercial applications or appliances, e.g. in hotels.
Waste disposal unit	Flow rate in litres/minute.

Unspecified water-consuming components

As the methodology and BREEAM credits for water efficiency compare the building's modelled water consumption performance against the performance of a baseline specification for the same component types, where a component type is not specified it is not accounted for in the methodology, i.e. the component is excluded from both the proposed and baseline building. Therefore no benefit is gained in terms of BREEAM performance, by deciding not to specify a particular component. However, the methodology will reflect the reduction in overall water consumption (litres/person/day) for the building, as a result of not specifying a particular component.

Buildings with greywater and rainwater systems

The following information is required where a greywater or rainwater system is specified:

Rainwater:

1. Collection area (m^2).
2. Yield coefficient (a coefficient (%) to recognise that some rainwater is lost due to splashing, evaporation, leakage and overflow etc. This coefficient will vary depending on the surface from which the rainwater is collected).
3. Hydraulic filter efficiency (a coefficient (%) to recognise the efficiency of the hydraulic filter).
4. Rainfall (average mm/year).

OR

5. Daily rainfall collection (litres) calculated in accordance with credible and verifiable national or local data, e.g. a regional, national or international meteorological organisation, data source or equivalent.

Greywater:

1. Manufacturer or system designer details.
2. The percentage volume of waste water collected (and reused) from the following (where relevant); wash hand basins, showers, kitchen basins, dishwashers, baths, washing machines and sources of waste water from non-domestic components.

Where greywater or rainwater systems are specified, a minimum level of component efficiency must be achieved to award 4 or 5 BREEAM credits and the exemplary level credit. This is to avoid awarding a higher number of BREEAM credits where performance from less efficient fittings is offset by the specification of a greywater or rainwater collection system.

The intention behind this is to ensure demand reduction is prioritised before offsetting consumption. Where a greywater or rainwater system is specified or installed, the component specification must achieve a percentage reduction in water consumption (over the baseline specification) equivalent to that required for 2 credits, i.e. a 25% improvement. Where this level is achieved, all of the total water demand met by greywater or rainwater sources can contribute to the overall percentage improvement required to achieve BREEAM credits. If it is not achieved, the percentage of greywater or rainwater allowable will be equivalent to the percentage improvement in water consumption achieved for the component specification, i.e. percentage improvement on baseline performance.

For example, if a 20% improvement only is achieved, and therefore the building is not meeting the 25% requirement, only 20% of the water demand met via greywater or rainwater sources can be used to offset water consumption from the micro components. This minimum requirement does not apply where only 1, 2 or 3 credits are sought or where no greywater or rainwater system is specified, i.e. percentage improvement is based solely on the water efficiency of the micro-component specification.

BRE Global may allow some exemptions to this rule in instances where a particular fitting type requires a high flow rate due to specialised end user requirements, and its specification prevents compliance with 25% improvement.

Buildings with a mixture of different functional areas

For the majority of buildings using the standard Wat 01 method, the BREEAM Wat 01 calculator defines the building type and range of different water-consuming activity areas within that building; for example, a retail development with sales area and goods storage or an office that includes a canteen and gym. However, where carrying out a single assessment of a building or development which consists of a diverse mix of activity areas or building types, all of which can be assessed separately within the calculator, the following applies:

Determine the building's total water consumption performance by carrying out separate assessments for each relevant activity area or building type. On completion of each assessment, the assessor will need to determine the percentage improvement as follows:

$$I = 100 \times \left[1 - \frac{(T_{1Act} \times T_{1Occ}) + \ldots + (T_{nAct} \times T_{nOcc})}{(T_{1Base} \times T_{1Occ}) + \ldots + (T_{nBase} \times T_{nOcc})}\right]$$

Where:

I = Overall improvement (%)$T_{n\ Act}$ = the modelled net water consumption (L/person/day) for each building type $T_{n\ Base}$ = the modelled baseline water consumption for the corresponding building type $T_{n\ Occ}$ = the total default occupancy rate for the corresponding building type.

Where greywater or rainwater systems are specified, the assessor should take care to avoid unintended double counting of the yield from such systems and using it to offset demand for each activity area or building type.

Fixed water use

The BREEAM water efficiency calculation includes an allowance for fixed water use. This includes water consumption for vessel filling (for building users' drinking water), cleaning in kitchens and food preparation in buildings with a catering facility. Fixed uses are included to provide greater accuracy in the reporting of the building's overall estimated water consumption. As these uses are fixed for both actual and baseline building models, their totals do not influence the achievement of BREEAM credits.

Other permissible component demand for non-potable water

The focus of this BREEAM issue is the performance of the building's permanent domestic-scale water-consuming components. Where a greywater or rainwater system is specified, the yield from the system should be prioritised for such uses, i.e. WC or urinal flushing. However, where the building demonstrates that it has other consistent (i.e. daily) and equivalent levels of non-potable water demand, and such demands are intrinsic to the building's operation, then it is permissible for the demand from these non-domestic uses to be counted, i.e. the demand for rainwater or greywater yield from such systems or components can be used as well as, or instead of, non-potable water demand from the building's WC or urinal components. Examples of consistent and intrinsic demands could include laundry use in hotels or residential institutions, or horticultural uses in garden centres, botanical gardens and golf courses. Demand for general landscaping and ornamental planting irrigation are not considered as equivalent or intrinsic by BREEAM.

Other permissible sources of non-potable water

The methodology allows for the collection and recycling of non-potable water from the relevant components listed in the criteria, i.e. taps, showers, baths and dishwashers or washing machines. In addition, where non-potable water is collected from a non-domestic component or source that is intrinsic to the building, then the amount collected can be accounted for in the methodology. This could include, for example, wastewater from active hygiene flushing, i.e. a regular hygiene flushing programme to minimise poor water quality in a potable cold or hot water system. In order for the method to account for this total, the design team will need to confirm to the assessor the yield from the component or system (in litres) and the frequency of that yield (in days), i.e. if once a week, the frequency would be seven days.

Evidence

Criteria	Interim design stage	Final post-construction stage
All	A completed copy of the BREEAM Wat 01 calculator. The relevant sections or clauses of the building specification or design drawings confirming technical details of: 1. Sanitary components 2. Rainwater and greywater collection system OR Where detailed documentary evidence is not available at this stage; A letter of instruction to a contractor or supplier or a formal letter from the developer giving a specific undertaking, providing sufficient information to allow the water calculations to be completed.	As design stage for post-construction information OR Written confirmation from the developer that the appliances or fittings have been installed as specified for the Design Stage OR An assessor site inspection report and photographic evidence confirming installation of components in accordance with a compliant specification.

Additional information

Relevant definitions

BREEAM Wat 01 calculator

The BREEAM Wat 01 calculator is a method for the assessment of water efficiency in most common types of new buildings. The calculator assesses the contribution that each internal domestic-scale water-consuming component (as listed in the criteria) has on whole building water consumption. The calculator and accompanying guidance on its application is available separately from this Scheme Document. Please note, the calculator is a compliance tool and not a design tool for water demand and drainage systems. The tool uses default usage and occupancy rates to provide a benchmark of the typical consumption given the specified fittings (in L/person/day and m^3/person/year) and their impact on the building's overall water efficiency. Due to the impacts and differences of actual user behaviour and occupancy rates, the results of the method will not reflect directly the actual water use during building operation. The results from the methodology should, therefore, not be used for the purpose of comparison with, or prediction of, actual water consumption from a non-domestic building.

Domestic-scale components

Domestic-scale components include water consumed (potable and non-potable) by internal building components including kitchen taps, wash hand basin taps, baths, showers and dishwashers, WCs, urinals, washing machines and waste disposal units.

Effective flush volume

The effective flush volume of a single flush WC is the volume of water used for one flush. The effective flush volume of a dual flush WC is the ratio of full flush to reduced flush. This is taken to be one full flush for every three reduced flushes for non-domestic buildings and one full flush for every two reduced flushes in domestic (residential) buildings or areas. The effective flush volume can therefore be calculated as follows, using a 6/4 litre dual flush volume WC as an example:

- Non-domestic: {(6 litre x 1) + (4 litre x 3)}/4 = 4.5 litre effective flushing volume (for a 6/4 dual flush WC)
- Domestic: {(6 litre x 1) + (4 litre x 2)}/3 = 4.67 litre effective flushing volume (for a 6/4 dual flush WC).

The differing ratio between non-domestic and domestic buildings reflects the different patterns of user behaviour between these building types.

Greywater recycling

The appropriate collection, treatment and storage of domestic wastewater (which is defined as that discharged from kitchens, baths or showers, laundry rooms and similar) to meet a non-potable water demand in the building, e.g. WC flushing, or other permissible non-potable use on the site of the assessed building.

Potable water

Drinking quality water that is taken from a connection to the main water supply to the building, which may be from the public water supply or from a private supply such as from groundwater via a borehole.

Non-potable water

Any water other than potable water, also referred to as unwholesome water.

Rainwater recycling

The appropriate collection and storage of rainwater run-off from hard outdoor surfaces to meet a non-potable water demand in the building, e.g. WC flushing, or other permissible non-potable use on the site of the assessed building.

Other information

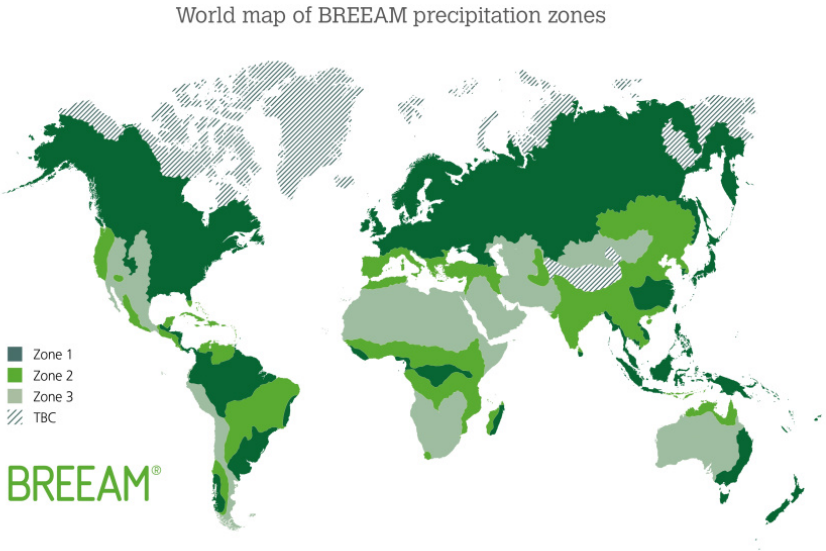

Figure 5: World map of BREEAM precipitation zones

Wat 02 Water monitoring

(all buildings)

Number of credits available	Minimum standards
1	Yes (criterion 1 below only)

Aim

To ensure water consumption can be monitored and managed, and therefore encourage reductions in consumption.

Assessment criteria

The following is required to demonstrate compliance:

One credit

1 The specification of a water meter on the mains water supply to each building; this includes instances where water is supplied via a borehole or other private source.

2 Water-consuming plant or building areas, consuming 10% or more of the building's total water demand, are either fitted with easily accessible sub-meters or have water monitoring equipment integral to the plant or area (see Compliance notes).

3 Each meter (main and sub) has a pulsed or other open protocol communication output to enable connection to an appropriate utility monitoring and management system, e.g. a building management system (BMS), for the monitoring of water consumption (see Relevant definitions on page 267).

4 If the site on which the building is located has an existing BMS, managed by the same occupier or owner (as the new building), the pulsed or digital water meters for the new building must be connected to the existing BMS (see Relevant definitions on page 267).

Checklists and tables

None.

Compliance notes

Ref	Terms	Description
Shell and core (non-residential and residential institutions only)		
CN1	Applicable assessment criteria	**Criteria 1 on the previous page, 3 and 4 on the previous page** Both options: All criteria relevant to the building type and function apply. **Criterion 2 on the previous page** Shell only: This criterion is not applicable Shell and core: This criterion is applicable. Refer to Appendix D – Shell and core project assessments on page 409 for a more detailed description of the shell and core assessment options.
CN1.1	Shell and core assessments	Shell and core Compliance with criterion 2 on the previous page must be demonstrated for water-consuming plant or building areas identifiable by the developer (see Relevant definitions on page 267). Water-consuming plant or building areas to be added or installed by the tenant do not need to be assessed for this issue.
Residential - Partially fitted and fully fitted		
CN2	Applicable assessment criteria - Single dwellings	Both options: Criterion 1 on the previous page is applicable only Refer to Appendix E – Applicability of BREEAM New Construction to single and multiple dwellings, partially and fully fitted on page 412 for a more detailed description of residential assessment options.
CN2.1	Applicable assessment criteria - Multiple dwellings	Both options: All criteria relevant to the building type and function apply. Refer to Appendix E – Applicability of BREEAM New Construction to single and multiple dwellings, partially and fully fitted on page 412 for a more detailed description of residential assessment options.
CN2.2	Utility company water monitoring equipment	Water meters installed by a water utility company that provide the future homeowner or tenant with accurate and regular water usage information per dwelling will comply with this issue.
General		

Ref	Terms	Description
CN3	Water-consuming plant or building area. See criterion 2 on page 264.	As a minimum, this includes the following (where present): 1. Buildings with a swimming pool and its associated changing facilities (toilets, showers etc.) 2. On sites with multiple units or buildings, e.g. shopping centres, apartment blocks, industrial units, retail parks etc. separate sub-meters are fitted on the water supply to the following areas (where present): — Each individual unit supplied with water (for residential institutions with self-contained dwellings, each dwelling) — Common areas (covering the supply to toilet blocks) — Service areas (covering the supply to outlets within storage, delivery, waste disposal areas etc.) — Ancillary or separate buildings to the main development with a water supply 3. Laboratory: in any building with a laboratory (or containing laboratories), a separate water meter is fitted on the water supply to any process or cooling loop for plumbed-in laboratory process equipment.
CN3.1	10% of water demand. See criterion 2 on page 264.	The sub-meter requirement does not necessarily apply in the following cases, where the assessor confirms there will be no additional monitoring benefit resulting from their installation: 1. Where a building has only one or two small sources of water demand (e.g. an office with sanitary fittings and a small kitchen) 2. Where the building has two sources of water demand, one significantly larger than the other, and the water consumption for the larger demand is likely to mask the smaller demand.
CN3.2	Extensions to existing buildings. See criterion 4 on page 264.	If no new water supply is being installed because the occupants of the extended building will use the facilities in, and therefore water supply to the existing building, then the following must be provided in the existing building: 1. A water meter for the mains water supply 2. Sub-meters for large water-consuming plant or facilities, e.g. evaporative cooling, swimming pool etc. (where present). The meters provided must have a pulsed output or connection to the existing BMS in accordance with the assessment criteria.
CN3.3	No water supply to the building or unit	If there is no installed water supply to the assessed building because there will be no water-consuming fittings in the building, then in such instances the guidance given in the above compliance note for extensions to existing buildings applies.

Methodology

None.

Evidence

Criteria	Interim design stage	Final post-construction stage
All	The relevant sections or clauses of the building specification or contract. Design drawings.	BREEAM Assessor's site inspection report and photographic evidence OR As-built drawings.

Additional information

Relevant definitions

Staff areas

Refer to BREEAM issue Hea 01 Visual comfort – Relevant definitions on page 95.

Meter outputs

Examples include pulsed outputs and other open protocol communication outputs, such as Modbus.

Utility monitoring and management system

Examples include automatic meter reading systems (AMR) and building energy management systems (BEMs). Automatic monitoring and targeting (AM&T) is an example of a management tool that includes automatic meter reading and data management.

Other information

None.

Wat 03 Water leak detection and prevention (all buildings)

Number of credits available	Minimum standards
Building type dependent	No

Aim

To reduce the impact of water leaks that may otherwise go undetected.

Assessment criteria

The following is required to demonstrate compliance:

One credit - Leak detection system

1 A leak detection system which is capable of detecting a major water leak on the mains water supply within the building and between the building and the utilities' water meter is installed. The leak detection system must be:
- 1.a A permanent automated water leak detection system that alerts the building occupants to the leak OR an inbuilt automated diagnostic procedure for detecting leaks
- 1.b Activated when the flow of water passing through the water meter or data logger is at a flow rate above a preset maximum for a preset period of time
- 1.c Able to identify different flow and therefore leakage rates, e.g. continuous, high or low level, over set time periods
- 1.d Programmable to suit the owner's or occupiers' water consumption criteria
- 1.e Where applicable, designed to avoid false alarms caused by normal operation of large water-consuming plant such as chillers.

One credit - Flow control devices (all buildings except residential))

2 Flow control devices that regulate the supply of water to each WC area or facility according to demand are installed (and therefore minimise water leaks and wastage from sanitary fittings).

One credit - Leak isolation (residential only)

3 Isolation valves are located in an accessible place that allows hot and cold water to be isolated by hand separately (switched on or off) for the following supplies:
- 3.a Incoming supply to the dwelling
- 3.b Taps
- 3.c Showers
- 3.d Heating or hot water systems
- 3.e Appliances (e.g. dishwasher, washing machine etc.).

Checklists and tables

None.

Compliance notes

Ref	Terms	Description
Shell and core (non-residential and residential institutions only)		
CN1	Applicable assessment criteria	**Leak detection system, criterion 1 on the previous page** Both options: All criteria relevant to the building type and function apply. **Flow control devices, criterion 2 on the previous page** Shell only: This criterion is not applicable. Shell and core: All criteria relevant to the building type and function apply. **Leak isolation, criterion 3 on the previous page** Both options: This criterion is not applicable. Refer to Appendix D – Shell and core project assessments on page 409 for a more detailed description of the shell and core assessment options.
CN1.1	WC Areas or facilities	Shell and core: The water supplies to WC areas or facilities must be assessed as per criterion 2 on the previous page regardless of whether or not the WC areas or facilities are fitted out.
Residential - Partially fitted and fully fitted		
CN2	Applicable assessment criteria - Single dwellings	Both options: Criterion 3 on the previous page only applies. Refer to Appendix E – Applicability of BREEAM New Construction to single and multiple dwellings, partially and fully fitted on page 412 for a more detailed description of residential assessment options.
CN2.1	Applicable assessment criteria - Multiple dwellings	Partially fitted: Criterion 3 on the previous page only applies. Fully fitted: Criteria 1 and 3 on the previous page apply. Refer to Appendix E – Applicability of BREEAM New Construction to single and multiple dwellings, partially and fully fitted on page 412 for a more detailed description of residential assessment options.
General		
CN3	Leakage rates. See criterion 1 on the previous page.	This issue does not specify what the high and low level leakage rates should be; however, the leak detection equipment installed must have the flexibility to distinguish between different flow rates to enable it to be programmed to suit the building type and owner's or occupiers' usage patterns.
CN3.1	System criteria. See criterion 1 on the previous page.	It is anticipated that the leak detection credit will usually be achieved by installing a system which detects higher than normal flow rates at meters or sub-meters. It does not necessarily require a system that directly detects water leakage along part or the whole length of the water supply system.

Ref	Terms	Description
CN3.2	Water utilities' meters. See criterion 1 on page 268.	Where there is a water utilities' meter at the site or building boundary, it may be necessary to install a separate flow meter (or alternative measurement system) just after the utility meter to detect leaks; however, if the water utility company agrees to some form of leak detection being installed on their meter, this would also be acceptable.
CN3.3	Flow control devices. See criterion 2 on page 268.	The following could be considered as types of flow control devices: — A time controller, i.e. an automatic time switch device to switch off the water supply after a predetermined interval — A programmed time controller, i.e. an automatic time switch device to switch water on or off at predetermined times — A volume controller, i.e. an automatic control device to turn off the water supply once the maximum preset volume is reached — A presence detector and controller, i.e. an automatic device detecting occupancy or movement in an area to switch water on and turn it off when the presence is removed — A central control unit, i.e. a dedicated computer-based control unit for an overall managed water control system, utilising some or all of the types of control elements listed above.
CN3.4	Flow control systems	Flow control systems may control combined WC areas, such as male and female toilets within a core; they are not required for each individual sanitary appliance. The criteria are set to encourage the isolation of the water supply to each WC block when it is not being used.
CN3.5	Accessible location. See criterion 3 on page 268.	Isolation valves must be located in an accessible location. This could be within a cupboard or access hatch, where the valve can be accessed without undue hazard or difficulty. The valve should be in close proximity to the appliance or fitting and clearly labelled. Examples of non-accessible locations are behind kitchen units or under floor boards.
CN3.6	Single WCs. See criterion 2 on page 268.	The flow control criteria for this issue apply to facilities which have only a single WC (potentially within smaller or low occupancy buildings). In these instances shut-off could be provided via the same switch that controls the lighting (whether proximity detection or a manual switch).
CN3.7	No water supply to the building or unit. See criteria 1 and 2 on page 268.	These credits are still assessed where there are no installed fittings and therefore no water supply to the building. In these instances the facilities likely to be used by the future occupants of the assessed building must meet the criteria, e.g. those facilities within the nearest accessible building.
CN3.8	Extensions to existing buildings. See criteria 1 and 2 on page 268.	If the water supply to the new extension is via the existing building then the water supply to the existing building must be assessed against the criteria of this issue.
Building type specific		

Ref	Terms	Description
CN4	Residential institutions and guest accommodation: Flow control specification. See criterion 2 on page 268.	The credit for the specification of flow control devices in WC areas or facilities does not apply to ensuite facilities in residential areas, e.g. ensuite facilities in individual private bedrooms and a single bathroom for a collection of individual private bedrooms in halls of residence, key worker accommodation or sheltered accommodation. The credit and criteria are however applicable to buildings which have guest bedrooms with ensuite facilities, e.g. hotel rooms, and communal WC areas or facilities, e.g. communal WC facilities in hotels or hostels and care homes.

Methodology

None.

Evidence

Criteria	Interim design stage	Final post-construction stage
All	The relevant sections or clauses of the building specification or contract. Design drawings. Manufacturer's product details.	BREEAM Assessor's site inspection report and photographic evidence. Manufacturer's product details.

Additional information

Relevant definitions

Isolation valve

An isolation valve is a valve in a plumbing system that stops the flow of water to a given location for maintenance purposes. This enables the flow of water to a terminal fitting, appliance or whole system (e.g. a tap, washing machine, heating system or whole home) to be isolated, thus allowing maintenance or replacement of components or systems.

Other information

None.

Wat 04 Water efficient equipment

(all buildings)

Number of credits available	Minimum standards
1	No

Aim

To reduce water consumption by encouraging specification of water efficient equipment.

Assessment criteria

The following is required to demonstrate compliance:

One credit

1 The design team has identified all water demands from uses other than domestic-scale drinking and sanitary use components, e.g. swimming pools, vehicle wash and irrigation equipment (see Relevant definitions on page 274).

2 Systems or processes have been identified to reduce the water demand, and demonstrate, through either good practice design or specification, a meaningful reduction in the total water demand of the building.

Checklists and tables

None.

Compliance notes

Ref	Terms	Description
Shell and core (non-residential and residential institutions only)		
CN1	Applicable assessment criteria	Both options: All criteria relevant to the building type and function apply. Refer to Appendix D – Shell and core project assessments on page 409 for a more detailed description of the shell and core assessment options.
Residential - Partially fitted and fully fitted		

Ref	Terms	Description
CN2	Applicable assessment criteria - Single and multiple dwellings	Both options: All criteria relevant to the building type and function apply. Refer to Appendix E – Applicability of BREEAM New Construction to single and multiple dwellings, partially and fully fitted on page 412 for a more detailed description of residential assessment options.
General		
CN3	No water demand from uses other than domestic-scale drinking and sanitary use components	Where there is no water demand from uses other than domestic-scale drinking and sanitary use components in the building this issue is not applicable and does not require assessment.
CN3.1	Reducing water consumption. See criterion 2 on the previous page	BREEAM does not prescriptively define all potential means or solutions for reducing water consumption. The design team needs to demonstrate to the assessor that they have identified key areas of water consumption in the building and that a reduction in water consumption has been achieved using existing 'tried and tested' solutions or new innovative solutions relevant to the building and its functional requirements. The following are some examples of solutions deemed to satisfy compliance for a number of different building types or functions (where the water demand for that function is one of the significant contributors in the building). 1. Drip-fed subsurface irrigation incorporating soil moisture sensors. The irrigation control should be zoned to permit variable irrigation to different planting assemblages. 2. Reclaimed or recovered water from a rainwater collection or waste water recovery system with appropriate storage, i.e. greywater collection from building functions or processes that use potable water, e.g. vehicle wash, sanitary facilities, irrigation etc. 3. External landscaping and planting that relies solely on precipitation, during all seasons of the year. 4. All planting specified is restricted to contextually appropriate species that thrive without irrigation and will continue to do so in those conditions likely as a result of climate change, i.e. typically warmer and drier conditions.
CN3.2	Microbial contamination	Where vehicle wash systems are specified, the design team are to clarify that the installed systems are designed to minimise any legionella risk (refer to BREEAM issue Hea 09 Water quality on page 144).
Building specific		
CN4	Single dwellings - Rainwater harvesting	In single dwellings with a garden, the provision of a water butt is sufficient to demonstrate compliance with the criteria. No requirements are set on the type of water butt or storage capacity required. The assessor should be satisfied that, within reason, the installation is adequate for the size of development and climatic conditions of the region.

Methodology

None.

Evidence

Criteria	Interim design stage	Final post-construction stage
All	Documentation detailing all water demands from uses other than domestic-scale drinking and sanitary use components. The relevant sections or clauses of the building specification or contract OR Design drawings (where necessary). Manufacturer's product details.	BREEAM Assessor's site inspection report and photographic evidence. Manufacturer's product details.

Additional information

Relevant definitions

Water demand

For the purposes of this BREEAM issue, water demand includes, but is not limited to; swimming pools, recreational hot tubs and hydrotherapy pools, equipment used for irrigation, and vehicle wash equipment. Water demand from domestic-scale sanitary fittings is not assessed in this issue, but is assessed under issue Wat 01 Water consumption on page 253.

Vehicle wash

A commercial scale automatic, semi-automatic or manual system for washing vehicles. This includes wheel and chassis wash, fixed gantry and screen wash systems using brushes, spray or handheld jet hoses.

Other information

None.

Materials

Summary

This category encourages steps taken to reduce the impact of construction materials through design, construction, maintenance and repair. Issues in this section focus on the procurement of materials that are sourced in a responsible way and have a low embodied impact over their life including extraction, processing and manufacture, and recycling.

Category summary table

Issue	Credits	Credit summary
Mat 01 Life cycle impacts	Up to 6 credits	— Reductions in the building's environmental life cycle impacts through assessment of the main building elements.
Mat 02 Hard landscaping and boundary protection	N/A	
Mat 03 Responsible sourcing of construction products	4	— Materials sourced in accordance with a sustainable procurement plan. — Key building materials are responsibly sourced to reduce environmental and socio-economic impacts.
Mat 04 Insulation	N/A	
Mat 05 Designing for durability and resilience	1	— The building incorporates measures to reduce impacts associated with damage and wear and tear. — Relevant building elements incorporate appropriate design and specification measures to limit material degradation due to environmental factors.
Mat 06 Material efficiency	1	— Opportunities and measures have been identified and taken to optimise the use of materials.

Mat 01 Life cycle impacts

(all buildings)

Number of credits available	Minimum standards
Building type dependent	No

Aim

To recognise and encourage the use of robust and appropriate life cycle assessment tools and consequently the specification of construction materials with a low environmental impact (including embodied carbon) over the full life cycle of the building.

Assessment criteria

The following is required to demonstrate compliance:

One to five credits

1 The project uses a life cycle assessment (LCA) tool to measure the life cycle environmental impact of the building elements.

2 The LCA includes at least the mandatory building elements indicated in the 'Materials assessment scope' section of the BREEAM International Mat 01 calculator (where present in the building).

3 The mandatory requirements identified in the 'Materials assessment tool, method and data' section of the BREEAM International Mat 01 calculator on page 279 have been met.

4 A member of the project team completes the BREEAM International Mat 01 calculator on page 279 and determines a score based on the robustness of the LCA tool used and the scope of the assessment in terms of the elements considered. Credits are awarded as follows:

Table 43: Percentage of BREEAM Mat 01 calculator points achieved and credits awarded

Percentage of BREEAM Mat 01 calculator points achieved (%)	Credits	
	Industrial	All other buildings
25.0	1	1
62.5	1	2
75.0	1	3
80.0	2	4
82.5	2	5
85.0	2 + Exemplary	5 + Exemplary

One credit - Environmental product declarations (EPD)

5 Where a range of at least five products specified at Design Stage (DS) and installed by Post-Construction Stage (PCS) are covered by verified EPD (see CN3.2 on the next page).

Exemplary level criteria

6 The requirements for exemplary level criteria outlined in Table 43 on the previous page within the assessment criteria above have been achieved.

7 Where a range of at least 10 products specified at DS and installed by Post-Construction Stage (PCS) are covered by verified manufacturer specific EPD (see CN3.2 on the next page).

Checklists and tables

None.

Compliance notes

Ref	Terms	Description
Shell and core (non-residential and residential institutions only)		
CN1	Applicable assessment criteria	Both options: All criteria relevant to the building type and function apply. Refer to Appendix D – Shell and core project assessments on page 409 for a more detailed description of the shell and core assessment options.
Residential - Partially fitted and fully fitted		
CN2	Applicable assessment criteria - Single and multiple dwellings	Both options: All criteria relevant to the building type and function apply. Refer to Appendix E – Applicability of BREEAM New Construction to single and multiple dwellings, partially and fully fitted on page 412 for a more detailed description of residential assessment options.
General		
CN3	Element not specified (applicable elements)	In some buildings, not all elements listed within the BREEAM International Mat 01 calculator on page 279 will be present or specified, e.g. upper floors in single storey buildings. In these instances the calculator will re-evaluate the standard and exemplary level benchmarks according to the applicable elements.

Ref	Terms	Description
CN3.1	LCA tool approvals	Where a project team is considering using a LCA tool which has not been previously evaluated by BRE Global (BREG), the assessor should contact BREG providing all information required for the evaluation of the tool. The evaluation process of LCA tools often requires the involvement and issue of evidence by the tool producer or developer. The evaluation process can take up to four weeks; therefore assessors are advised to contact BREG as soon as possible to initiate the process. The fee sheet available on BREEAM Projects provides details of fees for LCA tool evaluations. All tools (and versions of tools) used must: 1. Meet the mandatory requirements outlined in the BREEAM International Mat 01 calculator on the facing page 2. Have the score generated by the BREEAM International Mat 01 calculator on the facing page and evaluated by BRE Global. The BREEAM International Mat 01 calculator on the facing page provides a list of previously submitted tools (by version) and their associated evaluation score.
CN3.2	Environmental Product Declarations (EPD) Classifications	Each EPD shall be classified according to Mat 03 Responsible sourcing of construction products: Table 46 on page 291 . For each EPD, select the classification that is the closest match. Only two EPDs per classification group may be counted. This is to encourage a range of EPDs from different construction product sectors. Where a product is comprised of more than one material, the assessor should decide which material category classification should be used at their own discretion. EPD certificates must be valid (unexpired) at the point of specification. The EPD must be compliant with ISO 14025, ISO 21930 or EN 15804.

Evidence

Criteria	Interim design stage	Final post-construction stage
1–4	Specification confirming: 1. The name and version of the LCA tool used 2. A copy of the LCA tool output or information from the tool provider to demonstrate answers given in the BREEAM International Mat 01 calculator. A copy of the output from the BREEAM International Mat 01 calculator. See also Other information on the facing page section for detailed requirements.	As design stage but with as-built data.
5 on the previous page	A schedule of specified products in the building with accepted EPDs, and their product categories. Copies of the EPD certificates.	As design stage but with as-built data.

Additional information

Relevant definitions

BREEAM International Mat 01 calculator

A spreadsheet-based calculator required to determine whether a project has used an appropriate LCA tool, and to calculate the number of credits achieved for this BREEAM issue, based on the scope and rigour of life cycle assessment and elements considered within the LCA.

Environmental Product Declaration

An EPD is an independently verified environmental label (i.e. ISO Type III label) according to the requirements of ISO 14025.
For construction products, the EPD must be produced to either EN 15804[62],ISO14025[63] or ISO 21930[64].

Integrated Material Profile and Costing Tool (IMPACT)

Integrated Material Profile And Costing Tool. For more information about IMPACT visit: www.IMPACTwba.com

Calculation procedures

This issue is concerned with the use of LCA on the project, and robustness of the method or tools used. At present, we do not seek to benchmark performance. This is likely to be included as LCA matures and BRE Global have collated enough building performance data to establish robust benchmarks.

The Mat 01 Calculator scores points based on the rigour of the life cycle assessment in terms of:

1. The quality of the assessment tool or method and data
2. The scope (of building elements) included in the assessment.

Other information

Evidence requirements

Note: Aside from the likely benefit to the environment from teams using LCA tools, the objective for BREEAM is to gather LCA performance data in order to create benchmarks and inform future updates of the scheme. The evidence requirements below are generic, but BRE Global understand that some tools are not able to fulfil all of the criteria. Where this is the case, the tool operator should submit results as close as possible to that required for the tool.

IMPACT compliant tools

A copy of the full IMPACT project or building file submitted by the assessor to BRE Global must be transmitted in the following format:

1. For 3D CAD or building information model (BIM) based IMPACT compliant tools: In Industry Foundation Classes (IFC) or the IMPACT Compliant tool's native format.
2. For spreadsheet-based IMPACT compliant tools: IFC, MS Excel or comma-separated variables (CSV) file format.
3. Building element categorisation to be according to New Rules of Measurement (NRM) Royal Institution of Chartered surveyors (RICS).
4. A table in MS Excel or CSV file format listing each building element with, for each one, the information listed under 2 b, c and d (from the 'other tools' section), along with the NRM classification.

Other tools

An electronic data table or tables of results (suitably cross referenced) generated by the tool, submitted by the assessor to BRE Global must fulfil the following criteria:

1. Submit a total building environmental impact result for year 0 (installation only) and year 60 study periods, as follows:
   a. To include individual results for all environmental issues or indicators that the tool or data permits, showing issue or indicators names and units used. Where issues or indicators according to BS EN 15978:2011 are available, these should be used
   b. Include individual results for each life stage or module, e.g. stages A, B and C (see BS EN 15978:2011). Where the tool further permits, or where complete measurement of the aforementioned stages is not possible, more detail should be provided. For example, BS EN 15978:2011 modules should be used
   c. The reporting format should be to BS EN 15978:2011 (or equivalent).
2. Results for each element as follows, to enable project team members and assessors without an IMPACT Compliant tool to check the accuracy of the model:
   a. Element impact per issue (as above), with units
   b. Element kg kg CO_2-eq per life stage or module (as above)
   c. Element quantity, with units
   d. Element description
   e. For each material in the element:
      i. Installed quantities, with units
      ii. Site wastage quantities, with units
      iii. Replace, repair, refurbish quantities, with units
      iv. Reuse, recycling or disposal (landfill, incineration) quantities, with units.
3. Transmitted in IFC, MS Excel or CSV file format.

Data permissions

Submission of information to BRE Global for the purpose of assessing this issue will be deemed to grant permission for the BRE Group of companies to use the information to:

1. Fulfil BREEAM quality assurance requirements
2. Conduct further research (using anonymised data), including for the establishment of robust building level life cycle performance benchmarks in BREEAM and BRE associated tools and methodologies.

Mat 02 Hard landscaping and boundary protection

Not assessed as a standalone issue within BREEAM International New Construction, but incorporated within Mat 01 Life cycle impacts on page 276.

Mat 03 Responsible sourcing of construction products

(all buildings)

Number of credits available	Minimum standards
4	Yes (criterion 1 below only)

Aim

To recognise and encourage the specification and procurement of responsibly sourced construction products.

Assessment criteria

The following is required to demonstrate compliance:

Prerequisite

1 All timber and timber-based products used on the project are Legally harvested and traded timber on page 293.

Note: For other construction products there are no prerequisite requirements at this stage.

One credit - Sustainable procurement plan

2 By the end of concept design stage, the client or developer has a documented policy and procedure that sets out procurement requirements for all suppliers and trades to adhere to relating to the responsible sourcing of construction products (see CN3 on the facing page).

3 The documented policy and procedure must be disseminated to all relevant internal and external personnel, and included within the construction contract to ensure that they are enforceable on the assessed project.

4 The documented policy and procedure must encourage the specification of products with responsible sourcing certification over similar products without certification.

Up to three credits - Responsible sourcing of construction products

5 The available responsible sourcing credits (refer to Table 44 below) can be awarded where the applicable construction products (refer to Table 45 on page 286) are responsibly sourced in accordance with the BREEAM methodology, as defined in the Methodology on page 285 section.

Table 44: The number of BREEAM credits achieved is determined as follows

Responsible sourcing credits	% of available Responsible sourcing points achieved
3	≥ 36
2	≥ 20
1	≥ 10

Exemplary level criteria

The following outlines the exemplary level criteria to achieve one innovation credit for this BREEAM issue:

6 Where at least 52% of the available responsible sourcing points are achieved.

Checklists and tables

None.

Compliance notes

Ref	Terms	Description
Shell and core (non-residential and residential institutions only)		
CN1	Applicable assessment criteria	Both options: All criteria relevant to the building type and function apply. Refer to Appendix D – Shell and core project assessments on page 409 of this Scheme Document for further description of the above options.
Residential - Partially fitted and fully fitted		
CN2	Applicable assessment criteria - Single and multiple dwellings	Both options: All criteria relevant to the building type and function apply. Refer to Appendix E – Applicability of BREEAM New Construction to single and multiple dwellings, partially and fully fitted on page 412 for a more detailed description of residential assessment options.
General		
CN3	Documented product procurement policy. See criterion 2 on the previous page.	This may be prepared and adopted at an organisational level or be site or project specific. It is recommended (but not a requirement) that the documented policy follows the principles of BS 8900-1:2013[65] Managing sustainable development of organisations - Guide or BS 8903:2010[66] Principles and framework for procuring sustainably – Guide. This policy may form a part of a broader Sustainable Procurement Plan or be in the form of a standalone document.
CN3.1	BREEAM recognised responsible sourcing certification schemes (RSCS) and their point scores. See criterion 5 on the previous page.	Guidance Note 18 available in the responsible sourcing section of the BREEAM website , provides a table of RSCSs recognised under BREEAM, their scope and associated point scores. This table is reviewed on a regular basis and BREEAM Assessors must ensure they use the current table.

Ref	Terms	Description
CN3.2	Checking responsible sourcing claims. See criterion 5 on page 282.	Confirmation of manufacturers' and suppliers' claims should be sought from the relevant responsible sourcing scheme provider. Many of the organisations who administer responsible sourcing certification schemes will, via their website, list companies and products that have been certified against their standards, including the scope of any such certification. Some schemes, including BES 6001 via www.greenbooklive.com, will provide downloadable copies of the relevant certificate, which can in turn be used as evidence of compliance for this BREEAM issue.
CN3.3	Route 1 Cut-off See step 1 in Methodology on the facing page.	Any construction product in the following location or use categories (see Table 45 on page 286) which clearly accounts for less than the following volumes can be excluded from the assessment. The volume considered should be taken as the construction product's overall external dimensions, including any internal voids and air spaces. Minor fixings (brackets, nails, screws etc.), adhesives, seals and ironmongery would normally fall below this threshold. Also, see CN3.5 below. — 'Internal partition and internal walls (including finishes)': Less than 0.33 m^3 per 1000m^2 of gross internal floor area (GIFA). — 'Ceiling (including ceiling finishes)': Less than 0.33 m^3 per 1000m^2 of GIFA. — All other location or use categories: Less than 1m^3 per 1000 m^2 of GIFA.
CN3.4	Broken chain	To recognise responsible sourcing certification where it does exist in the supply chain, while reducing the risks associated with a broken chain, it is permissible to use the upstream certification score in the BREEAM International Mat 03 tool where the downstream risk to responsible sourcing is considered to be low. Specifically, it is acceptable for the following types of organisations in the supply chain (that are downstream of the organisation with certification) not to have their own responsible sourcing certification: 1. Organisations that only handle or transport, OR 2. Organisations that only fabricate, assemble or install and are using a recognised quality management system to ensure the mixing and substitution of the certified upstream source with uncertified sources has not occurred AND Are operating in a jurisdiction that can demonstrate relatively robust and well enforced environmental, social and economic controls. For example: — States which are members of the EU — States that have declared adherence to the OECD Guidelines for Multinational Enterprises.
CN3.5	Quantities precision	The degree of tolerance accepted for estimating quantities is ± 20% of the final installed quantity. It is not necessary for the assessor to submit calculations in order to justify estimates. In particular, the cut-off estimation for many construction products (that are clearly below the cut-off) may be done without the need for any calculations at all.

Ref	Terms	Description
CN3.6	Insulation	Insulation must be assessed (where relevant) as part of the Location or Use categories listed in the Table 45 on the next page below.

Methodology

To determine the number of credits achieved for criterion 5 on page 282, either route 1, 2 or 3 must be followed (see the Additional information on page 292 section for information on different routes). The following steps outline the process to be followed to determine the number of credits achieved for responsible sourcing.

For examples and a further explanation of this method, along with a simplified methodology for building services construction products, see Guidance Note 24.

Step 1: Collating information and entering it in the BREEAM International Mat 03 tool

For all routes, the BREEAM International Mat 03 tool is used according to the following steps.

1. For each construction product in the building that is in the scope (see Table 46 on page 291 under 'Scope of assessment' section below):

Note: For **Route 1**, only steps 1.1,1.3,1.5,1.6,1.7 and 1.9 must be followed. Step 1.4 is optional for routes 1 and 2.

Step 1.1: Estimate if the quantity of the product is above the cut-off volume (see CN3.3 on the previous page). If it is, enter the construction product in the tool and assign it a ' Location and use' category, then proceed to the next step. If the quantity meets the cut-off then the product can be excluded.

Step 1.2 **(Route 2 only)**: Estimate the quantity (mass or volume) of the product (see CN3.5 on the previous page).

Step 1.3: Obtain the BREEAM recognised responsible sourcing certifications scheme (RSCS) certification or environmental management system (EMS) certification, if any (see CN3.2 on the previous page). Compare the certification with Guidance Note 18 and obtain the RSCS point score. Where the construction product has no certification, is non-compliant with broken chain requirements (see CN3.4 on the previous page) or the certification type is not listed in Guidance Note 18, the score is zero. Where the construction product is a reused product, obtain the score from Guidance Note 18 for these products.

Step 1.4 **(Optional, if not being followed go to step 1.5)**: Where a constituent construction product has a better certification score (see CN3.2 on the previous page) than the overall construction product and it complies with the broken chain requirements (see CN3.4 on the previous page), the following steps should be followed:

Step 1.4.1: Identify the materials categories that make up an estimated ≥ 80% of the constituent construction product's volume.

Step 1.4.2: Include each identified materials category in the tool (by creating new rows in the tool).

Step 1.4.3: If ≥ 5% of the volume is unaccounted for in step 1.4.1, include the 'Other' material category.

Step 1.4.4 **(Route 2 only)**: For each material following route 2 and identified in step 1.4.1, enter the building-wide quantity into the tool. This may be based on a percentage of the overall construction product's quantity estimated in step 1.1.

Step 1.4.5: For each material category (including 'Other'), enter the constituent's certification score identified in step 1.4 into the tool.

Step 1.5: Identify the materials categories that make up an estimated ≥ 80% of the product's volume (excluding quantities entered for step 1.4.1 , if applicable).

Step 1.6: Include each identified materials category in the tool (by duplicating the entry made in step 1.1).

Step 1.7: If ≥ 5% of the volume is unaccounted for in step 1.5 (and step 1.4, where applicable), include the 'Other' material category.

Step 1.8 **(Route 2 only)**: For each material category following route 2 and identified in step 1.5, enter the building-wide quantity into the tool. This may be based on a percentage of the overall construction product's quantity estimated in step1.1.

Step 1.9: For each material category (including 'Other'), enter the overall construction product's certification score (from step 1.3) into the tool.

Step 2: BREEAM International Scoring and reporting tool

Step 2.1: Enter the credit result produced by the BREEAM International Mat 03 tool into the BREEAM International scoring and reporting tool.

Scope of assessment

Table 45 below (based on the New Rules of Measurement (NRM) classification system) indicates the building elements that must be included in the scope of the assessment. Including these elements (and only these) is necessary to ensure an appropriate level of comparability. All construction products that are installed as part of one or more of these building elements are in scope and must be included in the BREEAM International Mat 03 tool. For each building element the respective location or use category for use in the BREEAM International Mat 03 tool is provided in the table.

Table 45: Scope of assessment, common building element designation, and location and use categories

RICS NRM elements and BREEAM equivalents			
Level 1 element: 1–Substructure **Level 2 element: 1–Substructure**			
Level 3 sub-element		**BREEAM 'Location/use' category**	**Include**
1	Standard foundations	7. Structure , primary and secondary	Y
2	Specialist foundations systems	7. Structure , primary and secondary	Y
3	Lowest floor construction	7. Structure , primary and secondary	Y
4	Basement excavation	N/A	Y
5	Basement retaining walls	7. Structure , primary and secondary	Y
Level 1 element: 2–Superstructure **Level 2 element: 1–Frame**			
Level 3 sub-element		**BREEAM 'Location/use' category**	**Include**
1	Steel frames	7. Structure, primary and secondary	Y
2	Space decks	7. Structure, primary and secondary	Y
3	Concrete casings to steel frames	7. Structure, primary and secondary	Y

RICS NRM elements and BREEAM equivalents			
4	Concrete frames	7. Structure, primary and secondary	Y
5	Timber frames	7. Structure, primary and secondary	Y
6	Other frame systems	7. Structure, primary and secondary	Y
Level 1 element: 2–Superstructure Level 2 element: 2–Upper Floors			
Level 3 sub-element		**BREEAM 'Location/use' category**	**Include**
1	Floors	3. Floor (including floor finishes)	Y
2	Balconies	3. Floor (including floor finishes)	Y
3	Drainage to balconies	11. Other	Y
Level 1 element: 2–Superstructure Level 2 element: 3–Roof			
Level 3 sub-element		**BREEAM 'Location/use' category**	**Include**
1	Roof structure	6. Roof (including roof finishes)	Y
2	Roof coverings	6. Roof (including roof finishes)	Y
3	Specialist roof systems	6. Roof (including roof finishes)	Y
4	Roof drainage	6. Roof (including roof finishes)	Y
5	Roof lights, skylights and openings	2. Door and window	Y
6	Roof features	6. Roof (including roof finishes)	Y
Level 1 element: 2–Superstructure Level 2 element: 4–Stairs and ramps			
Level 3 sub-element		**BREEAM 'Location/use' category**	**Include**
1	Stairs and ramps structures	7. Structure, primary and secondary	Y
2	Stair and ramp finishes	3. Floor (including floor finishes)	Y
3	Stair and ramp balustrades and handrails	11. Other	Y
4	Ladders, chutes and slides	11. Other	Y

RICS NRM elements and BREEAM equivalents			
Level 1 element: 2–Superstructure Level 2 element: 5–External walls			
Level 3 sub-element		**BREEAM 'Location/use' category**	**Include**
1	External enclosing walls above ground floor level	8. External wall	Y
2	External enclosing wall below ground floor level	7. Structure, primary and secondary	Y
3	Solar and Rain screening	8. External wall	Y
4	External soffits	8. External wall	Y
5	Subsidiary walls, balustrades, handrail and proprietary balconies	11. Other	Y
6	Façade access and cleaning systems	11. Other	Y
Level 1 element: 2–Superstructure Level 2 element: 6–Windows and external doors			
Level 3 sub-element		**BREEAM 'Location/use' category**	**Include**
1	External windows	2. Door and window	Y
2	External doors	2. Door and window	Y
Level 1 element: 2–Superstructure Level 2 element: 7–Internal walls and partitions			
Level 3 sub-element		**BREEAM 'Location/use' category**	**Include**
1	Walls and partitions	5. Internal partition and internal walls (including finishes)	Y
2	Balustrades and handrails	11. Other	Y
3	Moveable room dividers	5. Internal partition and internal walls (including finishes)	Y
4	Cubicles	5. Internal partition and internal walls (including finishes)	Y

RICS NRM elements and BREEAM equivalents			
Level 1 element: 2–Superstructure Level 2 element: 8–Internal doors			
Level 3 sub-element		**BREEAM 'Location/use' category**	**Include**
1	Internal doors	2. Door and window	Y
Level 1 element: 3–Internal Finishes Level 2 element: 1–Wall finishes			
Level 3 sub-element		**BREEAM 'Location/use' category**	**Include**
1	Finishes to walls	5. Internal partition and internal walls (including finishes)	Y
Level 1 element: 3–Internal Finishes Level 2 element: 3–Ceiling finishes			
Level 3 sub-element		**BREEAM 'Location/use' category**	**Include**
1	Finishes to ceilings	1. Ceiling (including ceiling finishes)	Y
2	False ceilings	1. Ceiling (including ceiling finishes)	Y
3	Demountable suspended ceilings	1. Ceiling (including ceiling finishes)	Y
Level 1 element: 4–Fittings, Furnishings and Equipment Level 2 element: 1–Fitting, furnishings and equipment			
Level 3 sub-element		**BREEAM 'Location/use' category**	**Include**
2	Kitchen fittings and equipment (ONLY)	11. Other	Y
Level 1 element: 5–Services Level 2 element: (ALL)			
Level 3 sub-element		**BREEAM 'Location/use' category**	**Include**
	(ALL)	9. Building services	Y
Level 1 element: 8–External Works Level 2 element: 2–Roads, paths and pavings			
Level 3 sub-element		**BREEAM 'Location/use' category**	**Include**
1	(ALL)	10. Hard landscaping	Y

RICS NRM elements and BREEAM equivalents			
Level 1 element: 8–External Works Level 2 element: 2–Roads, paths and pavings			
Level 3 sub-element		**BREEAM 'Location/use' category**	**Include**
1	(ALL)	10. Hard landscaping	Y
Level 1 element: 8–External Works Level 2 element: 3–Soft landscaping, planting and irrigation systems			
Level 3 sub-element		**BREEAM 'Location/use' category**	**Include**
		N/A	N
Level 1 element: 8–External Works Level 2 element: 4–Fencing, railings and walls			
Level 3 sub-element		**BREEAM 'Location/use' category**	**Include**
1	(ALL)	10. Hard landscaping	Y
Level 1 element: 8–External Works Level 2 element: 5–External fixtures			
Level 3 sub-element		**BREEAM 'Location/use' category**	**Include**
			N
Level 1 element: 8–External Works Level 2 element: 6–External drainage			
Level 3 sub-element		**BREEAM 'Location/use' category**	**Include**
	(ALL)	9. Building services	Y
Level 1 element: 8–External Works Level 2 element: 7–External services			
Level 3 sub-element		**BREEAM 'Location/use' category**	**Include**
	(ALL)	9. Building services	Y

The material categories, for use in the BREEAM International Mat 03 tool, must be in accordance with Table 46 on the facing page. For each construction product, identify the closest matching category.

Table 46: Material categories

Material categories
1. Timber or timber-based products 2. Concrete or cementitious 3. Metal 4. Stone or aggregate 5. Clay-based 6. Gypsum 7. Glass 8. Plastic, polymer, resin, paint, chemicals and bituminous 9. Animal fibre, skin, cellulose fibre 10. Other.

Evidence

Criteria	Interim design stage	Final post-construction stage
1 on page 282	Written confirmation from the principal contractor or client that all timber and timber based products will be sourced in compliance with the definition of Legally harvested and Legally traded timber or has certification that fulfils these requirements (e.g. FSC, PEFC) OR A specification or letter of intent from the design team confirming that all timber and timber based products will be procured in accordance with the BREEAM requirements.	Documentary evidence confirming all timber used in the building is legally harvested and trader timber.
2 on page 282–4 on page 282	A copy of the documented sustainable procurement plan. Evidence that the plan is disseminated, or a written commitment to do so. Evidence that the plan is included in the construction contract, or a written commitment to do so. Evidence that there is a policy to encourage the specification of products with responsible sourcing certification.	Evidence that the plan was disseminated. Evidence that the plan was included in the construction contract.

Criteria	Interim design stage	Final post-construction stage
5 on page 282	A copy of the completed BREEAM International Mat 03 tool. A copy of all responsible sourcing and EMS certificates OR A letter of intent from the design team or other detailed documentary evidence confirming that the products shall be sourced from suppliers capable of providing the required certification. For affected certified construction products, evidence on how the broken chain requirements are met.	Written confirmation that the documentary evidence provided at the design stage was followed during construction. Where different from the design stage, provide updated documentary evidence that was followed during construction. Where certified materials were used, copies of certificates AND Corresponding invoices and delivery receipts. For post-construction stage assessment only, provide a copy of the BREEAM Mat 03 calculator and detailed documentary evidence (as listed for the design stage) AND corresponding invoices and delivery receipts.

Additional information

Relevant definitions

BREEAM International Mat 03 calculator

A calculator tool used by the BREEAM Assessor to determine the number of BREEAM credits achieved for BREEAM issue Mat 03.

BREEAM recognised responsible sourcing certification schemes (RSCSs)

These are third party schemes evaluated by BRE Global for recognition under BREEAM. Refer to Guidance Note 18 available in the Responsible sourcing section of the BREEAM website for information on the evaluation criteria and the process for the evaluation and acceptance of schemes, including application and appeals.

Convention on International Trade in Endangered Species (CITES)

The Convention on International Trade in Endangered Species of wild fauna and flora (CITES) works by subjecting international trade in specimens of selected species to certain controls. All import, export, re-export and introduction from the sea of species covered by the Convention has to be authorised through a licensing system. Each Party to the Convention must designate one or more Management Authorities in charge of administering that licensing system and one or more scientific authorities to advise them on the effects of trade on the status of the species. The species covered by CITES are listed in three appendices, according to the degree of protection they need.

1. Appendix I includes species threatened with extinction. Trade in specimens of these species is permitted only in exceptional circumstances.
2. Appendix II includes species not necessarily threatened with extinction, but in which trade must be controlled in order to avoid utilisation incompatible with their survival.
3. Appendix III contains species that are protected in at least one country, which has asked other CITES Parties for assistance in controlling the trade.

Appendices I and II of the CITES list illustrate species of timber that are protected outright. Appendix III of the CITES list illustrates species that are protected in at least one country. If a timber species used in the project is on Appendix III it can be included as part of the assessment as long as the timber is not obtained from the country or countries seeking to protect this species.

Legally harvested and traded timber

Legally harvested timber and wood-derived products are those that originate from a forest where the following criteria are met:

1. The forest owner or manager holds legal use rights to the forest
2. There is compliance by both the forest management organisation and any contractors with local and national legal criteria including those relevant to:
   a. Forest management
   b. Environment
   c. Labour and welfare
   d. Health and safety
   e. Other parties' tenure and use rights
   f. All relevant royalties and taxes are paid.
3. There is full compliance with the criteria of CITES.

Legally traded means timber or products derived from Legally harvested timber were:

1. Exported in compliance with exporting country laws governing the export of timber and timber products, including payment of any export taxes, duties or levies
2. Imported in compliance with importing country laws governing the import of timber and timber products, including payment of any import taxes, duties or levies
3. Traded in compliance with legislation related to the convention on international trade in endangered species (CITES), where applicable.

New Rules of Measurement

NRM provides a standard set of measurement rules and essential guidance for the cost management of construction projects and maintenance works. For more information visit: www.rics.org/.

Responsible sourcing

The management and implementation of sustainable development principles in the provision, procurement and traceability of construction materials and components. In BREEAM, this is demonstrated through auditable third party certification schemes. Refer to Guidance Note 18 available in the Responsible sourcing section of the BREEAM website for an up-to-date table of RSCSs recognised by BRE Global for the purposes of a BREEAM assessment.

Responsible sourcing certification scheme point scores

A graded scale to reflect the rigour of the certification scheme used to demonstrate responsible sourcing, forming the basis for awarding credits in the BREEAM issue Mat 03. Refer to Guidance Note 18 available in the Responsible sourcing section of the BREEAM website for an up-to-date table of RSCSs recognised by BRE Global for the purposes of a BREEAM assessment.

Route 1

Route 1 does not require the quantities of each construction product to be entered into the BREEAM International Mat 03 tool. This reduces the time taken to calculate the score achieved per construction product but, because the varying quantities of each construction product in the building cannot be taken into account when the credit is calculated, the lowest 'location or use' category score per materials category is used for the overall materials category score.

Route 2

Route 2 provides a more accurate measurement of the risks in the building design associated with construction products by taking account of the quantity of each construction product with a location and use category. It requires quantities to be entered into BREEAM International Mat 03 tool rather than using the lowest 'location or use' category score per material category. The improvement in rigour justifies route 2 having the potential to produce better scores than route 1.

Route 3

Route 3 is a mixture of route 1 and route 2. For example, route 1 may be used for the timber or timber-based category and route 2 for the metal category. Only one route may be used per materials category.

Other information

None.

Mat 04 Insulation

Not assessed as a standalone issue within BREEAM International New Construction Version 6, but incorporated within Mat 01 Life cycle impacts on page 276 and Mat 03 Responsible sourcing of construction products on page 282.

Mat 05 Designing for durability and resilience (all buildings)

Number of credits available	Minimum standards
1	No

Aim

To recognise and encourage adequate protection of exposed elements of the building and landscape, therefore minimising the frequency of replacement and maximising materials optimisation.

Assessment criteria

The following is required to demonstrate compliance:

One credit

Protecting vulnerable parts of the building from damage

1 The building incorporates suitable durability and protection measures, or designed features or solutions to prevent damage to vulnerable parts of the internal and external building and landscaping elements. This must include, but is not necessarily limited to:
- 1.a Protection from the effects of high pedestrian traffic in main entrances, public areas and thoroughfares (corridors, lifts, stairs, doors etc.)
- 1.b Protection against any internal vehicular or trolley movement within 1m of the internal building fabric in storage, delivery, corridor and kitchen areas
- 1.c Protection against, or prevention from, any potential vehicular collision where vehicular parking and manoeuvring occurs within 1m of the building façade for all car parking areas and within 2m for all delivery areas.

Protecting exposed parts of the building from material degradation

2 The relevant parts of the building incorporate appropriate design and specification measures to limit material degradation due to environmental factors (see Methodology on page 298 for the process to assess this criterion).

See Table 47 on the next page for a list of applicable elements, environmental factors and material degradation effects to consider.

Checklists and tables

Table 47: Applicable building elements, environmental factors and material degradation effects to consider

Applicable building elements, environmental factors and material degradation effects
Applicable building elements
1. Foundation, substructure, lowest floor, retaining walls 2. External walls 3. Roof or balconies 4. Glazing: windows, skylight 5. External doors 6. Railings or balusters (where exposed to external environment) 7. Cladding (where exposed to external environment) 8. Staircases or ramps (where exposed to external environment) 9. Hard landscaping.
Environmental factors
1. Environmental agents, including: a. Solar radiation b. Temperature variation c. Water or moisture d. Wind e. Precipitation, e.g. rain and snow f. Extreme weather conditions: high wind speeds, flooding, driving rain, snow 2. Biological agents, including: a. Vegetation b. Pests, insects 3. Pollutants, including: a. Air contaminants b. Ground contaminants.
Material degradation effects (includes, but not necessarily limited to the following)
1. Corrosion 2. Dimensional change, e.g. swelling or shrinkage 3. Fading or discolouration 4. Rotting 5. Leaching 6. Blistering 7. Melting 8. Salt crystallisation 9. Abrasion.

Compliance notes

Ref	Terms	Description
Shell and core (non-residential and residential institutions only)		
CN1	Applicable assessment criteria	**Protecting vulnerable parts of the building from damage - criterion 1 on page 295** Where the identified vulnerable parts of the building form part of the shell and core developer's remit: Both options: All assessment criteria relevant to the building type and function apply and must be accounted for in the assessment of this issue. Where the identified vulnerable parts of the building do not form a part of the shell and core developer's remit, e.g. they are in lettable areas and compliance is subject to the tenant's or future occupier's fit-out specification: Both options: These areas can be excluded from assessment. **Protecting exposed parts of the building from material degradation - criterion 2 on page 295** Both options: All criteria relevant to the building type and function apply. Refer to Appendix D – Shell and core project assessments on page 409 for a more detailed description of the shell and core assessment options.
Residential - Partially fitted and fully fitted		
CN2	Applicable assessment criteria - Single dwellings	**Protecting vulnerable parts of the building from damage - criterion 1 on page 295** Both options: Criteria 1.a on page 295 and 1.b on page 295 are not applicable. **Protecting exposed parts of the building from material degradation - criterion 2 on page 295** Both options: All criteria relevant to the building type and function apply. Refer to Appendix E – Applicability of BREEAM New Construction to single and multiple dwellings, partially and fully fitted on page 412 for a more detailed description of residential assessment options.
CN2.1	Applicable assessment criteria - Multiple dwellings	**Protecting vulnerable parts of the building from damage - criterion 1 on page 295** Both options: All criteria relevant to the building type and function apply. **Protecting exposed parts of the building from material degradation - criterion 2 on page 295** Both options: All criteria relevant to the building type and function apply. Refer to Appendix E – Applicability of BREEAM New Construction to single and multiple dwellings, partially and fully fitted on page 412 for a more detailed description of residential assessment options.
General		

Ref	Terms	Description
CN3	Suitable durability measures. See criterion 1 on page 295.	Suitable durability and protection measures to vulnerable parts of the building can include: 1. Bollards or barriers, or raised kerbs to delivery and vehicle drop-off areas 2. Robust external wall construction, up to 2m high 3. Protection rails to walls of corridors 4. Kick plates or impact protection (from trolleys etc.) on doors 5. Hard-wearing and easily washable floor finishes in heavily used circulation areas (i.e. main entrance, corridors, public areas etc.) 6. Designing out the risk without the need for additional materials specification to protect vulnerable areas.
CN3.1	Vehicle impact protection. See criterion 1.c on page 295.	Any vehicle impact protection measures specified must be positioned at an adequate distance from the building to protect the fabric from impact from any vehicle with a measurable overhang of the body from the wheel track, in particular for any goods delivery areas. In vehicle movement areas only: where the external robust wall construction is specified to comply with the credit, additional protection must be provided to ensure against potential damage to the robust façade from vehicle movement, i.e. specifying bollards or protection rails.
CN3.2	Preventing excessive material use	The specification or design measures chosen should reflect the need to balance the additional specification of materials with the need to protect building elements to minimise their replacement, insuring against excessive material use and promoting materials optimisation. See Mat 06 Material efficiency on page 300.
CN3.3	Public or common areas	Consideration should be given to materials specification in public or common areas (especially public waiting areas and toilet areas) to provide protection against potential malicious or physical abuse, as far as possible.

Methodology

Protecting exposed parts of the building from material degradation

The following outlines the process to assess criterion 2 on page 295 for newly specified materials and construction elements:

1. Identify from the list of 'applicable building elements' under Table 47 on page 296 the elements that are appropriate to the building being assessed.
2. Establish from the 'environmental factors' list those factors that are likely to cause material degradation effects in the identified applicable building elements.
3. Confirm the design and specification measures in place to limit these degradation effects.
4. The assessor should use their professional judgment in determining whether the design team have adequately demonstrated that they have designed and specified materials or measures which will be effective in preventing unnecessary deterioration, so reducing frequent replacements, repairs and maintenance through the life cycle of the building.
5. At the post-construction stage, where the design and specification measures installed differ from those proposed at the design stage, the assessor must ensure that these measures still meet the aims of the criterion as detailed in point 4.

Evidence

Criteria	Interim design stage	Final post-construction stage
1 on page 295	Design drawings illustrating vulnerable areas or parts of the building. Design drawings or specification confirming the durability of the measures specified.	Assessor's building or site inspection, or photographic evidence confirming compliance.
2 on page 295	Design drawings confirming the applicable elements. Documentary evidence for the environmental factors and material degradation effects considered relevant to the building. Design and specification measures in place to limit degradation effects. Where relevant manufacturer's technical details confirming the material degradation effect militated by the specified product.	As interim design stage and based on as-built drawings.

Additional information

Relevant definitions

Materials efficiency

Refer to BREEAM issue Mat 06 Material efficiency on page 300

Other information

None.

Mat 06 Material efficiency

(all buildings)

Number of credits available	Minimum standards
1	No

Aim

To recognise and encourage measures to optimise material efficiency in order to minimise the environmental impact of material use and waste without compromising on structural stability, durability or service life of the building.

Assessment criteria

The following is required to demonstrate compliance:

One credit

1 Opportunities have been identified, and appropriate measures investigated and implemented, to optimise the more efficient use of materials in building design, procurement, construction, maintenance and end of life.

2 The above is carried out by the design or construction team in consultation with the relevant parties (see CN3 on the facing page) at each of the following project work stages:
- 2.a Preparation and Brief
- 2.b Concept Design
- 2.c Developed Design
- 2.d Technical Design
- 2.e Construction.

Checklists and tables

None.

Compliance notes

Ref	Terms	Description
Shell and core (non-residential and residential institutions only)		
CN1	Applicable assessment criteria	Both options: All criteria relevant to the building type and function apply. Refer to Appendix D – Shell and core project assessments on page 409 for a more detailed description of the shell and core assessment options.

Ref	Terms	Description
Residential - Partially fitted and fully fitted		
CN2	Applicable assessment criteria - Single and multiple dwellings	Both options: All criteria relevant to the building type and function apply. Refer to Appendix E – Applicability of BREEAM New Construction to single and multiple dwellings, partially and fully fitted on page 412 for a more detailed description of residential assessment options.
General		
CN3	Relevant parties	All parties (as relevant to the project stage) involved in the design, specification or construction of the building should be consulted. This includes, but is not limited to, the following: 1. Client or developer 2. Cost consultant 3. Architect 4. Structural or civil engineers 5. Building services engineers - mechanical, electrical 6. Principal contractor 7. Demolition or strip-out contractor 8. Environmental consultant 9. Project management consultant 10. Materials or component manufacturers or suppliers.
CN3.1	Evidence requirements	The evidence required to demonstrate compliance will vary according to the work stage; examples of how material efficiency could be considered have been provided in Table 48 on the next page. To demonstrate compliance, as a minimum BREEAM Assessors must ensure that the measures and outputs under the 'evidence' column have been met.

Methodology

None.

Evidence

Criteria	Interim design stage	Final post-construction stage
All	See compliance note CN3.1 above, one or more appropriate evidence types can be used to demonstrate compliance with the criteria requirements.	

Additional information

Relevant definitions

Material efficiency

The process of undertaking a building project to enable the most efficient use of materials over the life cycle of the building and its components. This includes using fewer materials, reusing existing demolition and strip-out materials and, where appropriate, procuring materials with higher levels of recycled content. It may also include the adoption of alternative means of design or construction that result in lower materials usage and lower wastage levels including off-site manufacture and use of pre-assembled service pods.

Other information

Table 48: The following table is based on the principles set out in parts 1 and 2 of the BS 8895 series of standards, and provides some examples of how material efficiency can be considered at each work stage. As a minimum, the measures listed under the 'evidence' column have been met to show compliance with the issue.

Work Stage	Objective	Participants	Action	Evidence
Preparation and Brief	To set requirements that will inform decisions throughout the design and construction.	Client or client's agent with input from the design team.	Assess the site, the likely project scale, and the client's functional and aesthetic requirements to set material efficiency objectives for the project.	Dedicated report that sets out a clear framework to guide material efficiency activities throughout the design and construction of the project. The report should set out aims, objectives, targets, performance indicators, opportunities, constraints and responsibilities to guide material efficiency activities.
Concept Design	Develop strategies to implement or action the materials efficiency requirements set under the Preparation and Brief stage.	Design team.	Hold workshops with the project team to identify design opportunities to reduce or optimise materials use through design, specification, construction techniques etc.	— Minutes of the workshops held. — Documentation demonstrating how the feedback from the workshop has been incorporated in the concept design of the project, for example: outline specification for materials selection, report on predicted reductions in material quantities.

Work Stage	Objective	Participants	Action	Evidence
Developed Design and Technical Design	Developed design proposals based on learning from the concept design.	Design team	— Incorporate material efficiency measures and strategies identified in concept design into architectural, structural and building services design as appropriate. — Review performance against previous stages and identify deviations.	— Report on deviations from previous stages. — Documentation demonstrating the incorporation of the outcomes from the concept stage, for example: design drawings or specifications demonstrating materials efficiency measures undertaken.
Construction	Implement material efficiency measures in construction.	Principal contractor.	— Implement material efficiency measures and strategies identified in previous stages in building construction and identify deviations. — Identify further efficiencies as appropriate for this stage.	— Report on deviations from previous stages. — Documented evidence of activity to further identify efficiencies at this stage, for example: meeting minutes, training events, waste reduction documentation etc.

Optimising material use

Optimising material use is one the key resource efficiency goals for any sustainability strategy. This involves various components to ensure efficient use of materials, waste prevention and reduction, minimal damage to the environment and depletion of natural resources. This new BREEAM issue aims to encourage and support efforts to reduce the amount of materials used in building design without compromising on the structural stability and other performance factors. BRE intends to further develop the assessment criteria for this issue in future updates of BREEAM, and as such BRE would welcome any feedback on the application of this assessment issue to assist with the evolution of the criteria and inclusion of additional guidance on compliance in future BREEAM versions.

Tools to guide material efficiency strategies

The following provide frameworks for the consideration and review of resource efficiency in design and construction.

BS 8895 Designing for material efficiency in building projects

This standard outlines specific material efficiency processes, key tasks, team members and their responsibilities and outputs specific to each work stage, along with supporting guidance and tools. This serves as a useful tool to assist the design team in developing and implementing material efficiency strategies for their developments.

The standard is comprised of the following four parts:

- Part 1: Code of practice for Strategic Definition and Preparation and Brief[67] (published)
- Part 2: Code of practice for concept and developed design[68] (published)
- Part 3: Code of practice for technical design (planned for development)
- Part 4: Code of practice for operation, refurbishment (planned for development).

WRAP

Designing out Waste: A design team guide for Buildings[69] This document outlines five principles of designing out waste and can be applied during design development, and serve as prompts for investigating opportunities for material efficiency in design.

Waste

Summary

This category encourages the sustainable management (and reuse where feasible) of construction and operational waste and waste through future maintenance and repairs associated with the building structure. By encouraging good design and construction practices, issues in this section aim to reduce the waste arising from the construction and operation of the building, encouraging its diversion from landfill. It includes recognition of measures to reduce future waste as a result of the need to alter the building in the light of future changes to climate.

Category summary table

Issue	Credits	Credit summary
Wst 01 Construction waste management	3	— Development of a construction resource management plan. — Reducing construction waste related to on site construction and off-site manufacture or fabrication. — Diverting non-hazardous construction (on site and dedicated off-site manufacture or fabrication), demolition and excavation waste (where applicable) generated by the project from landfill.
Wst 02 Recycled aggregates	1	— Percentage levels of recycled or secondary aggregate specified against set targets.
Wst 03a Operational waste	1	— Provision of suitable space and facilities to allow for segregation and storage of operational recyclable waste volumes generated by the assessed building or unit, its occupants and activities.
Wst 03b Operational waste	2	— Provision of suitable space and facilities to allow for segregation and storage of operational recyclable waste volumes generated by the assessed building or unit, its occupants and activities.
Wst 04 Speculative finishes	1	— Specification of floor and ceiling finishes only where agreed with the occupant or for tenanted areas where the future occupant is not known, carpets, other floor finishes and ceiling finishes are installed in a show area only to reduce wastage.
Wst 05 Adaptation to climate change	1	— Encourage consideration and implementation of measures to mitigate the impact of more extreme weather conditions arising from climate change over the lifespan of the building.
Wst 06 Functional adaptability	1	— Encourage consideration and implementation of measures to accommodate future changes to the use of the building and its systems over its lifespan.

Wst 01 Construction waste management

(all buildings)

Number of credits available	Minimum standards
3	Yes

Aim

To promote resource efficiency via the effective and appropriate management of construction waste.

Assessment criteria

This issue is split into two parts:

- Construction waste reduction (2 credits)
- Diversion of resources from landfill (1 credit)

The following is required to demonstrate compliance:

Construction waste reduction

One credit

1 Where appropriate targets for the amount of non-hazardous and hazardous waste produced on site are set in m^3 of waste per 100m^2 or tonnes of waste per 100m^2.

2 Procedures are in place to minimise non-hazardous and hazardous waste in line with the targets.

3 The amount of site construction waste created is being monitored and targets regularly reviewed.

4 The design or site management team has nominated an individual responsible for implementing the above.

5 A pre-demolition audit of any existing buildings, structures or hard surfaces is completed to determine if refurbishment or reuse is feasible and, if not, to maximise the recovery of material from demolition for subsequent use, prioritising high grade or value applications. The audit must cover:
- 5.a Identification of the key refurbishment and demolition materials
- 5.b Potential applications and any related issues for the reuse and recycling of the key refurbishment and demolition materials.

6 Using the collated data, report the amount of waste generated per 100m^2 (gross internal floor area) in m^3 (where volume is actual volume of waste, not bulk volume) or tonnes from the construction process via the BREEAM scoring and reporting tool.

One credit

7 Criteria 1 to 6 above (where applicable) are achieved.

8 Procedures are in place for sorting, reusing and recycling construction waste into at least five defined waste groups (see Table 50 on page 308) either on site or off-site through a licensed external contractor.

Diversion of resources from landfill

One credit

9 A significant quantity of non-hazardous construction and demolition waste (where applicable) generated by the project has been diverted from landfill according to the figures within Table 49 below below:

Table 49: BREEAM targets for diversion from landfill according to National construction and demolition (C&D) waste recovery rate

National recovery rates*	Type of waste	One credit	Exemplary level
		BREEAM target rates for diversion from landfill	
< 50% (by weight)*	Construction	≥ 60% (by weight) or ≥ 50% (by volume)	≥ 75% (by weight) or ≥ 65% (by volume)
≥ 50% (by weight)*	Construction	≥ 10% improvement over national rate (up to where 95% of total waste created is diverted to landfill)	≥ 35% improvement over national rate (up to where 95% of total waste created is diverted to landfill)
< 60% (by weight)*	Demolition	≥ 70% (by weight) or ≥ 60% (by volume)	≥ 75% (by weight) or ≥ 65% (by volume)
≥ 60% (by weight)*	Demolition	≥ 10% improvement over national rate (up to where 95% of total waste created is diverted from landfill)	≥95% of total waste created is diverted from landfill
*Where the national waste recovery rate is reported for both construction and demolition waste together, the same target should be used for both types of waste. For the project to achieve the credit, both construction and demolition waste (reported separately) must meet the target.			

10 Waste materials will be sorted into separate key waste groups (according to the waste streams generated by the scope of the works) either on site or off-site through a licensed contractor for recovery (see Table 50 on the next page for information on waste groups).

11 Using the collated data, report the following via the BREEAM scoring and reporting tool (this applies to construction and demolition waste, where applicable):
- 11.a Destination of the non-hazardous waste leaving the site (i.e. address and facility); and
- 11.b Level of waste diverted from landfill as a percentage of overall arising OR m^3 of waste per 100m^2 OR tonnes of waste per 100m^2 (see Compliance notes on page 309).

Exemplary level criteria

The following outlines the exemplary level criteria to achieve an innovation credit for this BREEAM issue:

12 Criteria 1 to 11 above, where applicable, are achieved.

13 The percentage of non-hazardous construction and demolition waste (if relevant) diverted from landfill meets or exceeds the exemplary level percentage benchmark (outlined in Table 49 above).

Checklists and tables

Even though some locations may have limited infrastructure, it should be possible to reuse and recycle the five basic materials (ceramics, excavated material, plasterboard, concrete and timber) locally, so the second credit will be awarded only if C&D waste is sorted into at least five waste groups (see : Key waste group examples below) or the minimum required by local regulations, whichever is the most onerous. Where there is a significant amount of metals to be reused or recycled this can replace the smallest of the five categories listed above.

Table 50: Key waste group examples

Key group	Examples
Bricks	Bricks
Concrete	Pipes, kerb stones, paving slabs, concrete rubble, precast and in situ
Insulation	Glass fibre, mineral wool, foamed plastic
Packaging	Paint pots, pallets, cardboard, cable drums, wrapping bands, polythene sheets
Timber	Softwood, hardwood, board products such as plywood, chipboard, medium density fibreboard (MDF)
Electrical and electronic equipment	Electrical and electronic TVs, fridges, air-conditioning units, lamps equipment
Canteen or office	Office waste, canteen waste, organic waste, e.g. food waste
Oils	Hydraulic oil, engine oil, lubricating oil
Asphalt and tar	Bitumen, coal tars, asphalt
Ceramics	Tiles, bricks, ceramic sanitary ware, etc.
Excavated material (all inert)	Mixed rubble (mixture of concrete, ceramics and inert soils, clays, rocks, etc.)
Topsoil	Topsoil
Glass	Glass
Metals	Radiators, cables, wires, bars, sheet
Gypsum	Plasterboard, render, plaster, cement, fibre cement sheets, mortar

Key group	Examples
Plastics	Pipes, cladding, frames, non-packaging sheet
Furniture	Tables, chairs, desks, sofas
Soils	Soils, clays, sand, gravel, natural stone
Liquids	Non-hazardous paints, thinners, timber treatments
Hazardous	As defined in national legislation or as defined in the Hazardous Waste List (HWL) of the European Waste Catalogue (EWC). Compliance is required with the more onerous of the two.
Floor coverings (soft)	Carpets, vinyl flooring
Architectural features	Roof tiles, reclaimed bricks, fireplaces
Mixed or other	Efforts should be made to categorise waste into the above categories wherever possible

Compliance notes

Ref	Terms	Description
Shell and core (non-residential and residential institutions only)		
CN1	Applicable assessment criteria	Both options: All criteria relevant to the building type and function apply. Refer to Appendix D – Shell and core project assessments on page 409 for a more detailed description of the shell and core assessment options.
Residential - Partially fitted and fully fitted		
CN2	Applicable assessment criteria - Single and multiple dwellings	Both options: All criteria relevant to the building type and function apply. Refer to Appendix E – Applicability of BREEAM New Construction to single and multiple dwellings, partially and fully fitted on page 412 for a more detailed description of residential assessment options.
General		
CN3	Extensions to existing buildings	For assessments of extensions to existing buildings, where only the extension is being assessed, it is only the extension that must comply.

Ref	Terms	Description
CN3.1	Diversion from landfill	Diversion from landfill includes: 1. Reusing the material on site (in situ or for new applications) 2. Reusing the material on other sites 3. Salvaging or reclaiming the material for reuse 4. Returning material to the supplier via a 'take-back' scheme 5. Recovery of the material from the site by an approved waste management contractor and subsequently being recycled or sent for energy recovery.
CN3.2	Use of BRE Smartwaste	Criteria 1– 4 on page 306 are achieved where the client or contractor confirms that BRE's SMARTWaste system is to be used for planning and monitoring.
CN3.3	Limited site space for segregation and storage	Where space on site is too limited to allow waste materials to be segregated, a waste contractor may be used to separate and process recyclable materials off-site. Similarly, manufacturers' take-back schemes could also be used. Where this is the case, sufficient documentary evidence must be produced which demonstrates that segregation of materials is carried out to the agreed levels and that materials are reused or recycled as appropriate.
CN3.4	National construction and demolition waste recovery rate	Where the national construction and demolition recovery rates are known submit these as part of the ASWL process. . Where the national construction and demolition recovery rates are unknown the design team should assume that they are 50% for both construction and demolition. Achieving a 10% improvement will therefore require the design team or the contractor to divert 60% by weight of their non-hazardous construction waste from landfill.
CN3.5	Waste from temporary support structures	Some projects require temporary works that fall outside the scope of normal construction methods or practices, for example, projects that require bespoke temporary steelwork supports for façade retention. If it can be demonstrated that the components and materials used will be either reused or, if this is not possible, recycled after use then these may be excluded from the construction waste reduction and diversion from landfill assessments of this issue. However, the strategy for ensuring resource efficient design of the temporary works and an explanation of the reuse or recycling of the materials concerned must be reported in the site waste management plan, including a full justification for exemption, and provided to BRE Global. This justification will be reviewed by BRE Global on a case-by-case basis and must be approved prior to these credits being awarded.

Methodology

None.

Evidence

Criteria	Interim design stage	Final post-construction stage
All	A copy of the specification or contract or other formal document confirming waste procedures, including recycling and targets OR a letter from the client or their representative. Where relevant, a copy of the pre-demolition audit.	A copy of the waste procedures, including recycling and targets. Monitoring records or report. Where relevant, a copy of the pre-demolition audit.

Additional information

Relevant definitions

Appropriate targets

These can be set according to best practice (where available) and will depend on the type of waste and the opportunities for reuse on site. Targets could also be set to improve on data from similar past projects or which are working towards a company target. The design team should justify why the targets are deemed appropriate. A target is NOT deemed to be an 'appropriate target' within this issue solely because it is achievable. Note: Targets and measurements should exclude demolition and excavation waste as this varies from project to project (and is addressed in the 'diversion from landfill' credit). Further information can be found on the SMARTWaste Plan website on how to set appropriate targets.

Inert waste

Waste is considered inert if:

1. It does not undergo any significant physical, chemical or biological transformations;
2. It does not dissolve, burn or otherwise physically or chemically react, biodegrade or adversely affect other matter with which it comes into contact in a way likely to give rise to environmental pollution or harm to human health; and
3. Its total leachability and pollutant content and the ecotoxicity of its leachate are insignificant and, in particular, do not endanger the quality of any surface water or groundwater (taken from the European Community (EC) Directive 1999/31/EC on the landfill of waste).

Pre-demolition audits

These provide detailed information on materials that can be reclaimed and recycled, so reducing the cost and environmental impact of waste disposal, bringing savings from reusing existing materials and earnings from selling those that are not needed. They:

1. Identify volumes of wastes so that your company can plan 'reuse, recycling and recovery' activities prior to work starting.
2. Are tailor-made for each demolition project including:
   a. Identifying markets for recycled or recovered material
   b. Identifying reclamation and reuse potential both on site and off-site
   c. Local and national material valuation
   d. Segregation recommendations
   e. Environmental quantification.
3. Increase material and labour efficiency, reduce waste and maximise profit.

Other information

Site waste management plan

The implementation of a site waste management plan (SWMP) can help manage the site construction waste produced. The aim of a SWMP is to promote resource efficiency and to prevent illegal waste activities. Resource efficiency includes minimising waste at source and ensuring that clients, designers and principal contractors assess the use, reuse and recycling of materials and products on and off the site. A SWMP consists of a combination of commitments to:

1. Design out waste
2. Reduce waste generated on site
3. Develop and implement procedures to sort and reuse or recycle construction waste on and off-site (as applicable).

Data obtained from measuring and monitoring site construction waste can then be used to check performance against targets and benchmarks, analyse the effectiveness of any solutions implemented and strive for continual improvement.

SMARTWaste

SMARTWaste is an online environmental reporting tool for the construction industry. It enables organisations to efficiently capture, monitor and report on:

- Waste (including site waste management plans and pre-demolition audits)
- Energy (including conversion to carbon dioxide emissions)
- Water
- Responsible sourced materials (including timber)
- Transport
- Considerate Contractors Scheme.

Used to meet the criteria of this issue and as a source of evidence for demonstrating compliance, SMARTWaste helps organisations to reduce their environmental impacts, making substantial time and cost savings.

More information about SMARTWaste can be found at: www.smartwaste.co.uk.

Wst 02 Recycled aggregates

(all buildings)

Number of credits available	Minimum standards
1	No

Aim

To recognise and encourage the use of recycled and secondary aggregates, thereby reducing the demand for virgin material and optimising material efficiency in construction.

Assessment criteria

The following is required to demonstrate compliance:

One credit - Recycled aggregates

1 At least 25% of the high grade aggregate uses (within the development) are provided by secondary or recycled aggregate. This percentage can be measured using either weight or volume.

2 The recycled or secondary aggregates are EITHER
- 2.a Construction, demolition and excavation waste obtained on site or off-site OR
- 2.b Secondary aggregates (see Relevant definitions on page 315)

Exemplary level criteria

The following outlines the exemplary level criteria to achieve an innovation credit for this BREEAM issue.

3 Where the total amount of recycled or secondary aggregate specified is greater than 50% (by weight or volume) of the total high grade aggregate specified for the project.

4 The contributing recycled or secondary aggregate must not be transported more than 30km by road transport.

Checklists and tables

None.

Compliance notes

Ref	Terms	Description
Shell and core (non-residential and residential institutions only)		
CN1	Applicable assessment criteria	Both options: All criteria relevant to the building type and function apply. Refer to Appendix D – Shell and core project assessments on page 409 for a more detailed description of the shell and core assessment options.
Residential - Partially fitted and fully fitted		
CN2	Applicable assessment criteria - Single and multiple dwellings	Both options: All criteria relevant to the building type and function apply. Refer to Appendix E – Applicability of BREEAM New Construction to single and multiple dwellings, partially and fully fitted on page 412 for a more detailed description of residential assessment options.
General		
CN3	Recycled aggregates in concrete	Where national building regulations limit the use of recycled aggregates in concrete (typically applicable to bound aggregate uses as listed), the onus for achieving this credit is on the unbound uses (please note that the total aggregate figure must still include the bound uses).
CN3.1	National restrictions on the use of recycled aggregates	In countries where the use of recycled aggregates is restricted, this credit cannot be achieved by default. In countries where there is a maximum permitted regulatory level of less than 50% recycled aggregate, the exemplary credit can be achieved where the percentage of recycled aggregates used is greater than or equal to 35%. Where there is no maximum regulatory level, the 50% requirement must be achieved in order to award this credit.
CN3.2	National best practice guidance on defining granular fill and capping as a high grade use	The ASWL will confirm any approved national standards regarding the use of high grade materials. Where none have been approved, Checklist A6 should be used to confirm compliance. This should then be submitted to BRE for approval and the ASWL will be updated.
CN3.3	Off-site recycled aggregates	Where off-site recycled aggregates from construction, demolition and excavation waste are used, they should be produced according to the relevant standards for aggregates.
CN3.4	Aggregates in off-site manufactured applications	Where high grade aggregate uses have been incorporated into applications manufactured off-site, the aggregate present in these applications should be included in the assessment of this issue.

Ref	Terms	Description
CN3.5	Air-cooled blast furnace slag as a secondary aggregate	Air-cooled blast furnace slag is classified as a byproduct (rather than a waste) and can therefore be used as an aggregate without the need for a quality protocol. The slag used must meet the requirements of the European and aggregates standards that apply to the end use application (e.g. bitumen bound, unbound etc.).

Methodology

None.

Evidence

Criteria	Interim design stage	Final post-construction stage
All	Relevant section and clauses of the building specification or contract. Project team calculations. Documentation confirming the source of recycled or secondary aggregates and that the required amount can be provided. Appropriate documentation for the Approved standards and weightings list, e.g. specification, standards etc.	Calculations detailing the weights (or volumes) and types of aggregate provided for each application. Delivery notes (or confirmation from the supplier) of the types and quantities of aggregates provided on site. Confirmation that the materials meet the appropriate standard as defined in the Approved standards and weightings list.

Additional information

Relevant definitions

High Grade aggregate uses

High Grade aggregate uses are considered to be:

Bound

1. Structural frame
2. Floor slabs including ground floor slabs
3. Bitumen or hydraulically bound base, binder, and surface courses for paved areas and roads.

Unbound

1. Asphalt-based or similar road surfaces
2. Granular fill and capping
3. Pipe bedding
4. Sub bases and building foundations
5. Gravel landscaping.

Low grade aggregate uses

Crushed masonry used as fill material for general landscaping is not considered to be high grade. This practice is now common place on construction sites due to increased landfill costs.

Recycled aggregates

Recycled aggregates are those derived from reprocessing materials previously used in construction, e.g. crushed concrete or masonry from construction and demolition waste material.

Secondary aggregates

1. China clay waste
2. Slate overburden
3. Pulverised Fuel Ash (PFA)
4. Ground Granulated Blast Furnace Slag (GGBFS)
5. Air-cooled blast furnace slag
6. Steel slag
7. Furnace Bottom Ash (FBA)
8. Incinerator bottom ash
9. Foundry sands
10. Recycled glass
11. Recycled plastic
12. Spent oil shale
13. Colliery spoil
14. Municipal solid waste treatment residues.

Other information

None.

Wst 03a Operational waste

(non-residential, plus residential institutions)

For residential buildings, see Wst 03b Operational waste on page 322.

Number of credits available	Minimum standards
1	Yes

Aim

To recognise and encourage the provision of dedicated storage facilities for a building's operational-related recyclable waste streams, so that this waste is diverted from landfill or incineration.

Assessment criteria

The following is required to demonstrate compliance:

One credit - Operational waste

1 Dedicated space is provided for the segregation and storage of operational recyclable waste volumes generated by the assessed building or unit, its occupants and activities. This space must be:
- 1.a Clearly labelled, to assist with segregation, storage and collection of the recyclable waste streams
- 1.b Accessible to building occupants or facilities operators for the deposit of materials and collections by waste management contractors
- 1.c Of a capacity appropriate to the building type, size, number of units (if relevant) and predicted volumes of waste that will arise from daily or weekly operational activities and occupancy rates.

2 Where the consistent generation in volume of the appropriate operational waste streams is likely to exist, e.g. large amounts of packaging or compostable waste generated by the building's use and operation, the following facilities are provided:
- 2.a Static waste compactors or balers; situated in a service area or dedicated waste management space
- 2.b Vessels for composting suitable organic waste resulting from the building's daily operation and use; OR adequate space for storing segregated food waste and compostable organic material prior to collection and delivery to an alternative composting facility
- 2.c Where organic waste is to be stored or composted on site, a tap is provided adjacent to or within the facility for cleaning and hygiene purposes.

Additionally for Residential institutions with self-contained dwellings only

3 Each dwelling has a provision of three internal storage containers, as follows:
- 3.a A minimum total capacity of 30 litres
- 3.b No individual container smaller than 7 litres
- 3.c All containers in a dedicated non-obstructive position
- 3.d The storage containers for recycling are provided in addition to non-recyclable waste storage.

4 Home composting facilities and a home composting information leaflet is provided within the kitchen area for each self-contained dwellings.

Additionally for Residential institutions with individual bedrooms and communal facilities only

5 The above storage requirements (criterion 3 on the previous page) for self-contained dwellings or bedsits are met for every six bedrooms.

6 The recyclable storage is located in a dedicated non-obstructive position in either:
- 6.a Communal kitchens OR
- 6.b Where there are no communal kitchens present, in a communal space such as communal lounges or utility areas.

7 Home composting facilities and a home composting information leaflet is provided within the kitchen area or communal space for each individual bedrooms and communal facilities self, bedsit or communal kitchen.

Checklists and tables

None.

Compliance notes

Ref	Terms	Description
Shell and core (non-residential and residential institutions only)		
CN1	Applicable assessment criteria	**Operational waste, criteria 1 and 2 on the previous page** Both options: All criteria relevant to the building type and function apply. **Additional criteria for residential institutions, criteria 3 to 7 above** Both options: These criteria are not applicable. Refer to Appendix D – Shell and core project assessments on page 409 for a more detailed description of the shell and core assessment options.
CN1.1	End-occupier not known. See criterion 2 on the previous page	If the end-occupier is not known, but the functions or areas of the assessed building suggest that large amounts of packaging or compostable waste is likely to be generated during the building's operation, e.g. it is a retail or industrial project or contains a large catering facility, then an appropriately sized space and services or infrastructure to accommodate the relevant facilities must be provided. The facilities themselves do not necessarily need to be provided or installed to demonstrate compliance.
Residential - Partially fitted and fully fitted		
CN2	Applicable assessment criteria - Single and multiple dwellings	Both options: This issue is not applicable. Refer to Appendix E – Applicability of BREEAM New Construction to single and multiple dwellings, partially and fully fitted on page 412 for a more detailed description of residential assessment options.
General		

Ref	Terms	Description
CN3	Determining if the dedicated space complies. See criteria 1 and 2 on page 317.	The design team demonstrates that the provision of waste management facilities for the assessed building is adequate given the building type, occupier (if known), operational function and likely waste streams and volumes to be generated. Where it is not possible to determine what provision should be made, the following guide for minimum storage space provision should be used: 1. At least 2m² per 1000m² of net floor area for buildings < 5000m² 2. A minimum of 10m² for buildings ≥ 5000m² 3. An additional 2m² per 1000m² of net floor area where catering is provided (with an additional minimum of 10m² for buildings ≥ 5000m²). The net floor area should be rounded up to the nearest 1000m².
CN3.1	Extensions to existing buildings	Where there are facilities within the existing building, these can be used to assess compliance. The scope of these facilities must be adequate to cater for the total volume of predicted recyclable waste arising from the new and existing buildings.
CN3.2	Multiple building assessments and buildings that form part of a wider estate. See criterion 1.c on page 317.	Where the assessment applies to one or more buildings or units that are part of a wider estate or campus, the design team can choose to demonstrate compliance through the provision of dedicated centralised storage space and waste management facilities with the capacity to accommodate the recyclable waste material generated from all buildings and their activities.
CN3.3	Limited space or vehicle access for a compactor or baler. See criterion 2 on page 317.	For sites that have limited space for static installations, compliance can be assessed on the basis of the provision of adequate space for a smaller portable compactor or baler.
CN3.4	Internal storage areas	Where the facilities are situated internally, vehicular gate heights and widths and manoeuvring and loading space must be sized to ensure ease of access for vehicles collecting recyclable materials.
CN3.5	General waste	The area for storage of recyclable materials must be provided in addition to areas and facilities provided for dealing with general waste and other waste management facilities, e.g. compactors, balers and composters.
CN3.6	Small industrial units. See criterion 1 on page 317.	For an industrial building or development or site consisting of a number of smaller units, each ≤ 200m² floor area, shared facilities that meet the above criteria for the building or site as a whole are sufficient to achieve this credit.
CN3.7	Shopping centres and retail parks. See criterion 1 on page 317.	For shopping centres and retail parks there must be adequate space to cater for each tenant and their potential recyclable waste volumes. Tenants that occupy a large proportion of the centre, i.e. 'flagship tenants', must have their own dedicated compliant facilities. For smaller non-flagship tenant units, compliant central or common facilities on site or dedicated spaces for individual units will meet the assessment criteria for this BREEAM issue.

Ref	Terms	Description
CN3.8	Automated waste collection systems	These are accepted as a form of compliance as long as a management plan is in place, which can either be public (local authority) or private and requirements for separation are met.
Building specific		
CN4	Home composting information leaflet (multi-residential buildings). See criteria 3, 5, 6 and 7 on page 318.	The leaflet must provide information on: — How composting works and why it is important; — The materials that can be composted (e.g. raw vegetable peelings and fruit, shredded paper, tea bags, etc.); and — Details of the operation and management plan for the communal composting scheme. Where a green or kitchen waste collection scheme is in operation, the information leaflet provided by the local uthority is sufficient to meet the information leaflet criteria.
CN4.1	Residential institutions: supported living facility	Where it is not possible to locate the recycling bins within a communal area, which is accessible to residents, for safety reasons (e.g. where the residents have mental health problems and free access to these facilities would pose significant risk of self-harm or harm to others) it is acceptable to locate them within a dedicated non-obtrusive position accessible to staff only, but in close proximity to the areas where recyclable waste material is generated.

Methodology

None.

Evidence

Criteria	Interim design stage	Final post-construction stage
All	Design drawings or relevant section or clauses of the building specification confirming provision and scope of dedicated facilities (on site and off-site). Project team meeting minutes or a letter confirming likely building waste streams and indicative volumes.	As design stage. BREEAM Assessor's site inspection report and photographic evidence confirming compliant installation.

Additional information

Relevant definitions

Accessible space

Accessible space is typically within 20m of a building entrance. Depending on the size of the building, site restrictions or tenancy arrangements, it may not be possible for the facilities to be within 20m of a building entrance. In such circumstances, judgment on whether the space is 'accessible' to the building occupants and vehicle collection must be made.

Automated waste collection system

Some companies now offer a fully automated underground system for the collection, sort and transport of waste. It allows for waste separation at the source, for different types of waste and from multiple locations, with enhanced hygienic, occupational health and safety standards. It also reduces the use of waste transport by lorries, reducing nuisance and CO_2 emissions, from fossil fuel consumption.

Dedicated non-obstructive position

An easily accessible cupboard under the sink or any other cupboard in the kitchen, next to the storage or likely area for storing non-recyclable waste, where practical. Where a kitchen cupboard location is not possible the bins can be located near to the kitchen, in a utility room or connected garage, for example.

Flagship or anchor tenant

The largest and primary tenant within a retail development, typically department store type retailers.

Waste compactor or baler

A machine that is designed to compress waste streams in order to improve storage and transport efficiency.

Other information

Recyclable storage

The following footprint dimensions can act as a guide when determining size and accessibility criteria for the recyclable storage space:

1. Compactor dimensions: about the size of one car parking bay; 4.8 x 2.4m
2. Skip: the footprint of an 8 and 12 cubic yard skip measures 3.4m x 1.8m; therefore allow a minimum of 2.0m width and 4.0m length or 8m² area for the storage and access of such containers
3. Wheeled bins: 360 litre = 0.86m x 0.62/660L= 1.2m x 0.7m/1100L = 1.28m x 0.98m
4. Roll-on/roll-off containers: allow a minimum of 6.1m x 2.4m
5. Vehicle access: the following are dimensions for lorry types that are typically used to collect waste. Therefore gate heights and widths should not be smaller than these measurements:
   a. Dustcart: medium capacity; length = 7.4m, height = 4m, width 3.1m
   b. Skip lorry: length = 7m, height = 3.35m, width 3.1m.

Consideration must also be given to any other types of vehicle requiring access to this area, e.g. lorries for roll-on/roll-off containers.

Recycling bins

Individual recycling bins located at convenient locations throughout the building are necessary to maximise recycling rates.

Wst 03b Operational waste

(residential only)

For non-residential buildings and residential institutions, see Wst 03a Operational waste on page 317.

Number of credits available	Minimum standards
2	Yes

Aim

To recognise and encourage the provision of dedicated storage facilities for operational-related household waste streams and so help to avoid waste being sent to landfill or incineration.

Assessment criteria

The following is required to demonstrate compliance:

One credit - Recycling

1 An adequate external space has been allocated to the storage of both recyclable and non-recyclable or non-compostable household waste (see Compliance notes on the facing page). The space must be:
- 1.a At least the minimum recommended by the appropriate local authority OR
- 1.b Where there are no recommendations from the local authority, 100L of volume for a single bedroom dwelling and a further 70L for each additional bedroom
- 1.c Located on level hardstanding surface
- 1.d Accessible to the occupants of the house or block of flats.

2 Adequate internal space (including bins) has been allocated to the storage of recyclable household waste as follows:
- 2.a Where there is a recyclable waste collection scheme in the area that can be used by the residents EITHER of the following have been provided for the storage of recyclable household waste:
  - 2.a.i A minimum of three individual internal bins each no smaller than 7L OR
  - 2.a.ii A single bin of minimum capacity 35L (only allowable where the local collection collects a number of different waste groups within a single container)
- 2.b Where no recyclable waste collection scheme is in place at least five bins (each not smaller than 15L) have been provided for the storage of recyclable household waste
- 2.c The internal recycling bins should be located in a dedicated non-obstructive position. Free-standing recycling bins placed directly on the floor or in a cupboard do not comply. The bins could be in the kitchen (close to the non-recyclable waste bin) or located adjacent to the kitchen (i.e. within 10m), e.g. in a utility room or connected garage.

One credit - Composting

3 Provision of adequate external facilities for the storage or composting of household compostable waste. The facilities must be:
- 3.a Located in a dedicated position and accessible to the dwelling occupants
- 3.b Accompanied by an information leaflet, delivered to each dwelling or communal kitchen. The leaflet must provide information on:
  - 3.b.i How composting works and why it is important

3.b.ii The materials that can be composted (e.g. raw vegetable peelings and fruit, shredded paper, teabags, etc.)
3.b.iii Details of the operation and management plan for any communal composting scheme
3.b.iv Where adequate external composting facilities are provided, troubleshooting information, e.g. what to do if the compost gets too dry or too wet.

4 Adequate internal container space (large enough to hold at least a 7L container), for storing segregated compostable organic material (i.e. food waste), is provided in each dwelling kitchen or each communal kitchen. This can be one of the three internal storage bins mentioned in criterion 2.a on the previous page.

5 Where adequate external facilities have not been provided with a composting container, compliance can be demonstrated where one of the following is applicable to all dwellings under assessment:
5.a An accessible local communal or community composting service, run by either a local authority or a private organisation
5.b A management plan, which is in place to ensure food or green waste is appropriately removed and delivered to an alternative composting facility
5.c A local authority or private organisation green or kitchen waste collection system.

6 For communal facilities at least one water outlet is provided for cleaning in and around the facility.

Checklists and tables

None.

Compliance notes

Ref	Terms	Description
Shell and core (non-residential and residential institutions only)		
CN1	Applicable assessment criteria	Both options: This issue is not applicable. Refer to Appendix D – Shell and core project assessments on page 409 for a more detailed description of the shell and core assessment options.
Residential - Partially fitted and fully fitted		
CN2	Applicable assessment criteria - Single and multiple dwellings	Partially fitted: Criteria1 on the previous page and 3 on the previous page are applicable only. Fully Fitted: All criteria relevant to the building type and function apply. Refer to Appendix E – Applicability of BREEAM New Construction to single and multiple dwellings, partially and fully fitted on page 412 for a more detailed description of residential assessment options.
General		
CN3	Extensions to existing buildings	Where there are external facilities within the existing building, these can be used to assess compliance. The scope of these facilities must be adequate to cater for the total volume of predicted waste from the new and existing buildings.
CN3.1	Community based adequate external space	In countries where the outdoor space supplied for storing non-recyclable and recyclable waste is provided by the local authority for small communities of dwellings this can still be used to demonstrate compliance.

Ref	Terms	Description
CN3.2	Accessible - reasonable distance to the facilities	Easy to access and within a reasonable distance to facilities. The distance will depend on the collection scheme prevalent in the country or locality and should permit easy transfer of recycled waste streams to the facility. As a baseline this should normally be taken as the recommended distance set out by local authority requirements or 50m from an external entrance for houses and blocks of flats where no other requirements are in place.
CN3.3	Areas not yet covered by a collection scheme	For the purposes of criterion 2 on page 322, the development can be considered as having a recycling scheme in place where a local authority or operator provides a local recycling scheme and confirms in a written statement that the recycling scheme will be provided to the development within one year of the completion date of the dwelling (or first phase of development for larger scale projects).
CN3.4	Recyclable household waste	For the purpose of this issue, the space needs to be compatible with the range of recyclable collections provided by the local authority; the following materials will therefore typically be considered: 1. Paper 2. Cardboard 3. Plastics 4. Glass 5. Metals (tins and cans) 6. Textiles (clothes and shoes) 7. Vegetable oils (from kitchen) 8. Batteries.
CN3.5	Automated waste collection systems	These are accepted as a form of compliance as long as a management plan is in place, which can either be public (local authority) or private and requirements for separation are met.
CN3.6	Adequate external composting facilities	These must consist of an external storage bin for compostable waste or a composting container. The composting container must be specifically designed for composting and sited according to the manufacturer's instructions. Such containers should not be sited in close proximity of windows, doors, or ventilation intakes for habitable areas within the dwelling or surrounding dwellings. No requirements are set on the type of container or storage capacity required as this will be determined by the end user and predicted volumes of organic compostable waste. The assessor should be satisfied that, within reason, the installation is adequate for the size of the development, bearing in mind the likely quantity of organic waste that will be produced by the development.

Ref	Terms	Description
CN3.7	Community composting schemes	Existing and proposed community schemes are acceptable under this issue as long as they comply with all the specifications in the technical guide. The community scheme composting facility should be easily accessed from all dwellings served by the scheme, i.e. the householder would normally deliver the waste by foot. It is acceptable for the bin to be beside other recycling bins in a communal collection site as long as it is clearly identifiable as being connected to a licensed community scheme. The distance between the site entrance and the communal or community containers must not usually exceed 50m (if national regulations are in place and are more stringent, compliance with these is required).
CN3.8	Local authority green or kitchen waste collection schemes	A kitchen waste collection scheme run by the local authority is an acceptable alternative to communal or community composting facilities.

Evidence

Criteria	Interim design stage	Final post-construction stage
All	Drawings or a copy of the specification. Calculations to justify the size of the space allocated for external waste storage. Letters or a contract from the local authority or a private organisation where appropriate. Evidence for the existence of a community based adequate external space, set up and managed by the local authority, where applicable.	As design stage. As-built drawings or specifications (where applicable) OR written confirmation that the development has been constructed in accordance with the design stage drawings and specifications.

Additional information

Relevant definitions

Automated waste collection system

Some companies now offer a fully automated underground system, for the collection, sort and transport of waste. It allows for waste separation at the source, for different types of waste and from multiple locations, with enhanced hygienic, occupational health and safety standards. It also reduces the use of waste transport by lorries, reducing nuisance and CO_2 emissions, from fossil fuel consumption.

Composting

Composting is a natural process which converts organic waste into an earth-like mass by means of bacteria and micro-organisms. The composting process is also supported by larvae, wood lice, beetles, worms and other such creatures.

Communal or community composting

Communal or community composting is where a group of people share a composting system. The raw materials are provided by all who take part in the scheme, and the compost is then used in the community, either by individuals in their own gardens, or for use on larger projects within the local environment. The distance between the site entrance and the communal or community containers must not usually exceed 50m (or national regulations if these are more onerous).

The composting scheme must be compliant with all applicable legislation in the country of assessment.

Dedicated non-obstructive position

Ideally this would be in an easily accessible cupboard under the sink or any other cupboard in the kitchen, next to the storage or likely area for storing non-recyclable waste, where practical. Where a kitchen cupboard location is not possible the bins can be located near to the kitchen, in a utility room or connected garage for example.

Local authority collection scheme

In these schemes the local authority is responsible for regular collection of household waste from the dwelling or its locality. This includes the collection of residual waste (waste not intended for recycling or composting) and recyclable household waste.

Private recycling scheme operator

A private recycling scheme operator can be appointed to collect recyclable materials where a local authority collection scheme is not in operation or where a landlord or occupier elects to go private, e.g. in some apartments.

Other information

None.

Wst 04 Speculative finishes

(offices and multiple dwellings only)

Number of credits available	Minimum standards
1	No

Aim

To encourage the specification and fitting of finishes selected by the building occupant and therefore avoid unnecessary waste of materials.

Assessment criteria

The following is required to demonstrate compliance:

One credit - Speculative finishes

1 For tenanted office areas (where the future occupant is not known), prior to full fit-out works, carpets, other floor finishes and ceiling finishes have been installed in a show area only.

2 In an office building developed for a specific occupant, that occupant has selected (or agreed to) the specified floor and ceiling finishes.

3 For multiple dwellings (where the future occupant is not known), floor, kitchen and bathroom finishes have been installed in a show area only.

4 In a residential building, future occupants have selected (or agreed to) at least three of the specified floor, kitchen and bathroom finishes (see Relevant definitions on page 329).

Checklists and tables

None.

Compliance notes

Ref	Terms	Description
Shell and core (non-residential and residential institutions only)		
CN1	Applicable assessment criteria	Both options - This issue is not applicable. Refer to Appendix D – Shell and core project assessments on page 409 for a more detailed description of the shell and core assessment options.
Residential - Partially fitted and fully fitted		
CN2	Applicable assessment criteria - Single dwellings	Both options: This issue is not applicable. Refer to Appendix E – Applicability of BREEAM New Construction to single and multiple dwellings, partially and fully fitted on page 412 for a more detailed description of residential assessment options.
CN2.1	Applicable assessment criteria - Multiple dwellings	Both options: All criteria relevant to the building type and function apply. Refer to Appendix E – Applicability of BREEAM New Construction to single and multiple dwellings, partially and fully fitted on page 412 for a more detailed description of residential assessment options.
CN2.2	Occupant not involved	For dwellings where the occupant has no involvement with choosing the finishes, this credit cannot be awarded.
General		
CN3	General	None.

Methodology

None.

Evidence

Criteria	Interim design stage	Final post-construction stage
All	Design drawings or relevant section or clauses of the building specification or contract or a letter from the client, project team or building user where the future occupant is known.	As design stage or the BREEAM Assessor's site inspection report and photographic evidence.

Additional information

Relevant definitions

Residential kitchen and bathroom finishes

1. Kitchen units (cabinets and counter tops):
2. Kitchen appliances
3. Kitchen wall finishes
4. Bathroom suites (bath, shower, basin, WC)
5. Bathroom wall finishes.

Show area

- Office buildings: either a floor plate or an individual office. However, to award this credit it must be less than 25% of the net lettable floor area.
- Residential buildings: a show home or apartment.

Other information

None.

Wst 05 Adaptation to climate change

(all buildings)

Number of credits available	Minimum standards
1	No

Aim

To recognise and encourage measures taken to mitigate the impact of extreme weather conditions arising from climate change over the lifespan of the building.

Assessment criteria

A number of BREEAM issues within the new construction scheme contain assessment criteria which aim to support mitigation of the impacts of extreme weather events arising from climate change. The main credit in this issue focuses on structural and fabric resilience not covered in other issues. An exemplary credit is awarded where a holistic approach to adaptation to climate change has been covered, demonstrated by achieving credits in other issues.

The following is required to demonstrate compliance:

One credit - Adaptation to climate change – structural and fabric resilience

1 Conduct a climate change adaptation strategy appraisal for structural and fabric resilience by the end of Concept Design (or equivalent), in accordance with the following approach:
- 1.a Carry out a systematic (structural and fabric resilience specific) risk assessment to identify and evaluate the impact on the building over its projected life cycle from expected extreme weather conditions arising from climate change and, where feasible, mitigate against these impacts. The assessment should cover the following stages (see Methodology):
  - 1.a.i Hazard identification
  - 1.a.ii Hazard assessment
  - 1.a.iii Risk estimation
  - 1.a.iv Risk evaluation
  - 1.a.v Risk management
  - 1.a.vi Exemplary credit – Responding to adaptation to climate change.

Exemplary credit - Responding to adaptation to climate change

A holistic approach to the design and construction of the current building's life cycle, to mitigate against the impacts of climate change, is represented by the achievement of these criteria.

The following outlines the exemplary level criteria to achieve an innovation credit for this BREEAM issue:

2 Achievement of criterion 1 above, the structural and fabric resilience criterion in this issue, and the following criteria points or credits:

Hea 04 Thermal comfort

(Link to Wst 05 issue: to prevent increasing the risks of overheating)

- Hea 04 Thermal comfort: Criterion 6 has been achieved.

Hea 07 Hazards

(Link to Wst 05 issue: to reduce the risk of natural hazards which may be more severe due to climate change)

- The Hea 07 credit has been achieved.

Ene 01 Reduction of energy use and carbon emissions

(Link to Wst 05 issue: to maximise energy efficiency contributing to low carbon emissions resulting from increasing energy demands)

- At least eight credits in this issue have been achieved.

Ene 04 Low carbon design

(Link to Wst 05 issue: to maximise opportunities to avoid unnecessary carbon emissions)

- The passive design analysis credit in this issue has been achieved.

Wat 01 Water consumption

(Link to Wst 05: to minimise water demands in periods of drought)

- A minimum of three credits in this issue have been achieved.

Mat 05 Designing for durability and resilience

(Link to Wst 05 issue: to avoid increased risks of deterioration and higher maintenance demands)

- Criterion 2 relating to material degradation in this issue has been achieved.

Pol 03 Surface water run-off

(Link to Wst 05: to minimise the risks of increased flood risk and surface water run-off affecting the site or others)

- Flood risk — a minimum of one credit has been achieved.
- Surface water run-of f— two credits have been achieved.

Checklists and tables

None.

Compliance notes

Ref	Terms	Description
Shell and core (non-residential and residential institutions only)		
CN1	Applicable assessment criteria	**Adaptation to climate change – structural and fabric resilience** Both options: Criterion 1 on page 330is applicable. **Exemplary level criteria** Shell only: Criterion 2 on page 330is not applicable. Shell and core: Criterion 2 on page 330is applicable. Refer to Appendix D – Shell and core project assessments on page 409 for a more detailed description of the shell and core assessment options.
Residential - Partially fitted and fully fitted		
CN2	Applicable assessment criteria - Single and multiple dwellings	Both options: All criteria relevant to the building type and function apply. Refer to Appendix E – Applicability of BREEAM New Construction to single and multiple dwellings, partially and fully fitted on page 412 for a more detailed description of residential assessment options.
General		
CN3	Relevant bodies, see Hazard identification below.	This includes, but is not limited to the following: — Local authorities — Statutory bodies — Technical bodies.

Methodology

Hazard identification

1. Review the evidence and information from relevant bodies to identify and understand the expected impacts of increased extreme weather events from climate change on the building.
2. Identify likely hazards (see Relevant definitions on the facing page).

Hazard assessment

1. Determine the scale of the hazards identified.

Risk estimation

1. Identify the risk presented by these hazards to the building and the likely impact of the hazards taking into account the following aspects as a minimum:
   a. Structural stability
   b. Structural robustness
   c. Weather proofing and detailing
   d. Material durability
   e. Health and safety of building occupants and others
   f. Impacts on building contents and business continuity.

Risk evaluation

1. Evaluate the potential impact of these risks on the building.
2. Determine the tolerable risk threshold.
3. Check the sensitivity of the risk assessment.
4. Identify areas where the risks are unacceptable in health and safety, life cycle assessment and financial terms.

Risk management

1. Identify risk reduction measures.
2. Mitigate the hazards as far as is practically feasible.
3. Adapt the design or specification to incorporate the measures identified by the risk assessment in the final design.

Evidence

Criteria	Interim design stage	Final post-construction stage
All	A copy of the systematic risk assessment and any mitigation measures put in place.	As at design stage. BREEAM Assessor's site inspection report and photographic evidence.

Additional information

Relevant definitions

Durability

The ability to withstand wear, pressure, or damage.

Hazard

A hazard is a situation or event which has the potential to cause harm. It may be an accidental or a malicious action, insufficient strength or resistance, or excessive deviation from intended limits.

Resilience

The ability of a building or structural system or material to withstand an accidental or exceptional loading or other incident without experiencing an undue degree of damage or decrease in performance, such that progressive collapse, loss of performance or a disproportionate degree of damage occurs.

Structural and fabric resilience

BREEAM defines this as the ability of a structure to withstand an increased burden of weather, increased pressure or hazards associated with climate change. Examples of increased pressures or hazards include:

1. Solar radiation
2. Temperature variation
3. Water or moisture
4. Wind
5. Precipitation, e.g. rain and snow
6. Extreme weather conditions: high wind speeds, flooding, driving rain, snow, rainwater ponding
7. Subsidence or ground movement.

Systematic risk assessment

A structured approach to help professionals identify, evaluate and manage risk, where the reduction of the risks identified is integral to the process. It includes:

- Identifying the hazards
- Eliminating the hazards, as far as reasonably practicable
- Reducing the risks from each hazard, as far as reasonably practicable
- Developing the building design to be robust.

Other information

This new BREEAM issue aims to encourage and support efforts to mitigate the future impacts of climate change on the building by considering a number of relevant factors during the design stages. BRE have avoided being overly prescriptive with the assessment criteria in order to allow a degree of flexibility in its application and demonstrating compliance, recognising that this is a complex environmental and design issue where solutions and approaches are largely influenced by site location and building specific factors. This places a greater emphasis on the BREEAM Assessor to use their judgment in determining whether the project team and the building design has met the aim and intent of the credit and its criteria, using appropriate project information to back their judgment. BRE will endorse the BREEAM Assessor's judgment through the quality assurance audit where a reasonable justification to award the credit on the basis of project team actions and proposed design solutions is evident. BRE would welcome any feedback on the application of this assessment issue to assist with the evolution of the criteria and inclusion of additional guidance on compliance in future BREEAM versions.

There are a number of UK reports and publications which also provide useful climate change adaptation principles for international projects including:

1. The National Adaptation Programme[70] report has been drawn up by the government, industry and other non-governmental organisations working together. It contains a mix of policies and actions to help the UK to adapt successfully to future weather conditions, by dealing with the risks and making the most of the opportunities.
2. The book "Design for climate change"[71] describes buildings and issues as part of the Design for Future Climate, Adapting Buildings programme, the largest programme focusing on the climate change adaptation of buildings in the UK. This programme from the Technology Strategy Board (TSB) aims to improve the climate resilience of building projects. The book has guidance on construction, including structural stability.
3. The BRE report[72], Potential implications of climate change in the built environment, discusses climate change adaptation strategies, including some for structural resilience.

Wst 06 Functional adaptability

(non-residential only)

Number of credits available	Minimum standards
1	No

Aim

To recognise and encourage measures taken to accommodate future changes of use of the building over its lifespan.

Assessment criteria

The following is required to demonstrate compliance:

One credit - Functional adaptability

1 A building-specific functional adaptation strategy study has been undertaken by the client and design team by completion of the concept design which includes recommendations for measures to be incorporated to facilitate future adaptation.

2 Functional adaptation measures (see examples in Table 51 on page 337) have been implemented in the design by completion of the technical design in accordance with the functional adaptation strategy recommendations, where practical and cost effective. Omissions have been justified in writing to the assessor.

Checklists and tables

None.

Compliance notes

Ref	Terms	Description
Shell and core (non-residential and residential institutions only)		
CN1	Applicable assessment criteria	Both options: All criteria relevant to the building type and function apply. Refer to Appendix D – Shell and core project assessments on page 409 for a more detailed description of the shell and core assessment options.
Residential -Partially fitted and fully fitted		

Ref	Terms	Description
CN2	Applicable assessment criteria - Single and multiple dwellings	Both options: This issue is not applicable. Refer to Appendix E – Applicability of BREEAM New Construction to single and multiple dwellings, partially and fully fitted on page 412 for a more detailed description of residential assessment options.
General		
CN3	Functional adaptation strategy study	The functional adaptation strategy study should consider: 1. The potential for major refurbishment, including replacing the façade 2. Design aspects that facilitate the replacement of all major plant within the life of the building, e.g. panels in floors or walls that can be removed without affecting the structure, providing lifting beams and hoists 3. The degree of adaptability of the internal environment to accommodate changes in working practices 4. The degree of adaptability of the internal physical space and external shell to accommodate change in-use 5. The extent of accessibility to local services, such as local power, data infrastructure etc. For additional guidance, see Table 51 on the facing page
CN3.1	Functional adaptation implementation	The implementation will be specific to the building and scope of the project, but information should be made available to the assessor covering: 1. The feasibility for multiple or alternative building uses and area functions, for example, related to the structural design of the building 2. Options for multiple building uses and area functions based on design details, e.g. modularity 3. Routes and methods for major plant replacement, e.g. networks and connections have flexibility and capacity for expansion 4. Accessibility for local plant and service distribution routes, e.g. detailed information on building conduits and connections infrastructure 5. The potential for the building to be extended either horizontally, vertically or both.

Methodology

None.

Evidence

Criteria	Interim design stage	Final post-construction stage
All	Functional adaptation strategy and implementation plan report.	As per interim design stage.

Additional information

Relevant definitions

Building functional adaptation

Work to an existing building that responds to a required change of use or requirements and goes beyond maintenance and repairs. These changes solve functional problems and could provide significant improvements. The functional adaptation works could include alterations, conversions or extensions.

Functional adaptability

The ability of a building to be adapted for a change in operational requirements within the same building type, or for use as a different building type.

Other information

Table 51 below provides examples of functional design measures that may be adopted for each assessment part when considering accessibility, spatial adaptability and expandability.

Table 51: Design measures allowing future adaptation

	Accessibility	Spatial adaptability	Expandability
Fabric and structure: — External walls — Cladding — Ground and first floor — Roof.	Use of products or systems which allow easy replacements.	Location of structural components within the floor space.	Provision to add extensions or alterations to increase building capacity.
Core and local services: — Mechanical and electrical — Plumbing — Stairs and lifts — Fire.	Inclusion of facilities management requirements and construction design management feedback for future operational needs.		Provision of capacity in infrastructure to enable future expansion and adaptation.
Interior design: — Finishes — Floors — Interior walls — Connections.	Use of products or systems which allow easy replacements.	Layout in standardised grids. Use of inherent finishes to allow replacement. Use of standardised material sizes.	Identifying or recognising potential future functional requirements. Efficient use of space to allow for any increase in occupancy.

Land use and ecology

Summary

This category encourages sustainable land use, habitat protection and creation, and improvement of long term biodiversity for the building's site and surrounding land. Issues in this section relate to the reuse of brownfield sites or those of low ecological value, mitigation and enhancement of ecology and long term biodiversity management.

Category summary table

Issue	Credits	Credit summary
LE 01 Site selection	3	— To encourage the use of previously occupied or contaminated land and avoid land which has not been previously disturbed.
LE 02 Ecological value of site and protection of ecological features	2	— To encourage development on land that already has limited value to wildlife and to protect existing ecological features from substantial damage during site preparation and completion of construction works.
LE 03 Minimising impact on existing site ecology	N/A	
LE 04 Enhancing site ecology	3	— To encourage actions taken to enhance the ecological value of the site as a result of development.
LE 05 Long term impact on biodiversity	2	— To minimise the long term impact of the development on the site and the surrounding area's biodiversity.

LE 01 Site selection

(all buildings)

Number of credits available	Minimum standards
3	No

Aim

To encourage the use of previously occupied or contaminated land and avoid land which has not been previously disturbed.

Assessment criteria

This issue is split into two parts:

- Previously occupied land (2 credits)
- Contaminated land (1 credit)

The following is required to demonstrate compliance:

Up to two credits - Previously occupied land

1 A percentage of the proposed development's footprint is on an area of land which has previously been occupied by industrial, commercial or domestic buildings or fixed surface infrastructure.

Table 52: Percentage of proposed development's footprint on previously developed land

Percentage of the proposed development's footprint on previously developed land	Credits
75%	1
95%	2

One credit - Contaminated land

2 The site is deemed to be significantly contaminated, i.e. could not be developed or built to the proposed end use without remediation. This can either be confirmed by a contaminated-land professional or identified using Checklist A7 on page 442.

3 The more onerous of these criteria have been adopted:
- 3.a Nationally recognised guidance for site investigation, risk assessment and appraisal of contaminated land as set out in the regulations or a nationally recognised code of practice OR
- 3.b A robust site investigation, risk assessment and appraisal have been undertaken, in accordance with the requirements of Checklist A7 on page 442 (as a minimum).

4 The client or principal contractor confirms that remediation of the site will be carried out in accordance with the recommended remediation strategy and its implementation plan (defined in Checklist A7 on page 442) as set out by the contaminated-land professional and any relevant national or other legislation.

Checklists and tables

None.

Compliance notes

Ref	Terms	Description
Shell and core (non-residential and residential institutions only)		
CN1	Applicable assessment criteria	Both options: All criteria relevant to the building type and function apply. Refer to Appendix D – Shell and core project assessments on page 409 for a more detailed description of the shell and core assessment options.
Residential - Partially fitted and fully fitted		
CN2	Applicable assessment criteria - Single and multiple dwellings	Both options: All criteria relevant to the building type and function apply. Refer to Appendix E – Applicability of BREEAM New Construction to single and multiple dwellings, partially and fully fitted on page 412 for a more detailed description of residential assessment options.
General		
CN3	Temporary works. See criterion 1 on the previous page	Undeveloped areas of the site to be used for temporary works (e.g. temporary offices or parking, material or machinery storage) must be considered as development on undeveloped land and therefore included in the calculations unless they have been defined as 'land of low ecological value' in accordance with BREEAM issue LE 02 Ecological value of site and protection of ecological features on page 344.
CN3.1	Infill development. See criterion 1 on the previous page	New buildings developed within the boundary of existing sites do not automatically comply with the reuse of land criteria. The land on which at least 75% or 95% of the new building will be sited must meet the definition of previously developed.
CN3.2	Prior decontamination. See criteria 2 and 3 on the previous page	The credit for use of contaminated land can only be awarded where remediation has taken place to enable development of the site for the assessed building, or a larger phased development that includes the assessed building. The credit is not achievable for instances where historical remediation and development of the site has occurred outside the scope of the current development proposals.
CN3.3	Large sites split into smaller plots. See criteria 2 and 3 on the previous page	Where contamination of a large site has been remediated and has then been packaged up into smaller plots of land for individual buildings (possibly as part of a phased development strategy), the credit can be awarded regardless of the plot location of the assessed building within the wider development plan. This is on the condition that the site could not have been developed without remediation work taking place.

Ref	Terms	Description
CN3.4	Health and safety related decontamination. See criteria 2 and 3 on page 339	Contaminated land that has been decontaminated solely for health and safety reasons (rather than for the specific purpose of redevelopment) does not comply.
CN3.5	Asbestos. See criteria 2 and 3 on page 339	Where the only remediation required is the removal of asbestos within an existing building fabric, the site cannot be classified as contaminated land. However, where asbestos is found to be present in the ground this will be classed as contamination for the purposes of assessing this issue.
CN3.6	Checklist A7 on page 442	Checklist A7 on page 442 indicates the likelihood of significant contamination problems on a site for the purposes of a BREEAM assessment. It also sets out the scope of any preliminary investigation, site investigation and remedial strategy. It does not seek to evaluate types, levels or risks of contamination present on the site.
Building specific		
CN4	Education (schools only). Playing fields. See criterion 1 on page 339	Development of a playing field within the construction zone can be counted as development on previously occupied land only if an equivalent area of playing field is reinstated within one year of the completed construction works; and where such reinstatement will not encroach on land of high ecological value as defined in BREEAM issue LE 02 Ecological value of site and protection of ecological features on page 344

Methodology

None.

Evidence

Criteria	Interim design stage	Final post-construction stage
1	Design drawings (including existing site plan), report or site photographs.	BREEAM Assessor's site inspection report and photographic evidence or as-built drawings. Where alteration has occurred, the percentage must be recalculated using as-built plans.

Criteria	Interim design stage	Final post-construction stage
2–4	A completed copy of the relevant sections of Checklist A7 on page 442. Existing site plans showing contaminated areas to be remediated in relation to any proposed development. A copy of the contaminated-land professional's report. A letter from the principal contractor or remediation contractor confirming: 1. The remediation strategy for the site 2. Summary details of the implementation plan. If a contractor has not yet been appointed, a letter from the client or their representative confirming that the appointed contractor will undertake necessary remediation works to mitigate the risks identified in the report.	As design stage with information for the as-built situation.

Additional information

Relevant definitions

Construction zone

For the purpose of this BREEAM issue the construction zone is defined as any land on the site which is being developed (and therefore disturbed) for buildings, hardstanding, soft landscape, site access plus a 3m wide zone measured outward from the boundary. It also includes any areas used for temporary site storage and buildings. If it is not known exactly where buildings, hardstanding, site access and temporary storage will be located it must be assumed that the construction zone is the entire site.

Contaminated land or site

Land that could not be legally or safely developed or built on to the proposed end use without the remediation of contamination. Contamination is defined as any substance or agent in, or on the ground within the construction zone, which presents an unacceptable risk to human health, property or the environment. For the purposes of BREEAM, substances or agents that could present unacceptable contamination risks are defined as those that act as a barrier to the development of land, which could include certain plant species such as, but not limited to, Japanese knotweed and giant hogweed.

Contaminated-land professional

An individual that holds a degree or equivalent qualification in chemistry, environmental science or management, earth sciences, civil engineering or a related subject, and has a minimum of three years relevant experience (within the last five years) in site investigation, risk assessment and appraisal. Such experience must clearly demonstrate a practical knowledge of site investigation methodologies and understanding of remediation techniques and national legislation on the subject; as well as acting in an advisory capacity to provide recommendations for remediation.

Previously occupied land

For the purposes of this issue, BREEAM defines previously occupied land as that which is or was occupied by a permanent structure, including any associated fixed surface infrastructure (the definition is based on the National Planning Policy Framework[73] definition of previously developed land). The definition excludes:

1. Land that is or has been occupied by agricultural or forestry buildings
2. Land that has been developed for minerals extraction or waste disposal by landfill purposes where provision for restoration has been made through development control procedures
3. Land in built-up areas such as parks, recreation grounds and allotments which, although they may feature paths, pavilions and other buildings, have not been previously occupied
4. Land that was previously occupied but where the remains of the permanent structure or fixed surface structure have blended into the landscape in the process of time (to the extent that it can reasonably be considered as part of the natural surroundings).

Proposed development

Any development (building, hard landscaping, car park and access roads) that falls within the boundary of the assessed site.

Remediation

Activity undertaken to prevent, minimise, remedy or mitigate the risk caused by contaminated land to human health or the environment.

Other information

None.

LE 02 Ecological value of site and protection of ecological features

(all buildings)

Number of credits available	Minimum standards
2	No

Aim

To encourage development on land that already has limited value to wildlife and to protect existing ecological features from substantial damage during site preparation and completion of construction works.

Assessment criteria

This issue is split into two parts:

- Ecological value of site (1 credit)
- Protection of ecological features (1 credit)

The following is required to demonstrate compliance:

One credit - Ecological value of site

1 Land within the assessment zone is defined as 'land of low ecological value' using either:

1.a The BREEAM checklist (Table 53 on the facing page) for defining land of low ecological value (see Checklists and tables on the facing page)

OR

1.b A suitably qualified ecologist (SQE) who has identified the land as being of 'low ecological value' within an ecological assessment report, based on a site survey. See the BREEAM definition of a Suitably qualified ecologist (SQE) on page 349.

One credit - Protection of ecological features

2 All existing features of ecological value (see Relevant definitions on page 349) within the assessment zone and site boundary area are adequately protected from damage during clearance, site preparation and construction activities (see CN3 on page 347).

3 In all cases, the principal contractor is required to construct ecological protection recommended by the SQE, prior to any preliminary site construction or preparation works (e.g. clearing of the site or erection of temporary site facilities).

Checklists and tables

BREEAM checklist for defining land of low ecological value

If the answer to all questions in the checklist is 'no', the land can be defined as having a low ecological value and the credit awarded. Should any of the questions be answered 'yes', the credit can only be awarded on confirmation from a SQE that the site is of low ecological value.

The checklist should be completed by either the BREEAM Assessor, using appropriate evidence submitted by the design team or completed by the design team and submitted to the assessor along with appropriate supporting evidence. The answers to the checklist must be based on an evaluation of the site prior to any site clearance or construction activities (refer to Compliance notes on the next page for further details).

Table 53: BREEAM checklist for defining land of low ecological value

ID	Question	Yes	No
Q1	Have any of the following local organisations identified possible ecological value on the site, all relevant bodies must be contacted before responding to the question? 1. The appropriate statutory body 2. Nature or conservation groups.	❑	❑
Q2	Is the development within 2km of a clearly defined geographical space, recognised, dedicated and managed, through legal or other effective means, to achieve the long term conservation of nature with associated ecosystem services (e.g. Ramsar site)? The following sources of information are not exhaustive but can be used to check local land use 1. http://www.protectedplanet.net/ 2. Appropriate statutory body websites 3. Maps that show specific sites and provide information on local policies relating to that site.	❑	❑
Q3	Is the development within 500m of a designated area? The following sources of information are not exhaustive but can be used to check local land use: 1. http://www.protectedplanet.net 2. Appropriate statutory body websites 3. Maps that show specific sites and provide information on local policies relating to that site.	❑	❑

ID	Question	Yes	No
Q4	Are any of the following habitats present on, or within 100m of the construction zone? The following list is not exhaustive, but provides guidance on the type of habitat BREEAM defines as having ecological value: 1. Woodland (e.g. high forest, coppice, scrub)* 2. Water courses (e.g. rivers, streams or canals)** 3. Wetlands (e.g. swamps, marshes, wet grasslands, peatlands, oases, estuaries, deltas, tidal flats, near-shore marine areas, mangroves, coral reefs, and human-made sites such as fish ponds, rice paddies, reservoirs, and salt pans) 4. Grassland (e.g. steppe, prairie, pampas, meadow, veld, campos, savannah, heathland, bogs, etc.) 5. Dwarf shrub habitat (e.g. heathland, moorland, maquis) 6. Arid, semi-arid desert*** 7. Any other habitats considered to have ecological value.	❑	❑
Q5	Are any of the following features present within or on the boundary of the construction zone? 1. Mature or semi-mature trees 2. Mature hedgerow or mature planting marking a boundary (field hedgerows over 1m tall and 0.5m wide)**** 3. Existing buildings (occupied or derelict) that may provide shelter for wildlife.	❑	❑

Notes:
* Woodland is defined as 'having over 25% canopy cover of trees and shrubs, over a metre high'.
** Broad habitats of rivers and streams are defined as running watercourses ranging from small headwater streams to large rivers. This broad habitat, along with wetlands, includes the open water itself and the vegetation along the water's edge.
*** UNEP confirms deserts are unique, highly-adapted natural ecosystems, both providing life-supporting services on the planet and supporting human populations in much the same ways as in other ecosystems
**** A hedge is defined as 'a line of woody vegetation that has been subject to management so that trees no longer take their natural shape.'

Compliance notes

Ref	Terms	Description
Shell and core (non-residential and residential institutions only)		
CN1	Applicable assessment criteria	Both options: All criteria relevant to the building type and function apply. Refer to Appendix D – Shell and core project assessments on page 409 for a more detailed description of the shell and core assessment options.
Residential - Partially fitted and fully fitted		
CN2	Applicable assessment criteria - Single and multiple dwellings	Both options: All criteria relevant to the building type and function apply. Refer to Appendix E – Applicability of BREEAM New Construction to single and multiple dwellings, partially and fully fitted on page 412 for a more detailed description of residential assessment options.

Ref	Terms	Description
General		
CN3	Protecting features of ecological value	Where the following features of ecological value exist on site and are being retained they should be protected as detailed below: — Trees of over 100mm trunk diameter, stands of trees, and trees of significant ecological value, are protected by barriers. Barriers must prohibit construction works in the area between itself and the tree trunk. The minimum distance between the tree trunk and barriers must be either the distance of branch spread or half tree height, whichever is the greater. Trees are protected from direct impact and from severance or asphyxiation of the roots. — Coastal developments, watercourses, wetland areas, areas of freshwater and known groundwater wells should be protected by cut-off ditches and site drainage to prevent run-off to minimise risk of pollution, silting or erosion. — Fenced exclusion zones should be maintained around all mangrove stands (landward side) that are being retained to minimise the risk of workforce machinery damage of these sensitive habitats. Activity on the seaward side of mangroves should be avoided where possible and closely monitored and controlled. Confirmation is required that mangrove stands would not be exposed to prolonged drought or waterlogging from changes in water levels as a result of construction activities. — Other ecological features and natural areas requiring protection must either have barriers erected and be protected, or, when remote from site works or storage areas, be protected with a prohibition of construction activity in the vicinity.
CN3.1	No features of ecological value. See criterion 2 on page 344	Where there are no features of ecological value, the credit for the protection of ecological features can only be awarded if the assessment zone is defined as 'land of low ecological value'.
CN3.2	Use of a SQE See criterion 1 on page 344	Where a SQE is employed and has, using their professional judgment, defined the site as land of low ecological value, this assessment or judgment overrides any assessment determined using the BREEAM checklist for defining land of low ecological value. The SQE must base their findings on data collected from a site visit conducted at appropriate times of the year, when different plant and animal species are evident. The content of the ecology report is to be representative of the existing site's ecology prior to the commencement of initial site preparation works (i.e. before construction). Where the ecologist has not visited the site at the appropriate times the credit cannot be awarded (except in the circumstances indicated below in CN3.4 on the next page.
CN3.3	Features of little or no ecological value. See criterion 2 on page 344	If a SQE has confirmed that a feature present on the site has little or no ecological value (see Relevant definitions on page 349), or where a tree is deemed to create a significant danger to the public or occupants by a statutory body or qualified arboriculturalist, then that feature may be exempt from the 'protection of ecological features' requirement of this issue.

Ref	Terms	Description
CN3.4	Prior removal of features of ecological value	If features of ecological value have been removed as part of the site clearance activities then the development cannot achieve the credits, even if they are to be replaced as part of a new soft landscape strategy.
CN4	Site clearance prior to purchase of the site. See criterion 1 on page 344	For sites cleared prior to purchase of the site and less than five years before assessment, a SQE should estimate the site's ecological value immediately prior to clearance using available desktop information (including aerial photography) and the landscape type or area surrounding the site. Where it is not possible for the ecologists to determine that the site was of low ecological value prior to the site clearance then the credits must be withheld, i.e. where there is no evidence and therefore justification for awarding the credits. For sites cleared more than five years ago, the ecological value of the site is to be based on the current situation on the basis that within five years, ecological features would have started to re-establish themselves and therefore act as an indicator of the site's ecological value.
CN4.1	Verification of a report written by an ecologist not meeting the BREEAM SQE criteria. See criterion 1.b on page 344.	Where a SQE is verifying an ecology report produced by another ecologist who does not meet the SQE criteria, they must, as a minimum, review the report and confirm in writing that they have found it to: 1. Represent sound industry practice 2. Report and recommend correctly, truthfully and objectively 3. Be appropriate given the local site conditions and scope of works proposed 4. Avoid invalid, biased and exaggerated statements. Additionally, written confirmation from the third party verifier that they comply with the definition of a SQE is required.

Methodology

None.

Evidence

Criteria	Interim design stage	Final post-construction stage
All	A completed copy of Table 53 on page 345 signed and dated by the client or a design team member AND EITHER Plans, site photographs and specifications confirming presence, or otherwise, of ecological features and the protection measures specified OR Ecologist's report highlighting information required in accordance with Guidance Note 13 – Relating ecologist's report to BREEAM.	As design stage BREEAM Assessor's site inspection report and photographic evidence OR Ecologist's report confirming: 1. The boundary of the site and the construction zone has not been altered 2. Where applicable, all existing ecological features still remain.

Additional information

Relevant definitions

Appropriate statutory body

This refers to the statutory or legal organisation, or entity, whose duty it is to carry out the planning approval function for the development area.

Assessment zone

For the purpose of this BREEAM issue the assessment zone is defined as any land on the site which is being developed (and therefore disturbed) for buildings, hardstanding, soft landscaping, site access, plus a 3m wide zone measured outward from the boundary around these areas irrespective of site boundary. It also includes any areas used for temporary site storage and buildings. If it is not known exactly where buildings, hardstanding, site access and temporary storage will be located it must be assumed that the construction zone is the entire site.

Ecology related subject

Depending on the ecological content (minimum 60%), the following degrees might be considered relevant: Ecology, Biological Sciences, Zoology, Botany, Countryside Management, Environmental Sciences, Marine and Freshwater Management, Earth Sciences, Agriculture, Forestry, Geography, Landscape Management.

Features of ecological value

Features requiring protection during site clearance and construction to maintain their presence and ecological value, which include as a minimum:

1. Trees determined to be of value using one of the following measures
   a. More than 10 years old (or where age is unknown where the trunk diameter is over 100mm)
   b. Tree of significant ecological value as defined in BS 5837: 2012 by the SQE or qualified arboriculturalist
2. Hedges and natural areas requiring protection
3. Watercourses and wetland areas
4. Nesting or roosting opportunities for birds or bats within the building.

Note: Where a tree is deemed to create a significant danger to the public or occupants by a statutory body or qualified arboriculturalist, then that feature may be exempt from the 'protection of ecological features' requirement of this issue.

Suitably qualified ecologist (SQE)

An individual achieving all the following items can be considered to be 'suitably qualified' for the purposes of compliance with BREEAM:

1. Holds a degree or equivalent qualification in ecology or a related subject comprising a significant ecology component.
2. Is a practising ecologist, with a minimum of three years relevant experience (within the last five years). Such experience must clearly demonstrate a practical understanding of factors affecting ecology in relation to construction and the built environment; including, acting in an advisory capacity to provide recommendations for ecological protection, enhancement and mitigation measures. The relevant experience must relate to the country that the assessment is being carried out in.

Other information

Very often there is the potential for a site to increase its biodiversity value through appropriate design and management, regardless of whether enhancing biodiversity is required to gain planning consent. This BREEAM assessment issue provides the opportunity to reward those projects that contribute to protecting and enhancing biodiversity, improve living environments and meet environmental objectives.

The SQE's recommendations may have an impact on specifications worked up by other design team members, such as landscape architects or drainage engineers. BREEAM recommends that collaborative input between the ecologist and relevant professionals is sought from the concept stage of the development to highlight opportunities and constraints and allow effective integration of these aspects into the ecologist's recommendations.

The World Database on Protected Areas (WDPA) contains information from various organisations such as national governments, non-governmental organisations, academic institutions, international biodiversity convention secretariats, etc. The data and maps can be used for environmental impact analysis and private sector decision-making when areas of ecological value could be impacted.

Relating ecology reports to BREEAM

Guidance on relating ecology reports to BREEAM is available in Guidance Note 13 on the BREEAM website.

LE 03 Minimising impact on existing site ecology

This issue is not applicable to BREEAM International New Construction Version 6.

LE 04 Enhancing site ecology

(all buildings)

Number of credits available	Minimum standards
3	No

Aim

To encourage actions taken to enhance the ecological value of the site as a result of development.

Assessment criteria

This issue is split into two parts:

- Ecologist's report and recommendations (1 credit)
- Increase in ecological value (2 credits)

The following is required to demonstrate compliance:

One credit - Ecologist's report and recommendations

1 A SQE has been appointed by the client or their project representative no later than the conclusion of the design brief, i.e. the ecologist is appointed at the beginning of Concept Design stage.

2 The SQE has provided an ecology report with appropriate ecological recommendations (see Relevant definitions on page 354) for the enhancement of the site's ecology at Concept Design stage. The report is based on a site visit or survey by the SQE (see also CN2.1 on the facing page).

3 At least 50% of the recommendations within the ecology report for enhancement of site ecology have been, or will be, implemented in the final design and build.

Up to two credits - Increase in ecological value

4 Criteria 1 above and 2 above are achieved.

5 A percentage of the recommendations within the ecology report for enhancement of site ecology have been, or will be, implemented in the final design and build.

Table 54: Percentage of recommendations within ecology report implemented

Percentage of ecology report recommendations implemented	Credits
75%	1
95%	2

Checklists and tables

None.

Compliance notes

Ref	Terms	Description
Shell and core (non-residential and residential institutions only)		
CN1	Applicable assessment criteria	Both options: All criteria relevant to the building type and function apply. Refer to Appendix D – Shell and core project assessments on page 409 for a more detailed description of the shell and core assessment options.
Residential - Partially fitted and fully fitted		
CN1.1	Applicable assessment criteria - Single and multiple dwellings	Both options: All criteria relevant to the building type and function apply. Refer to Appendix E – Applicability of BREEAM New Construction to single and multiple dwellings, partially and fully fitted on page 412 for a more detailed description of residential assessment options.
General		
CN2	Early stage involvement from the SQE. See criterion 1.	The role of the SQE during the Preparation and Brief stage will be to advise on early stage site layout and development density decisions so that opportunities to enhance site ecology are maximised. SQE involvement at the Concept Design stage will be necessary to provide more detailed ecological recommendations (see Relevant definitions on the next page) based on the outline design.
CN2.1	Timing of ecologist's survey and report. See criterion 2.	The SQE must carry out site surveys of existing site ecology, on which their report is based (or to provide verification where the report is prepared by others) at the Concept Design stage in order to facilitate and maximise potential ecological enhancement.
CN2.2	Guidance for ecologists and assessors	Guidance on relating ecology reports to BREEAM is available in Guidance Note 13 on the BREEAM website.
CN2.3	Infill construction on existing sites with limited space for ecological enhancements or overriding security requirements. See criterion 1.	Where it is not possible to implement ecological enhancements within the construction zone due to overriding security issues, or where space for ecological enhancements within the zone is severely limited, ecological enhancements made to other areas of the site can be taken into account and used to determine the number of BREEAM credits achieved. These enhancements must be made within the boundary of the wider existing development and be planned and commissioned on a similar timescale to the assessed development. Examples of instances where this Compliance note may apply include new 'infill' building developments within existing college and higher education campuses, retail or business parks.

Methodology

None.

Evidence

Criteria	Interim design stage	Final post-construction stage
All	The SQE's report highlighting information required in Guidance Note 13 or a copy of Guidance Note 13 completed by the ecologist. Design drawings including proposed and existing (pre-development) site plan or survey. Written confirmation from the client or design team confirming how the ecologist's recommendations will be implemented.	As design stage requirements. BREEAM Assessor's site inspection report and photographic evidence confirming planting in accordance with design stage plan. Relevant section or clauses of the building specification or contract or a letter from the client or principal contractor confirming the planting will be completed within 18 months from completion of the development*. * This is for large mixed-use or multi-building developments, where the whole site has not been completed and ecological enhancements have not yet been added, or where features are being added at a later date in an appropriate planting season.

Additional information

Relevant definitions

Ecological recommendations

Ecological recommendations are defined as measures adopted to enhance the ecology of the site. These are measures that the ecologist reasonably expects can be implemented, considering their feasibility taking into account building or site constraints. Measures may include but are not limited to:

1. The planting of locally appropriate native species or non-native species with a known attraction or benefit to local wildlife
2. The adoption of horticultural good practice (e.g. no, or low, use of residual pesticides)
3. The installation of bird, bat or insect boxes at appropriate locations on the site
4. Development of a full biodiversity management plan including avoiding clearance or works at key times of the year (e.g. breeding seasons)
5. The proper integration, design and maintenance of sustainable drainage systems (SuDS) (such as rain gardens), green roofs, green walls, community orchards, community allotments etc.

Other information

None.

LE 05 Long term impact on biodiversity

(all buildings)

Number of credits available	Minimum standards
2	No

Aim

To minimise the long term impact of the development on the site and the surrounding area's biodiversity.

Assessment criteria

The following is required to demonstrate compliance:

Up to two credits

1 Where a SQE is appointed prior to commencement of activities on site and they confirm that all relevant EU, local and national regulations or legislation requirements relating to the protection and enhancement of ecology have been complied with during the design and construction process.

2 Where a landscape and habitat management plan, appropriate to the site (including impacts of the building both during construction and in operation), is produced covering at least the first five years after project completion. This is to be handed over to the building owner or occupants and includes:
- 2.a Management of any protected features on site
- 2.b Management of any new, existing or enhanced habitats
- 2.c A reference to any current or future legislation requirements (local, national or regional) that apply to the site regarding the protection of species and habitats (and where applicable refer to biodiversity action strategies or action plans)
- 2.d Confirmation from the SQE that all relevant aspects of ecology are included within the plan.

3 Where additional measures to improve the assessed site's long term biodiversity are adopted, according to Table 55 on the next page.

Where criteria 1 above to 3 above are met credits can be awarded as follows:

No. of credits	No. of additional measures
1	2
2	4

Where the SQE confirms that some of the additional measures listed in Table 55 on the next page are not applicable to the assessed development, the credits can be awarded as follows:

	Applicable additional measures				
	All	4	3	2	1
Credits	Number of additional measures to assess				
1	2	2	2	N/A	N/A
2	4	4	3	2	1

Checklists and tables

Table 55: Additional measures for the improvement of long term biodiversity

Ref	Additional measure for the improvement of long term biodiversity
1	The principal contractor nominates a biodiversity champion with the authority to influence site activities and ensure that detrimental impacts on site biodiversity are minimised in line with the recommendations of a SQE.
2	The principal contractor trains the site workforce on how to protect site ecology during the project. Specific training must be carried out for the entire site workforce to ensure they are aware of how to avoid damaging site ecology during operations on site. Training should be based on the findings and recommendations for protection of ecological features highlighted within a report prepared by a SQE.
3	The principal contractor records actions taken to protect biodiversity and monitor their effectiveness throughout key stages of the construction process. The requirement commits the principal contractor to make such records available where publicly requested.
4	Where a new ecologically valuable habitat appropriate to the local area is created. This includes a habitat that supports nationally, regionally or locally important biodiversity, or which is nationally, regionally or locally important itself. Local biodiversity expertise should be sought before the end of the Concept Design stage to help identify species of local biodiversity importance on site and ensure that the proposals support local priorities.
5	Where flora and fauna habitats exist on site, the contractor programmes site works to minimise disturbance to wildlife. For example, site preparation, ground works, and soft landscape works have been, or will be, scheduled at an appropriate time of year to minimise disturbance to wildlife. Timing of works may have a significant impact on, for example, breeding birds, flowering plants, seed germination, amphibians etc. Actions such as phased clearance of vegetation may help to mitigate ecological impacts. This additional requirement will be achieved where a clear plan has been produced detailing how activities will be timed to avoid any impact on site biodiversity in line with the recommendations of a SQE.

Ref	Additional measure for the improvement of long term biodiversity
6	**Education buildings (preschools, schools and colleges only)** A partnership has been set up by the design team with a local group that has wildlife expertise and the group has: 1. Provided advice early in the design process regarding protecting and providing habitats for species of local importance on the site 2. Provided advice to ensure the design is in keeping with the local environment. In particular this should draw on their local knowledge of any features or species of ecological interest on or near the site 3. Provided, or will continue to provide, ongoing support and advice to the educational establishment to help them manage, maintain and develop the outdoor space in the longer term.

Compliance notes

Ref	Terms	Description
Shell and core (non-residential and residential institutions only)		
CN1	Applicable assessment criteria	Both options: All criteria relevant to the building type and function apply. Refer to Appendix D – Shell and core project assessments on page 409 for a more detailed description of the shell and core assessment options.
Residential - Partially fitted and fully fitted		
CN2	Applicable assessment criteria - Single and multiple dwellings	Both options: All criteria relevant to the building type and function apply. Refer to Appendix E – Applicability of BREEAM New Construction to single and multiple dwellings, partially and fully fitted on page 412 for a more detailed description of residential assessment options.
General		
CN3	Where additional measures are not applicable. See criterion 3 on page 355.	In all cases it is necessary to employ a SQE to achieve credits for this BREEAM issue. As a minimum the SQE must provide the following in writing: 1. Confirmation that criteria 1 and 2 on page 355 have been achieved 2. Clarification of how many of the additional measures for criterion 3 on page 355 are applicable and have been achieved 3. Guidance on how to achieve additional measure 4 (where possible). Where the SQE confirms that none of the additional measures are applicable (due to the nature of the site and its surroundings) full credits can be awarded for demonstrating compliance with criteria 1 and 2 on page 355.
Building specific		

Ref	Terms	Description
CN4	Education (preschool and school buildings only). Additional measure 6: Ongoing support and advice	This could take the form of meetings several times a year with a staff or pupils or students working party to help them plan conservation and ecological enhancement work, or activities relating to the ecology in or near the school or college grounds.

Methodology

None.

Evidence

Criteria	Interim design stage	Final post-construction stage
1–3	Ecologist's report highlighting information required in Guidance Note 13 or a copy of Guidance Note 13 completed by the ecologist AND EITHER A copy of the site's landscape and habitat management plan OR The relevant section or clauses of the building specification or contract confirming its development and scope OR A letter from the client confirming a commitment to produce the management plan and its scope.	A letter from the SQE confirming that all relevant legislation relating to protection and enhancement of ecology has been complied with. A copy of the site's landscape and habitat management plan.
Additional measures		
1	The relevant section or clauses of the building specification or contract or an appointment letter from the contractor.	Assessor inspection of, or a copy of the relevant sections of the site log book confirming the details of any action or events taken by the biodiversity champion. If no actions were required or taken, this should be confirmed in the log book.
2	Training schedule or letter of confirmation from the principal contractor committing to provide relevant training OR A copy of the specification clause requiring the training of the site's workforce by the principal contractor.	A record of training undertaken including the necessary details.

Criteria	Interim design stage	Final post-construction stage
3	A letter from the principal contractor confirming monitoring and reporting criteria for the development OR A copy of the specification clause requiring the principal contractor to undertake monitoring and reporting.	BREEAM Assessor's (or SQE's) site inspection report and photographic evidence confirming the existence of the proposed habitat.
4	A copy of the proposed site plan highlighting the new ecologically valuable habitat and the SQE's report or letter confirming that the habitat supports the relevant biodiversity action plans.	BREEAM Assessor's (or SQE's) site inspection report and photographic evidence confirming the existence of the proposed habitat.
5	The SQE's report or letter confirming actions required with respect to programming site works to minimise disturbance. The principal contractor's programme of works OR The relevant section or clauses of the building specification or contract confirming that the programme of site works will minimise disturbance to wildlife in accordance with the SQE's recommendations.	A letter from the SQE, or a copy of their report confirming site works were executed in a manner that minimised disturbance to wildlife in accordance with their recommendations.
6	Documentary evidence from the design team or wildlife group confirming: 1. Scope of the partnership 2. Details and remit of the wildlife group 3. A description of the process for ongoing support that the group commit to give to the partnership 4. Details of the meetings and actions to date.	Documentary evidence from the design team or wildlife group detailing, as a minimum, meetings, actions, advice given, framework for future support including a timetable for meetings and events.

Additional information

Relevant definitions

Biodiversity

Biodiversity is defined as the variety of life on earth. It includes all species, animal, plants, fungi, algae, bacteria and the habitats that they depend upon.

Biodiversity action plan

A plan which sets specific, measurable, achievable, realistic and time bound conservation targets for species and habitats.

Biodiversity champion

An individual formally tasked by the principal contractor with the responsibility for monitoring and influencing site activities and minimising detrimental impacts on biodiversity. The individual must have sufficient authority and knowledge of ecology and construction, and also spend sufficient time on site in order to carry out the role. The biodiversity champion need not be an ecologist or ecological expert. This may be the same person as the sustainability champion in Man 03 Responsible construction practices on page 56.

Local group with wildlife expertise

A local group with wildlife expertise could be the local Wildlife Trust or an alternative group that has been involved in local wildlife conservation or enhancement projects.

Suitably Qualified Ecologist (SQE)

Refer to LE 02 Ecological value of site and protection of ecological features on page 344

Other information

Guidance on relating ecology reports to BREEAM is provided in Guidance Note 13 available on the BREEAM website.

The following are examples of what to include in long term management plans for habitats, species and biodiversity features:

1. Description and evaluation of features to be managed
2. Ecological trends and constraints on site that could influence management
3. Aims and objectives of management
4. Appropriate management options for achieving aims and objectives
5. Prescriptions for management actions
6. Preparation of a work schedule (including an annual work plan capable of being rolled forward over a five year period)
7. Body or organisation personnel responsible for implementation of the plan
8. Monitoring and remedial measures
9. Funding resources and mechanisms to ensure sustainable long term delivery of the proposed management.

The level of detail required for any given site should be that which is necessary to ensure the effective management of the biodiversity features present.

Pollution

Summary

This category addresses the prevention and control of pollution and surface water run-off associated with the building's location and use. Issues in this section aim to reduce the building's impact on surrounding communities and environments arising from light pollution, noise, flooding and emissions to air, land and water.

Category summary table

Issue	Credits	Credit summary
Pol 01 Impact of refrigerants	4	— Avoidance or reduction of the impact of refrigerants through specification and leak prevention or detection.
Pol 02 NOx emissions	2	— Reduction in emissions of NO_X arising from the building's space and water heating systems.
Pol 03 Surface water run-off	5	— Development of sites with a low probability of flooding where the design minimises the impact of flooding through careful master-planning. — Surface water run-off is managed to be no worse than the pre-development scenario. — Watercourse pollution prevention systems are in place.
Pol 04 Reduction of night time light pollution	1	— External light pollution is eliminated through effective design or the removal of the need for unnecessary external lighting.
Pol 05 Reduction of noise pollution	1	— Measures to reduce the likelihood of disturbance arising as a result of noise from fixed installations on the development.

Pol 01 Impact of refrigerants

(all buildings)

Number of credits available	Minimum standards
4	No

Aim

To reduce the level of greenhouse gas emissions arising from the leakage of refrigerants used to heat or cool the building.

Assessment criteria

This issue is split into two parts:

- Buildings that use no refrigerants (including connection to systems off site) (all available credits)
  OR
- For buildings that use refrigerants:
  - Prerequisite
  - Ozone depletion potential (1 credit)
  - Impact of refrigerant (1 to 2 credits)
  - Leak detection (1 credit)

The following is required to demonstrate compliance:

All available credits - No refrigerant use

1 Where the building does not require the use of refrigerants within its installed plant or systems, or any off-site system it is connected to.

OR alternatively, where the building does require the use of refrigerants, all the available credits can be awarded as follows:

Prerequisite

2 All systems (with electric compressors) must comply with the requirements of EN 378:2008+A2:2012[74] (parts 2 and 3) or ISO 5149:2014[75] and where refrigeration systems containing ammonia are installed, the Institute of Refrigeration Ammonia Refrigeration Systems Code of Practice[76]

One credit - Ozone depleting potential (ODP)

3 The refrigerants used must have an ozone depleting potential of zero.

Two credits - Impact of refrigerant

4 Where the systems using refrigerants have Direct Effect Life Cycle CO_2 equivalent emissions (DELC CO_2-eq) of ≤ 100 kg CO_2-eq/kW cooling or heating capacity. To calculate the DELC CO_2-eq., please refer to Relevant definitions on page 367 and Methodology on page 364. OR

5 Where air-conditioning or refrigeration systems are used to heat or cool the building the refrigerants used have a Global Warming Potential (GWP) ≤ 10.

OR

One credit - Impact of refrigerant

6 Where the systems using refrigerants have Direct Effect Life Cycle CO_2 equivalent emissions (DELC CO_2-eq) of ≤ 1000 kg CO_2-eq/kW cooling or heating capacity.

One credit - Leak detection

7 Where systems using refrigerants have a permanent automated refrigerant leak detection system installed; OR where an inbuilt automated diagnostic procedure for detecting leakage is installed. In all instances a robust and tested refrigerant leak detection system must be installed and must be capable of continuously monitoring for leaks.

8 The system must be capable of automatically isolating and containing the remaining refrigerant charge in response to a leak detection incident (see Other information on page 368).

Checklists and tables

None.

Compliance notes

Ref	Terms	Description
Shell and core (non-residential and residential institutions only)		
CN1	Applicable assessment criteria	Shell only: This issue is not applicable. Shell and core: All criteria relevant to the building type and function apply. Refer to Appendix D – Shell and core project assessments on page 409 for a more detailed description of the shell and core assessment options.
CN1.1	Avoiding the need for refrigerants	Shell and core: If the building is designed in such a way that it avoids the need for refrigerant containing building services or connection to off-site systems, and therefore no 'refrigerant-using' building services or systems will be specified for the fit-out, then the available credits can be awarded by default.
Residential - Partially fitted & Fully fitted		
CN2	Applicable Assessment criteria - Single and multiple dwellings	Both options: All criteria relevant to the building type and function apply. Refer to Appendix E – Applicability of BREEAM New Construction to single and multiple dwellings, partially and fully fitted on page 412 for a more detailed description of residential assessment options.
General		
CN3	Industrial buildings without offices & with untreated operational areas	This issue will be filtered from the scope of assessment for industrial units designed without offices and where the operational area will be untreated, i.e. not designed to be air-conditioned or contain a cold storage facility with refrigeration plant.

Ref	Terms	Description
CN3.1	Country regulations on the use of Ozone Depleting Substances (ODS)	Where legislation within the country of assessment prohibits the use of ozone depleting substances in new refrigeration systems, the credit for using substances with an ozone depletion potential of zero will be filtered out of the assessment. At the time of writing all European countries are known to fall into this category.
CN3.2	Refrigerant charge of less than 6kg	For installations of small multiple hermetic systems only where the refrigerant charge in each unit is less than 6kg, the credit for leak detection and containment can be awarded by default. This is on the basis that the risk of a large refrigerant leak due to system failure is minimised, as individual leaks from each system will be small where leakage occurs, and therefore there is little life cycle benefit of requiring leak detection equipment on each small system. Note: solutions such as this may be less energy efficient and as such may impact on the achievement of credits under .
CN3.3	Specification of multiple systems	Where more than one air-conditioning or refrigeration system is servicing the building, the assessor must source the relevant technical data for each system and enter it into the Pol 01 calculator. The calculator will then determine the weighted average DELC for the multiple installation and the BREEAM credits can be awarded or withheld accordingly.
CN3.4	Leak detection. See criteria 7 and 8 on the previous page.	The refrigerant leak detection criteria are still applicable in instances where any type of non-solid refrigerant is present, i.e. even if the refrigerant meets BREEAM's DELC CO_2-eq benchmarks. Exceptions to this are systems that use natural and environmentally benign refrigerants, such as air and water (for example lithium bromide or water absorption chillers) and installations of small multiple hermetic systems, where CN3.2 above applies. These types of system and refrigerants will achieve the leak detection credit by default.
CN3.5	ODP data not available	Where ODP data for the specified refrigerant are not available, the credit cannot be awarded on a default basis.

Methodology

The number of Pol 01 BREEAM credits achieved is determined by the assessor using the BREEAM Pol 01 calculator.

The Direct Effect Life Cycle CO_2-eq emissions (DELC) per kW of cooling and heating capacity are calculated using the following equation:

$$\frac{[RLO+RLSR] \times GWP}{CC}$$

Where:

Refrigerant loss operational (RLO) = $(Ref_{charge} \times Sys_{op\text{-}life} \times (L1 + L2 + S1 + S2))/100$

Refrigerant loss system retirement (RLSR) = $Ref_{charge} \times (1 - Ref_{RecEff}/100)$

Where:

1. Ref_{charge}: Refrigerant charge (kg)
2. $Sys_{op\text{-}life}$: System operational lifetime (years)
3. Ref_{RecEff}: Refrigerant Recovery Efficiency factor (%)
4. L1: Annual Leakage Rate (% Refrigerant charge)
5. L2: Annual Purge Release factor (% Refrigerant charge)
6. S1: Annual Service Release (% Refrigerant charge)
7. S2: Probability factor for catastrophic failure (% Refrigerant charge loss/year)
8. GWP: Global Warming Potential of refrigerant
9. CC: Cooling or heating capacity (kW).

The following default values must be used, where system specific data are not available:

$Sys_{op\text{-}life}$: System operational design life (years): see Table 56 below

Ref_{RecEff}: Refrigerant recovery efficiency factor (%): **95%**

L1: Annual leakage rates (% refrigerant charge): see Table 57 on the next page

L2: Annual purge release factor (% refrigerant charge): **0.5** (if the system does not require an annual purge, zero should be used)

S1: Annual service release (% refrigerant charge): **0.25** (this applies where the system requires opening up to carry out the annual service. For systems which do not require opening up, there will be no associated annual release of refrigerant, therefore a default of zero should be used)

S2: Probability factor for catastrophic failure (% refrigerant charge loss/year): **1%** (based on a failure rate of 1 in 100 systems).

The following information must be sourced from the design team's mechanical and electrical engineer or system manufacturer:

- System type
- Ref_{charge}: Refrigerant charge (kg)
- GWP: Global Warming Potential of refrigerants
- Cooling or heating capacity (kW).

Table 56: Default system operational design life values

System type	Default system operational design life values (years)
Small and medium capacity chillers	15
Large capacity chillers	20
Unitary split	15
Variable Refrigerant Flow (VRF) system	15
All other systems	10
These figures are based on those reported in LOT 6 for air-conditioning units and the British Refrigeration Association's (BRA) Guideline Methods of Calculating TEWI (2006)[77]. Note: The following should be considered when determining whether the system specified is defined as small or medium or large: — Large capacity chiller: centrifugal compressor — Medium capacity chiller: scroll or screw compressor — Small capacity chiller: scroll compressor.	

Table 57: Average annual leakage rates

System type	Annual leakage rate (% of charge per annum)
Cold storage and display systems	
Integral cabinets	3%
Split or condensing units	18%
Centralised	19%
Air-conditioning systems	
Unitary split	15%
Small-scale chillers	10%
Medium or large chillers	5%
Heat pumps	6%
These figures are based on those reported in LOT 6 for air-conditioning units and also Table 2 of the Market Transformation Programmes Briefing Note for Commercial Refrigeration no. 36, 'Direct Emission of Refrigerant Gases' (version 1.2). The figures are based on the average of the leakage rates from the four separate studies reported in Table 2 (where a range is reported, the higher value was used).	

Evidence

Criteria	Interim design stage	Final post-construction stage
All	The following as appropriate: 1. Confirmation of the absence of refrigerant in the development 2. A copy of the specification clause or letter from the M&E engineer or system manufacturer confirming relevant refrigeration type and system information 3. A completed copy of the BREEAM Pol 01 calculator.	As design stage. Assessor's building or site inspection or as-built drawings. Manufacturer's information.

Additional information

Relevant definitions

Direct effect life cycle (DELC) carbon dioxide equivalent

A measure of the effect on global warming arising from emissions of refrigerant (in the case of this BREEAM assessment issue) from the equipment to the atmosphere over its lifetime (units: kg CO_2-eq). The calculation involves estimating the total refrigerant release over the period of operation and subsequent conversion to an equivalent mass of carbon dioxide. Should the system use several different refrigerants, e.g. a primary refrigerant and a secondary coolant, or a cascade system, individual calculations are made for all refrigerants which contribute to the direct effect (see Methodology on page 364 for a description of how DELC is calculated).

Global warming potential

GWP is defined as the potential for global warming that a chemical has relative to 1 unit of carbon dioxide, the primary greenhouse gas. In determining the GWP of the refrigerant, the Intergovernmental Panel on Climate Change (IPCC) methodology using a 100-year Integrated Time Horizon (or ITH) should be applied.

Ozone depleting potential

ODP is the ratio of the relative amount of degradation to the ozone layer caused by a particular substance relative to the calculated depletion for the reference gas CFC 11 (ODP = 1.0).

Ozone depleting substances (ODS)

"Substances known to deplete the stratospheric ozone layer. The ODSs controlled under the Montreal Protocol and its Amendments are chlorofluorocarbons (CFCs), hydrochlorofluorocarbons (HCFCs), halons, methyl bromide (CH_3Br), carbon tetrachloride (CCl_4), methyl chloroform (CH_3CCl_3), hydrobromofluorocarbons (HBFCs) and bromochloromethane (CH_2BrCl)." , extracted from IPCC/TEAP report, Special Report on Safeguarding the Ozone Layer and the Global Climate System, Cambridge University, 2006.

Refrigerant leak detection

An automated permanently installed multi-point sensing system, designed to continuously monitor the atmosphere in the vicinity of refrigeration equipment and, in the event of detection, raise an alarm. The system may be aspirated or have multiple sensor heads linked to a central alarm unit or BMS. Various sensor types are available including infrared, semiconductor or electro-chemical.

Refrigerant recovery

The process of removing refrigerant from a system and storing it in an airtight container.

Refrigerant pump down

The specification of automatic refrigerant pump down can further limit potential losses and damage to the environment and have subsequent economic benefits to the building owner. Under the United Kingdom Environmental Protection Act 1990 unwanted refrigerant and refrigerating system oil are classified as either controlled or hazardous waste. Not only is it an offence to discharge them to the environment, but there are procedures regarding transport, storage, transfer of ownership and ultimate disposal. Article 16 of EC Regulation 2037/2000 specifies that used CFCs and HCFCs must be recovered for destruction or recycling or reclamation.

Robust and tested refrigerant leak detection system

This is normally defined as that included on the Enhanced Capital Allowance (ECA) Energy Technology Product List[78] (or an equivalent list). Where the system does not fall within the scope of the ECA energy technology product list or an equivalent list, the design team must demonstrate to the assessor that the system specified meets the principles of the scheme as far as is applicable.

Small-scale white goods

These should be defined as domestic-scale white goods and would also include small individual display cabinets, for example drinks cabinets in small retail shops.

Systems using refrigerants

The criteria of this issue apply to air-conditioning and refrigeration systems used to heat or cool the building for the following uses, regardless of the system's refrigerant charge (kg):

- Comfort cooling or space heating (including assessment of refrigerants in heat pumps)
- Cold storage, including commercial food and drink display cabinets but excluding small scale white goods (see definition above)
- Process-based cooling loads, e.g. servers, IT equipment
- Off-site facilities such as district heating or cooling systems.

Refrigerant

There are three main make-ups of refrigerants:

1. Hydrogenated Fluorocarbon Refrigerants (HFCs) are made up of hydrogen, fluorine, and carbon. Because they do not use a chlorine atom (which is used in most refrigerants) they are known to be one of the least damaging to the earth's ozone layer.
2. Hydrogenated Chlorofluorocarbon Refrigerants (HCFCs) are made up of hydrogen, chlorine, fluorine, and carbon. These refrigerants contain minimal amounts of chlorine; they are not as detrimental to the environment as some other refrigerants.
3. Chlorofluorocarbon Refrigerants (CFCs) contain chlorine, fluorine and carbon. These refrigerants carry high amounts of chlorine so they are known to be the most hazardous to the ozone layer.

The use of CFCs and HCFCs as refrigerants has been addressed under the Montreal protocol. Phase out programmes have been agreed resulting in these substances no longer being used as refrigerants in all new installations and most existing situations. The industry's favoured replacements are currently HFCs which are often potent global warming contributors. Hydrocarbons and ammonia-based refrigerants have low or zero GWP and are therefore preferred long term options. These are now widely available and are valid alternatives to HFCs in all buildings, provided health and safety issues are fully addressed. The United Nations Environment Programme (UNEP) hosts a HCFC Help Centre which contains information about the management and phase out of HCFCs and alternatives to HCFCs in the refrigeration and air-conditioning sector.

Other information

Automatic isolation and containment of refrigerant

Any system that isolates and contains refrigerant within the system so as to minimise leakage to the atmosphere in the event of a systems failure. An example of a system which could meet criterion 8 on page 363 would be one which initiates an automated shut down and pump down of the refrigerant into a separate storage tank.

Common refrigerants

Table 58: List of some common refrigerant types with low GWP

R-Number	Chemical name	GWP 100-year
R-30	Dichloromethane	9
R-170	Ethane	3
R-290	Propane	3
R-600	Butane	3
R-600a	Isobutane	3
R-702	Hydrogen	5.8

R-Number	Chemical name	GWP 100-year
R-717	Ammonia	0
R-718	Water	<1
R-729	Air (nitrogen, oxygen, argon)	0
R-744	Carbon dioxide	1
R1150	Ethylene	3
R-1234yf	2,3,3,3-Tetrafluoropropene	>1
R-1270	Propylene	3

Sources: The United Nations Environment Programme (UNEP) '2010 Report of the Refrigeration, Air-conditioning and Heat Pumps Technical Options Committee' (pages 29-30).
EN 378-1:2008+A2:2012: Refrigerating systems and heat pumps - Safety and environmental requirements. Part 1: Basic requirements, definitions, classification and selection criteria - Annex E.
The Intergovernmental Panel on Climate Change 5th Assessment Report, Chapter 8, 'Anthropogenic and Natural Radiative Forcing', 2013.
'Global environmental impacts of the hydrogen economy', Derwent *et al*, 2006.

The formula used to calculate the Direct Effect Life Cycle CO_2-eq emissions in BREEAM is based on the Total Equivalent Warming Impact (TEWI) calculation method for new stationary refrigeration and air-conditioning systems. TEWI is a measure of the global warming impact of equipment that takes into account both direct emissions (as assessed in this BREEAM issue) and indirect emissions produced through the energy consumed in operating the equipment (which is assessed in the BREEAM energy section).

Refer to EN 378-1[79] and the British Refrigeration Association's (BRA) Guideline Methods of Calculating TEWI for further details. The BRA publication also includes sectorial release factors for new systems designed to best practice standards.

REAL Zero

REAL Zero was a UK led project to investigate the causes of and solutions to refrigerant leakage, against the background of the EU F Gas Regulation. It brought together expertise across sectors and provided practical guides and training booklets. It was subsequently updated and developed into a European e-learning programme known as REAL Skills.

For further information including guidance notes, calculators, tools and case study information visit: http://www.realskillseurope.eu/

Ozone depleting potential refrigerants

Both CFCs and HCFCs are now tightly controlled or due to be phased out in the foreseeable future in all signatory countries to the Montreal Protocol on Substances That Deplete the Ozone Layer, BREEAM only recognises refrigerants that have an ODP of zero. Table 59 on the next page gives current ODP figures for a range of available substances that are capable of acting as refrigerants; assessors should use this to verify the ODP of the specified refrigerant. Substances not on this list should be referred to the BREEAM office so that an appropriate figure can be established.

Note: This table omits substances that are not typically used as refrigerants in buildings.

Table 59: Ozone depleting potential of refrigerants

Refrigerant type	Ozone depleting potential
R11 (CFC-11)	1.00
R12 (CFC-12)	1.00
R113 (CFC-113)	0.80
R114 (CFC-114)	1.00
R115 (CFC-115)	0.60
R125 (CFC-125)	0.00
Halon-1211	7.90
Halon-1301	15.90
Halon-2402	6.00
Ammonia	0.00
R22 (HCFC-22)	0.05
R123 (HCFC-123)	0.02
R134a (HFC-134a)	0.00
R124 (HCFC-124)	0.02
R141b (HCFC-141b)	0.11
R142b (HCFC-142b)	0.07
R143a (HFC-143a)	0.00
R32 (HCFC-32)	0.00
R407C (HFC-407)	0.00
R152a (HFC-152a)	0.00
R404A (HFC blend)	0.00
R410A (HFC blend)	0.00
R413A (HFC blend)	0.00

Refrigerant type	Ozone depleting potential
R417A (HFC blend)	0.00
R500 (CFC/HFC)	0.74
R502 (HCFC/CFC)	0.33
R507A (HFC azeotrope)	0.00
R290 (HC290 propane)	0.00
R600 (HC600 butane)	0.00
R600a (HC600a isobutane)	0.00
R290/R170 (HC290/HC170)	0.00
R1270 (HC1270 propene)	0.00
The United Nations Environment Programme (UNEP) '2010 Report of the Refrigeration, Air-conditioning and Heat Pumps Technical Options Committee' (pages 29-30). EN 378-1:2008+A2:2012: Refrigerating systems and heat pumps - Safety and environmental requirements. Part 1: Basic requirements, definitions, classification and selection criteria - Annex E.	

Pol 02 NO_x emissions (all buildings)

Number of credits available	Minimum standards
2	No

Aim

To contribute to a reduction in local NO_x emission levels through the use of low emission heat sources in the building.

Assessment criteria

The following is required to demonstrate compliance:

Two credits (All building types other than Industrial)

1 Where the plant installed to meet the building's delivered heating and hot water demand has, under normal operating conditions, a NO_x emission level (measured on a dry basis at 0% excess O_2) as follows:

NO_x emission levels for heating and hot water (mg/kWh)	Credits
≤ 56 mg/kWh	1 credit
≤ 40 mg/kWh	2 credits
Note for residential developments: Each self-contained dwelling must meet the requirements.	

Two credits (Industrial building types only)

NO_x emission levels for heating and hot water (mg/kWh)	Credits
Office and associated areas ≤ 56 mg/kWh	1 credit
Operational areas ≤ 56 mg/kWh	1 credit

2 Report via the BREEAM scoring and reporting tool the direct and indirect NO_x emissions in mg/kWh and energy consumption in kWh/m²/yr arising from systems installed to meet the building's space heating, cooling and hot water demands.

Checklists and tables

None.

Compliance notes

Ref	Terms	Description
Shell and core (non-residential and residential institutions only)		
CN1	Applicable assessment criteria	Shell only: This issue is not applicable. Shell and core: All criteria relevant to the building type and function apply. Refer to Appendix D – Shell and core project assessments on page 409 for a more detailed description of the shell and core assessment options.
Residential - Partially fitted & Fully fitted		
CN2	Applicable Assessment criteria - Single and multiple dwellings	Both options: All criteria relevant to the building type and function apply. Refer to Appendix E – Applicability of BREEAM New Construction to single and multiple dwellings, partially and fully fitted on page 412 for a more detailed description of residential assessment options.
General		
CN3	New build extensions to existing buildings	If the heating/hot water demand for the new extension is being met by an existing system, then the NO_X emission level for the existing system must be assessed against the criteria of this issue.
CN3.1	NO_X data provided in different units	Where NO_X data are provided in different units or at a level of excess oxygen greater than zero, the manufacturer or supplier must be asked to convert this to comply with the BREEAM criteria. Alternatively, the assessor may adjust the figure using the relevant correction factors provided in Methodology on page 375. Where combined heat and power (CHP) systems are used, these conversion factors cannot be used and the information must be obtained from the system manufacturer.
CN3.2	Grid electricity	Heating systems powered by grid electricity can be considered to have zero NO_X emissions. If all heating in the building is provided by grid electricity the credits can be awarded by default. The reason for this is based on the aim of this issue, which is to improve local air quality.
CN3.3	Electricity from a renewable source	Where electricity used by the heating system is sourced from a zero emission renewable source such as PVs, wind etc., there are no resulting emissions. This source of heating can therefore be counted as having zero NO_X emissions.
CN3.4	Combined heat and power	Refer to Additional information on page 376 for guidance on calculating NO_X emission levels from CHP.
CN3.5	Heat recovery	Heat recovery can be considered as having zero NO_X emissions for the purpose of this issue.

Ref	Terms	Description
CN3.6	Open flues	No credits may be awarded for open flue heating or hot water systems.
CN3.7	Water heating benchmark and point of use heaters	Where the water heating can be demonstrated to be less than 10% of the building's total energy consumption, these credits can be awarded based solely on the NO_X emissions from space heating.
CN3.8	More than one heating system	Where more than one heating system is specified refer to Additional information on page 376 for guidance on calculating emission levels.
CN3.9	Assessment and reporting of a building's NO_X emissions from cooling	At present the Pol 02 issue does not benchmark and award credits for NO_X emission levels associated with a building's cooling demands. To facilitate possible future benchmarking of this kind and alignment with European Standards on the Sustainability of Construction Works, BREEAM does require, as a condition of achieving any credits for this issue, the reporting of both direct and indirect NO_X emissions resulting from meeting the building's heating, cooling and hot water demands. In the case of indirect emissions, this refers primarily to emissions associated with grid electricity, where grid electricity is a source of energy for the building's heating, cooling or hot water demands. Direct NO_X emissions are those resulting from the burning of fuel on site or in the assessed building to meet heating, cooling or hot water demands, for example via a gas, oil-fired or biomass boiler.
Building type specific		
CN4	Industrial Office or operational areas not present	**First credit** Where the assessed building is designed without an office area, the first credit does not apply. One credit is therefore available where compliance with the operational area benchmark is met. **Second credit** Where the operational area of the assessed building is designed to be untreated, the second credit does not apply. One credit is therefore available where compliance with the office area benchmark is met. Where there is no office area and no heating in the operational area, this issue is not assessed.
CN4.1	Residential buildings: Secondary water or space heating systems	If a secondary space or water heating system supplies less than 8% of the dwelling's combined space heating and hot water demand, it can be omitted from the assessment. However, including a low NO_X heating system that supplies less than 8% of the combined demand can lower the average NO_X figure. Where this is the case inclusion of the secondary system is at the discretion of the developer and assessor.
CN4.2	Residential buildings: Post-construction stage exceptions	Where communal heating systems intended to supply a dwelling under assessment are due to be commissioned within a reasonable period following completion of an individual dwelling, then they should be the heat energy source assessed under this issue for NO_X, rather than the interim heat energy supply measure (which should also be noted). The communal system (e.g. CHP, district heating, etc.) must be the intended primary heating energy source for the dwelling. Evidence to confirm that future commissioning of such plant will occur within a reasonable period must be provided in the form of developer commitments and other pertinent technical documentation such as local service strategies; this reasonable period might be up to 18 months from completion of the dwelling.

Methodology

Calculating NO_X emission levels from combined heat and power (CHP) systems

Where CHP systems are specified, it is only necessary to consider the heat-related NO_X emissions for the assessment of this issue.

The NO_X emissions associated with heat generation should be calculated using the following formula:

$$X = A \times \left(\frac{B}{B+C}\right)$$

Where:

Term	Description
X	NO_X emissions per unit of heat generated (mg/kWh heat).
A	NO_X emissions per unit of fuel input (mg/kWh fuel input).
B	Heat output (kW).
C	Electrical output (kW).

The above methodology determines the net NO_X emissions from CHP-generated electricity compared with central generation of electricity and allocates this amount to the heat production. Where x is calculated to be negative, it should be assumed to be zero.

Calculating the average NO_X emission levels from multiple systems

Where the CHP or other heating system type operates in conjunction with another system, an average NO_X emission rate should be used based on the power output from each source, i.e. multiply the emissions of each system by the percentage of heat demand it supplies and total these values.

Where there are multiple sources of heat generation, an average NOx emission rate should be calculated based on the ratio of heat output (kW) from each heat source.

The following formula can be used for such cases:

$$NOx_{avg} = N_1 \times \left(\frac{H_1}{H_T}\right) + N_2 \times \left(\frac{H_2}{H_T}\right) \ldots + N_n \times \left(\frac{H_n}{H_T}\right)$$

Where:

Term	Description
NOx_{avg}	Average NO_X
N_1	NO_X emissions rate for source 1

Term	Description
N_2	NO_X emissions rate for source 2
N_n	NO_X emissions rate for source n
H_T	Total rated power output from all sources
H_1	Rated power output from source 1
H_2	Rated power output from source 2
H_n	Rated power output from source n

Evidence

Criteria	Interim design stage	Final post-construction stage
All	Relevant section or clauses of the building specification or contract. Manufacturer's product details. Calculations.	As design stage. report and photographic evidence.

Additional information

Relevant definitions

Approved building energy calculation software

Refer to BREEAM issue

NO_X emissions

NO_X emissions are pollutant gases produced by the combustion of fossil fuels. NO_X reacts with heat and sunlight to produce ozone that can cause serious respiratory problems. It also reacts with water to produce acid rain which has a detrimental effect on ecosystems. For the purposes of BREEAM, NO_X emission levels are required in units of mg/kWh, measured on a dry basis at 0% excess oxygen levels.

Conversion factors

Manufacturers should be asked to supply NO_X emissions data in mg/kWh, measured on a dry basis. Where this is not possible the assessor may use the following conversion factors to convert figures in parts per million (ppm), mg/MJ, mg/m³ or wet NO_X. It should be noted that these conversion factors assume worst case efficiencies and are likely to give conservative answers. This could have the effect of lowering the number of credits achieved. Note that these conversion factors are not applicable where combined heat and power (CHP) systems are being used. Please see the calculation procedures below for further details on assessing CHP systems for this issue.

1. Figures in mg/m³ should be multiplied by 0.859 in order to convert emissions into mg/kWh[80]. A conversion may also be necessary for data not calculated at 0% excess oxygen.
2. Figures in ppm should be multiplied by 1.76 in order to convert emissions into mg/kWh. A conversion may also be necessary for data not calculated at 0% excess oxygen.
3. Figures in mg/MJ should be multiplied by 3.6 in order to convert emissions into mg/kWh (1 kWh = 3.6 MJ). A conversion may also be necessary for data not calculated at 0% excess oxygen.

Wet NO_X conversion factor

This issue's criteria are based on dry NO_X values; almost all manufacturers will quote emissions measured on a dry basis. However, if wet NO_X figures are supplied, these will need to be converted to dry. The following formula should be used to determine the wet NO_X conversion factor[81]:

Conversion factor c = 100/(100-y)

Where y is the % water vapour content measured in the gas. This figure should be obtained from the manufacturer.

Excess oxygen correction

If a NO_X emission rate is quoted by the manufacturer in mg/m³ or ppm, then it should be established at what percentage excess oxygen this emission was measured. The greater the amount of excess oxygen in the flue gases at the time of measurement, the more 'diluted' the NO_X emissions. It is therefore important to convert any emission rate back to 0% excess oxygen. For the purpose of BREEAM, the following conversion factors can be used for the most frequently used rates supplied by manufacturers:

Table 60: Excess oxygen conversion factors

% excess O_2	Conversion (c)
3%	x 1.17
6%	x 1.40
15%	x 3.54

Conversion factor c = 20.9/(20.9 – x)

Where x = % excess O_2 (NOT excess air) and 20.9 is the percentage of O_2 in the air.

Other information

Some systems may find it difficult to achieve credits in this issue, including:

District heating

District heating systems that incinerate waste usually have NO_X emission rates higher than the levels set to achieve any BREEAM credits.

Biomass

Biomass systems are recognised as reducing the impact of fossil fuel depletion by employing a renewable fuel source (provided it is sustainably sourced). However, biomass can produce a significant amount of NO_X and so may not achieve this credit. They may, however, gain recognition in the energy section of BREEAM.

Pol 03 Surface water run-off

(all buildings)

Number of credits available	Minimum standards
5	No

Aim

To avoid, reduce and delay the discharge of rainfall to public sewers and watercourses, thereby minimising the risk and impact of localised flooding on and off-site, watercourse pollution and other environmental damage.

Assessment criteria

This issue is split into three parts:

- Flood risk (2 credits)
- Surface water run-off (2 credits)
- Minimising watercourse pollution (1 credit)

Up to two credits - Flood resilience

Two credits - Low flood risk

1 Where a site-specific flood risk assessment (FRA) confirms the development is situated in a flood zone that is defined as having a low annual probability of flooding (in accordance with current best practice national planning guidance). The FRA must take all current and future sources of flooding into consideration (see CN3.2 on page 382).

One credit - Medium or high flood risk

2 Where a site-specific FRA confirms the development is situated in a flood zone that is defined as having a medium or high annual probability of flooding and is not in a functional floodplain (in accordance with current best practice national planning guidance). The FRA must take all current and future sources of flooding into consideration (see CN3.2 on page 382).

3 To increase the resilience and resistance of the development to flooding, one of the following must be achieved:

3.a The ground level of the building and access to both the building and the site, are designed (or zoned) so they are at least 600mm above the design flood level of the flood zone in which the assessed development is located (see CN3.5 on page 383) OR

3.b The final design of the building and the wider site reflects the recommendations made by an appropriate consultant.

Two credits - Surface water run-off

Prerequisite

4 An appropriate consultant is appointed to carry out, demonstrate or confirm the development's compliance with the following criteria:

One credit

5 Where drainage measures are specified to ensure that the peak rate of run-off from the site to the watercourses (natural or municipal) is no greater for the developed site than it was for the pre-development site. This should comply at the 1-year and 100-year return period events.

6 Relevant maintenance agreements for the ownership, long term operation and maintenance of all specified sustainable drainage systems (SuDS) are in place.

7 Calculations include an allowance for climate change; this should be made in accordance with current best practice planning guidance (see Relevant definitions on page 388).

One credit

8 Where flooding of property will not occur in the event of local drainage system failure (caused either by extreme rainfall or a lack of maintenance); AND

EITHER

9 Drainage design measures are specified to ensure that the post-development run-off volume, over the development lifetime, is no greater than it would have been prior to the assessed site's development for the 100-year 6-hour event, including an allowance for climate change (see criterion 14 below).

10 Any additional predicted volume of run-off for this event is prevented from leaving the site by using infiltration or other SuDS techniques.

OR (only where criteria 9 and 10 above for this credit cannot be achieved):

11 Justification from the appropriate consultant indicating why the above criteria cannot be achieved, i.e. where infiltration or other SuDS techniques are not technically viable options.

12 Drainage design measures are specified to ensure that the post-development peak rate of run-off is reduced to the limiting discharge. The limiting discharge is defined as the highest flow rate from the following options:
- 12.a The pre-development 1-year peak flow rate; OR
- 12.b The mean annual flow rate Qbar; OR
- 12.c 2L/s/ha.

Note that for the 1-year peak flow rate the 1-year return period event criterion applies (as described in the peak run-off criteria above).

13 Relevant maintenance agreements for the ownership, long term operation and maintenance of all specified SuDS are in place.

14 For either option, above calculations must include an allowance for climate change; this should be made in accordance with current best practice planning guidance.

Two credits - Surface water run-off - Single dwellings only

For single dwellings, the below criteria should be applied in place of the surface water run-off criteria above (please see CN2.1 on page 381 for more information).

15 Either of the following criteria is met:
- 15.a There is a decrease in the impermeable area by 50% or more, from the pre-existing impermeable hard surfaces; OR
- 15.b Where all run-off from the roof for rainfall depths up to 5mm from all new and existing parts of the building have been managed on site using source control methods.

OR

One credit - Surface water run-off - Single dwellings only

16 Either of the following criteria is met:
- 16.a There is no increase in the impermeable surfaces as a result of the new construction; OR
- 16.b If there is an increase in the impermeable surfaces as a result of the new construction then the following must be met:

16.b.i Hard standing areas - where there is an extension or increase in the hardstanding areas and hence an increase in the total impermeable area as a result of the new construction, the hardstanding area must be permeable or be provided with on site SuDS to allow full infiltration of the additional volume, to achieve the same end result. The permeable hardstanding must include all pavements and public rights of way, car parks, driveways and non-adoptable roads, but can exclude small garden paths which will drain onto a naturally permeable surface.

16.b.ii Building (new-build or extension) - where there is an increase in building footprint, extending onto any previously permeable surfaces, the additional run-off caused by the area of the new-build or extension must be managed on site using an appropriate SuDS technique for rainfall depths up to 5 mm.

One credit - Minimising watercourse pollution

17 There is no discharge from the developed site for rainfall up to 5mm (confirmed by the appropriate consultant).

18 In areas with a low-risk source of watercourse pollution, an appropriate level of pollution prevention treatment is provided, using appropriate SuDS techniques.

19 Where there is a high risk of contamination or spillage of substances such as petrol and oil (see CN3.17 on page 385), separators (or an equivalent system) are installed in surface water drainage systems.

20 Where the building has chemical or liquid gas storage areas, a means of containment is fitted to the site drainage system (i.e. shut-off valves) to prevent the escape of chemicals to natural watercourses (in the event of a spillage or bunding failure).

21 A comprehensive and up-to-date drainage plan of the site will be made available for the building or site occupiers.

22 Relevant maintenance agreements for the ownership, long term operation and maintenance of all specified SuDS must be in place.

Checklists and tables

None.

Compliance notes

Ref	Terms	Description
Shell and core		
CN1	Applicable assessment criteria	Both options: All criteria relevant to the building type and function apply. Refer to Appendix D – Shell and core project assessments on page 409 for a more detailed description of the shell and core assessment options.
Residential - Partially fitted & Fully fitted		

Ref	Terms	Description
CN2	Applicable assessment criteria - Single dwellings	**Criteria 1 to 3 on page 378 - Flood resilience** Both options: All criteria relevant to the building type and function apply. **Criteria 4 to 16 on page 379 - Surface water run-off** Both options: Only single dwelling criteria 15 on page 379 or 16 on page 379 apply. **Criteria 17 to 16 on page 379 - Minimising watercourse pollution** Both options: All criteria relevant to the building type and function apply. Refer to Appendix E – Applicability of BREEAM New Construction to single and multiple dwellings, partially and fully fitted on page 412 for a more detailed description of residential assessment options.
CN2.1	Applicable assessment criteria - Multiple dwellings	**Criteria 1 to 3 on page 378 - Flood resilience** Both options: All criteria relevant to the building type and function apply. **Criteria 4 to 16 on page 379 - Surface water run-off** Both options: Criteria 4 to 14 on page 379 apply only. **Criteria 17 to 16 on page 379 - Minimising watercourse pollution** Both options: All criteria relevant to the building type and function apply. Refer to Appendix E – Applicability of BREEAM New Construction to single and multiple dwellings, partially and fully fitted on page 412 for a more detailed description of residential assessment options.
General		
CN3	Alternative standards and recommendations from an appropriate statutory body. See criteria 1 and 2 on page 378.	None of the credits can be awarded where the assessed development has proceeded against the recommendation of the statutory body on the basis that the flooding implications are too great (this includes a recommendation given by the statutory body even where such a recommendation cannot be, or is not, statutorily enforced). Where the local authority (or other statutory body) has set more rigorous criteria than those above these must be met in order to achieve the relevant credits.
CN3.1	Contaminated sites. See criteria 5–16	Drainage designs for sites must take into account legislation relating to contaminated sites; however in many circumstances even on contaminated sites there may be opportunities for the installation of some SuDS techniques. Please see Other information on page 392 for more details.
Flood resilience		

Ref	Terms	Description
CN3.2	Sources of flooding. See criteria 1 and 2 on page 378.	The Flood Risk Assessment (FRA) must detail the risk of flooding from the following sources: 1. Fluvial (rivers) 2. Tidal 3. Surface water: sheet run-off from adjacent land (urban or rural) 4. Groundwater: most common in low-lying areas underlain by permeable rock (aquifers) 5. Sewers: combined, foul or surface water sewers 6. Reservoirs, canals and other artificial sources. Please see Other information on page 392 section which provides more detail on the above sources of flooding. The content of the FRA should be based on historic trends, but should also account for predicted changes to the climate which may impact on the flood risk to the site in the future.
CN3.3	Functional flood plain. See criterion 3 on page 378.	The BREEAM credit for locating in a flood zone of 'medium or high annual probability' cannot be awarded where the building is located in the functional flood plain. This is defined in the current best practice national planning guidance for each country.
CN3.4	Flood defences. See criteria 1, 2. and 3 on page 378.	**Third party defences** There are many landscape feature defences, owned by third parties, which due to their location act as a flood defence by default, e.g. motorway, railway embankments, walls etc. It can be assumed that such embankments will remain in place for the lifetime of the development, unless the assessor or project team have reason to believe otherwise. For walls, assurance must be sought that the wall is likely to remain for the design life of the building. **Pre-existing flood defences** In an area protected by existing flood defences (designed to withstand a certain magnitude of flooding) the appropriate number of flood risk credits can be awarded where the defences reduce the risk to 'low' or 'medium' and the following conditions are met: 1. The development is not located in an area where new flood defences have to be, or have been, constructed to minimise the risk of flooding to the site and its locality purely for the purpose of the development or its wider master plan 2. The relevant agency confirms that, as a result of such defences, the risk of a flood event occurring is reduced to low or medium risk. If firm confirmation is not provided then the credit cannot be awarded. A statutory body's local or regional office may be able to provide more information on existing defences in the area in which the assessed development is located.

Ref	Terms	Description
CN3.5	600mm threshold. See criterion 3.a on page 378.	It is accepted that, for buildings located in medium and high risk flood zones, areas of the car park and site access may be allowed to flood and therefore fall below the 600 mm threshold. In such cases the credit is still achievable provided safe access to the site, and the ground floor of the building can be maintained (i.e. they are 600 mm above the design flood level) to ensure the building and site do not become an 'island' in the event of a flood. Where the development has been permitted and the ground levels of the topography or infrastructure immediately adjacent to the site fall below the 600 mm threshold, the credit can still be awarded, provided there are no other practical solutions for access to the site above this level and the assessed building, and access to it, meet the assessment criteria. As much of the external site area as possible (or as required by an appropriate statutory body) should be designed at or above the threshold. For buildings located in medium or high flood risk zones, any areas used to store sensitive, historical, hazardous, valuable and perishable materials, e.g. radioactive materials, microbiological facilities, server rooms, libraries, etc., must be located above the 600 mm threshold.
CN3.6	Level of detail required in the FRA for smaller sites. See criteria 1 and 2 on page 378.	For smaller sites, e.g. less than 1 ha (10,000 m²), the level of detail required in an acceptable FRA will depend on the size of the site and the arrangement of buildings on that site. For a small site with a relatively simple arrangement of buildings this might consist of a brief report. For larger sites with a higher density of buildings a more detailed assessment would be appropriate. For small simple sites (2000 m² and less), an acceptable FRA could be a brief report carried out by the contractor's engineer confirming the risk of flooding from all sources of flooding, including information obtained from the water company or sewerage undertaker, other relevant statutory authorities, site investigation and local knowledge.
Surface water run-off		
CN3.7	Sites with many buildings	Where the assessed building is part of a larger development of buildings, there are a number of options for assessment of the surface water run-off credits: 1. The individual building and its associated hardstanding areas can be assessed independently where the run-off is being dealt with on a building-by-building basis (i.e. each building has its own dedicated sub-catchment that serves only that building) 2. When assessing the run-off from a number of buildings (including domestic and non-domestic buildings) the assessment must take into account the drainage from the local sub-catchment serving all those dwellings or buildings. Note that proportioning cannot be used to calculate the percentage of run-off discharging into the local sub-catchment resulting from just the assessed building 3. The whole development can be assessed for compliance. Whichever approach is taken to demonstrate compliance, it must be consistent when completing both the rate of run-off and volume of run-off calculations.

Ref	Terms	Description
CN3.8	Discharge to the sea or tidal estuaries	The peak rate of run-off and volume run-off criteria can be deemed to be met by default if the site discharges rainwater directly to a tidal estuary or the sea. The site must discharge run-off directly into the tidal estuary or the sea, if these criteria are to be awarded by default. Typically, this would mean that drainage pipes would only carry run-off from the site and that they would not need to cross privately owned land outside the boundary of the development before reaching the sea. Please see Relevant definitions on page 388 section for a definition of tidal estuary.
CN3.9	No change in impermeable area	Where the man-made impermeable area draining to the watercourse (natural or municipal) has decreased or remains unchanged post-development, the peak and volume rate of run-off requirements for the surface water run-off credits will be met by default. Flow rate calculations will not need to be provided. Instead, drawings clearly showing the impermeable areas of the site draining to the watercourse should be provided for the pre-and post-development scenarios. Figures must also be given (ideally on the drawings) to show a comparison between the areas of drained impermeable surfaces pre-development and post-development. In this instance a flood risk assessment must be carried out and any opportunities identified to reduce surface water run-off are implemented.
CN3.10	Limiting discharge flow rate. See criterion 12 on page 379.	For the surface water run-off credits, where the limiting discharge flow rate would require a flow rate of less than 5L/s at a discharge point, a flow rate of up to 5L/s may be used where required to reduce the risk of blockage.
CN3.11	Highways and impermeable areas	Where new non-adoptable highways are built, including those for developments with a mixture of buildings, all of the new impermeable surfaces must be included in calculations to demonstrate compliance with the peak rate of run-off and volume of run-off criteria. Where buildings are built beside existing highways or where adoptable highways are built, the impermeable area of the highway does not need to be included in the calculations.
CN3.12	Derelict sites. See criteria 5 on page 379, 7 on page 379, 11 on page 379, 12 and 14 on page 379.	If the site has been derelict for over five years, the appropriate consultant must assess the previous drainage network and make reasonable assumptions to establish probable flow rates and volumes. To do this they should use best practice simulation modelling to determine the 1-year and 100-year peak flow rates at the relevant discharge points. To complete the calculations, a site visit prior to development will be required unless accurate data already exist from a previous survey. The resultant professional report can then be used to determine the pre-development volumes and rates of run-off. Without this professional input, the site must be deemed greenfield pre-development, assuming Soil type 5 for the calculation of the pre-development site run-off.

Ref	Terms	Description
CN3.13	National best practice guidance on the design of SuDS and rainwater harvesting systems	Please refer to the Approved Standards and Weightings List (ASWL)to locate the appropriate national best practice standards in the country of assessment. Alternatively, please demonstrate applicability as follows: — The minimum requirements as set out in the approved standards and weightings list are covered by the proposed documents; OR — Where appropriate standards do not exist for a country, the design team should demonstrate compliance with the UK or European standards as listed in each relevant country reference sheet.
Minimising watercourse pollution		
CN3.14	5 mm discharge for minimising watercourse pollution. See criterion 17 on page 380.	In a small number of sites it may not be possible for the first 5mm of rainfall to be prevented from leaving the site completely. Where this is the case, an appropriately qualified professional must design the system to ensure that the intent of this criterion has been met as far as possible and provide justifications to explain why the criterion could not be fully achieved on the site. Where this can be justified, the awarding of the water quality credit would not be affected, provided all other relevant criteria have been achieved.
CN3.15	5mm requirement - end-of-pipe solutions. See criterion 17 on page 380.	End-of-pipe solutions, such as ponds and basins, will only be deemed to comply with the 5 mm criteria where the principal run-off control to prevent discharge from the first 5 mm of a rainfall event is achieved using source control and site control methods.
CN3.16	5mm requirement - green roofs. See criterion 17 on page 380.	Green roofs can be deemed to comply with this requirement for the rain that falls onto their surface. However, evidence is still required to demonstrate that the 5mm rainfall from all other hard surfaces on site is being dealt with, to allow this credit to be awarded.
CN3.17	Areas that are a source of pollution. See criteria 19 and 20 on page 380.	For the purpose of assessing the watercourse pollution credit, an area that presents a risk of watercourse pollution includes vehicle manoeuvring areas, car parks, waste disposal facilities, delivery and storage facilities or plant areas.
CN3.18	Extension or infill building on existing site	Where the assessment is of an individual building on an existing site, i.e. infill development, the watercourse pollution criteria apply to areas within the construction zone that present a risk of pollution, as well as any areas external to the construction zone that are affected by the new works, i.e. drainage onto or from the proposed development.
CN3.19	Suitable level of treatment. See criteria 15–18.	In all cases the appropriate consultant should use their professional judgment to determine the most appropriate strategy for minimising watercourse pollution.
CN3.20	Roof plant. See criteria 20, 21 and 15 on page 379.	Roof-top plant space must be considered where there is a risk from polluting substances such as petrol or oil. Refrigerants are not assessed under the pollution aspect of this issue, as the main risk of pollution is to air and not the watercourse.

Ref	Terms	Description
CN3.21	Permeable paving system	Where it can be demonstrated that a permeable paving system designed to retain silts and degrade oils has been used, then this will meet the assessment criteria for minimising watercourse pollution for car parks and access roads.
CN3.22	Workshop areas in retail buildings	Where workshop areas are specified, they should be assessed against the above requirements (minimising watercourse pollution). This is due to circumstances where there may be some form of vehicle servicing as part of a car showroom or other type of retail space.

Methodology

Calculating peak rate of run-off

The assessor is not required to perform any calculations. Calculations should be provided by the appropriate consultant to demonstrate that they have sized the drainage facilities appropriately. Further guidance on calculating peak rate run-off for different sites and situations include:

1. The SuDS Manual [82].
2. Preliminary rainfall run-off management for developments.
3. National planning policy guidance or statement for the specific country.
4. IH Report 124, Flood estimation for small catchments (Marshall and Bayliss, 1994).
5. Flood Estimation Handbook (Centre for Ecology and Hydrology, 1999) [83].

Greenfield sites of less than 50 ha

The calculation of greenfield run-off rates must be in accordance with IH Report 124, Flood estimation for small catchments (Marshall and Bayliss, 1994). The pro-rata method on the size of catchment detailed in Table 4.2 in The SuDS Manual, CIRIA C697 (2007) must be followed.

Greenfield sites of 50 ha to 200 ha

The calculation of greenfield run-off rates must be in accordance with IH Report 124, Flood estimation for small catchments (Marshall and Bayliss, 1994). Flood Estimation Handbook (Centre for Ecology and Hydrology, 1999) can be used for these sites as an alternative, where there is a preference to do so, but only if the catchment is considered to be suitable for its application.

Greenfield sites of more than 200 ha

The calculation of greenfield run-off rates must be in accordance with the Flood Estimation Handbook (Centre for Ecology and Hydrology, 1999) and any subsequent updates. Where the Flood Estimation Handbook is not considered appropriate for the development, IH Report 124 can be used.

Brownfield sites

The calculation of brownfield run-off rates should be as follows:

- If the existing drainage is known then it should be modelled using best practice simulation modelling, to determine the 1-year and 100-year peak flow rates at discharge points (without allowing surcharge of the system above cover levels to drive greater flow rates through the discharge points).
- If the system is not known, then the brownfield run-off should be calculated using the greenfield run-off models described above but with a Soil Type 5.

Limiting discharge rate

The limiting discharge for each discharge point should be calculated as the flow rates from the pre-developed site. The calculation should include the total flow rate from the total area of the site feeding into the discharge point (this should include both BREEAM-assessed and non-BREEAM-assessed parts of the development, if applicable). The discharge point is defined as the point of discharge into the watercourse or sewers (including rivers, streams, ditches, drains, cuts, culverts, dykes, sluices, public sewers and passages through which water flows, see Relevant definitions on the next page). Where this calculation results in a peak flow rate of less than 5L/s, the limiting discharge rate may be increased up to a level of no more than 5L/s at the point of discharge from the site to reduce the risk of blockage.

For example, if the flow rate for the 1-year and 100-year events were 4L/s and 7L/s respectively, then the limiting discharges would be 5L/s and 7L/s. Similarly, if it was calculated to be 2L/s and 4L/s, then a maximum of 5L/s limiting discharge rate could be applied to both discharge points.

Sites should not be subdivided to enable higher overall limiting discharge rates to be claimed. It is, however, recognised that some sites may require more than one discharge point as a result of the local topography or existing surrounding drainage infrastructure, and in such cases, the limiting discharge flow rate may be increased to a level no more than 5L/s at each discharge point. The assessor should seek evidence that the number of discharge points is necessary, either due to topography, infrastructure limitations or both. Evidence may be in the form of a topographical map and an explanation from the appropriate consultant as to why multiple discharge points are required, stating that it is not feasible to have fewer discharge points.

100-year peak rate event: excess volume of run-off

The storage of excess flows from the 100-year event does not necessarily have to be contained within the drainage system or SuDS features (the features designed solely for the purpose of drainage). Where appropriate, storage of some or all of this volume can be achieved using temporary surface flooding of areas such as a playing field. Specific consideration should be given to overland flow routing. Overland flood flows and temporary storage of flood water on the surface must not be so frequent as to unreasonably inconvenience residents and other users.

Evidence

Criteria	Interim design stage	Final post-construction stage
Flood Risk		
1– 3	Flood risk assessment. Design drawings. Where appropriate, correspondence from the appropriate statutory body confirming reduced annual probability of flooding due to existing flood defences.	Flood risk assessment updated as necessary. 'as-built' drawings. Confirmation that the basis of the Flood Risk Assessment has not changed where more than five years have passed since the Flood Risk Assessment was carried out.
Surface Water Run-off		

Criteria	Interim design stage	Final post-construction stage
4–-16	Statement from the appropriate consultant confirming that they are qualified in line with the BREEAM definition. Consultant's report containing all information necessary to demonstrate compliance with the requirements.	Evidence to confirm that maintenance responsibilities have been defined for any SuDS solutions installed. AND EITHER Written confirmation from the developer or appropriate consultant that the solutions assessed at the design stage have been implemented OR Where the design has changed, the evidence identified for the design stage assessment is provided for post-construction or as-built details.
Minimising Watercourse Pollution		
17–22	Design drawings or relevant section or clauses of the building specification or contract indicating: 1. High and low risk areas of the site 2. Specification of SuDS, source control systems, oil or petrol separators and shut-off valves as appropriate.	Assessor's building or site inspection and photographic evidence AND EITHER Written confirmation from the developer or appropriate consultant that the solutions assessed at the design stage have been implemented OR Where the design has changed, the evidence identified for the design stage assessment is provided for post-construction or as-built details.

Additional information

Please note this section will be revised when the National Standards for Sustainable Drainage and associated regulations come into force.

Relevant definitions

Adoptable highways

For the purposes of BREEAM, an 'adoptable' highway is a highway that is the responsibility of the highways authority in terms of installation and maintenance of surface water drainage which only carries run-off from the highway itself. This means that to fall under the definition of an 'adoptable highway' the drainage network must not be directly connected to any other upstream drainage network (e.g. from a private development) and only handle run-off from the adoptable highway. Where drainage within the highway will carry run-off from both the highway and housing, it is not regarded as an 'adoptable' highway. In this instance the drainage design must take account of the highway run-off.

Appropriate consultant

A consultant with qualifications and experience relevant to designing SuDS and flood prevention measures and completing peak rate of run-off calculations. Where complex flooding calculations and prevention measures are required, this must be a specialist hydrological engineer.

Appropriate statutory body

This refers to the statutory organisation, legal organisation or entity whose duty it is to carry out the planning approval function for the project.

Catchment
The area contributing surface water flow to a point on a drainage or water course. It can be divided into sub-catchments.

Current best practice planning guidance
The document should include independently published figures for an allowance for climate change (based on a minimum period of 100 years) according to the annual probability of flooding in the area.

Design flood level
The maximum estimated water level during the design storm event. The design flood level for a site can be determined through either known historical data or modelled for the specific site.

Design storm event
Historic or notional weather conditions of a given annual probability, against which the suitability of a proposed development is assessed and mitigation measures, if any, are designed.

Discharge point
The discharge point is the point at which the run-off from the site leaves the site boundary and enters a watercourse.

Flood defences
Flood defences do not completely remove the risk of flooding, but they do reduce it. Building in areas where flood defences are present (and appropriately designed to withstand a certain magnitude of flooding) is therefore preferable to building in medium or high risk areas without defences. However, for the purpose of this issue, it is still preferable to build in areas of low risk than encourage development of new flood defences in areas with a higher risk of flooding purely for the sake of new development.

Flood event
A flooding incident characterised by its peak level or flow, or by its level or flow hydrograph.

Flood probability
The estimated probability of a flood of given magnitude occurring or being exceeded in any specified time period. For example, the 100-year flood has a 1% chance of occurring in any given year.

Flood risk
The combination of the flood probability and the magnitude of the potential consequences of the flood event.

Flood risk assessment
A study to assess the risk of a site flooding, and to assess the impact that any changes or development on the site will have on flood risk to the site and elsewhere. A Flood Risk Assessment (FRA) should be prepared according to relevant planning policy and technical guidance documents. Confirmation must be based on historical, geological and geomorphic data (e.g. altitude) and take all sources of flooding into consideration. The FRA must account for future climate change and detail any necessary adaptation measures if required. Where more than five years have passed since the FRA was carried out, evidence would be required to demonstrate that the basis of the FRA has not changed in that time.

Flood storage
The temporary storage of excess run-off or river flow in ponds, basins, reservoirs or on the flood plain during a flood event.

Greenfield
A site which has either never been built on, or one which has remained undisturbed for five years or more.

Greenfield run-off rate
The rate of run-off that would occur from the site in its undeveloped and therefore undisturbed state.

Hard surfaces
These include roofs, car parks, access roads, pavements, delivery and service yards and external hard landscaping. Footpaths less than 1.5m wide which have free drainage to soft landscaped areas on both sides

may be excluded.

Infiltration
The passage of water into a permeable surface, such as soil, permeable paving and soakaways.

Limiting discharge
The limiting discharge is based upon the calculated pre-development flow rate at a discharge point.

Level of pollution prevention treatment
When used in the context of one, two or three levels of treatment for surface water, the treatment level should be regarded as the number of SuDS components in series through which run-off passes from the originating surface on which rainfall fell to the site discharge point. Where a SuDS component has more than one treatment process, it might be considered to provide more than one level of treatment. In these circumstances advice should be sought from the BREEAM office.

Low-risk areas (with respect to watercourse pollution)
Low-risk areas can be defined as areas where the risk of contamination or spillage of substances such as petrol and oil is reduced. For the purpose of this issue, roofs and small car parks may be considered as low-risk areas.

Peak run-off rate (referred to as Qp [m^3/sec])
This is the highest rate of flow from a defined catchment area assuming that rainfall is uniformly distributed over the drainage area, considering the entire drainage area as a single unit and estimation of flow at the most downstream point only.

Pre-development
The state of the site under assessment immediately prior to purchase of the site by the client or developer (or, where the client has owned or occupied the site for a number of years, its current state).

Qbar
An estimation of the mean annual flood flow rate from a catchment (see Report IH124 Flood estimations for small catchments).

Rainwater discharge
Rainwater discharge is the rainwater which flows from the development site to watercourses and sewers. It is also referred to as run-off.

Run-off
This is usually rainwater, but can also be groundwater or overspill from sewers and other sources.

Sewerage undertaker
This is a Body, typically a water company, with statutory responsibility for sewerage and sewerage disposal and also surface water from roofs and yards of premises.

Soakaways
A subsurface structure designed to promote the infiltration of surface water into the ground. As a general point, soakaways may be shallow and broad – as in a blanket under permeable paving, or deeper structures. Deeper, point source soakaways should be avoided for road and car park drainage; shallow structures providing infiltration in an extensive way (infiltration trenches and permeable paving) do not need oil separators.

SuDS management train
An approach to drainage design that combines a sequence of appropriate surface water drainage structures using SuDS systems for management of the run-off to treat the flow, reduce run-off volume and restrain the run-off rate in order to minimise man's impact on the environment. Additional benefits associated with operation and maintenance, ecology and amenity are aspects which are considered when designing a management system. The management train incorporates a hierarchy of techniques:

1. Source control. Examples of SuDS techniques include:
    - Soakaways
    - Porous or pervious paving
    - Roof water directed to garden (rather than piped drains)
    - Rainwater reuse or harvesting
    - Green roofs
    - Other surface infiltration, attenuation and conveyance techniques that deal with run-off at source.
2. Site or local control. Examples of SuDS techniques include:
    - Swales
    - Pond
    - Infiltration basins
    - Detention basin
    - Larger soakaways
    - Pervious (porous or permeable) paving.
3. Regional control. Examples of techniques include:
    - Balancing ponds
    - Wetlands
    - Large detention basin.

SuDS techniques

One or more components built to manage surface water run-off to prevent flooding and pollution, including for example: wet ponds, infiltration basins, detention basins, swales, reed beds, pervious (porous or permeable) paving, soakaways, rainwater harvesting, filter strips, filter drains and trenches with or without perforates pipes, green roofs and underground attenuation storage. For more information refer to The SuDS manual.

Surface water run-off

Water flow over the ground surface to a drainage system. This occurs if the ground is impermeable, is saturated or if the rainfall is particularly intense.

Tidal estuary

A tidal estuary is defined as a semi-enclosed coastal body of water which has a free connection with the open sea and within which seawater is measurably diluted with fresh water derived from land drainage. An estuary should be unconstrained tidal waters, i.e. there should be no barriers or constricted shorelines that would restrict the free flow of water into the open sea in any conditions. The impact on the total volume of run-off from the site (and other sites which may in future discharge into the estuary) should be insignificant in terms of the overall water levels in the estuary. Tidal rivers (i.e. where no or limited measurable seawater content is present during normal tidal movements) cannot be included as part of the estuary for the purposes of BREEAM.

Treatment

Improving the quality of water by physical, chemical or biological means.

Types of oil separator

Class 1 Separators: These are designed to achieve a concentration of less than 5mg/l oil under standard test conditions. They should be used when the separator is required to remove very small oil droplets, such as those arising from car park run-off.

Class 2 Separators: These are designed to achieve a concentration of less than 100mg/l oil under standard test conditions. They are suitable for dealing with discharges where a lower quality requirement applies or for trapping large spillages. Both classes can be produced as 'full retention' or 'bypass' separators:

Full retention separators: These treat the flow that can be delivered by the drainage system, which is normally equivalent to the flow generated by a rainfall intensity of 50mm/hr.

Bypass separators: These fully treat all flows generated by rainfall rates of up to 5mm/hr. Flows above this rate are allowed to bypass the separator. These separators are used when it is an acceptable risk not to provide full treatment for high flows. Pollution Prevention Guideline 3 contains more detailed guidance on the selection and sizing of an appropriate type of separator.

Volume of run-off

The volume of run-off that is generated by rainfall occurring on the site. This is typically measured in cubic metres. Additional predicted volume of run-off is the difference between the volumes of run-off pre-development and post-development.

Watercourses and sewers

A term that includes rivers, streams, ditches, drains, culverts, dykes, sluices, sewers and passages through which water flows.

Other information

Sources of flooding and flood risk

1. Streams and Rivers: Flooding that can take place from flows that are not contained within the channel due to high levels of rainfall in the catchment.
2. Coastal or Estuarine: Flooding that can occur from the sea due to a particularly high tide or surge, or a combination of both.
3. Groundwater: Where the water table rises to such a height where flooding occurs. Most common in low-lying areas underlain by permeable rock (aquifers), usually due to extended periods of wet weather.
4. Sewers and highway drains: Combined, foul or surface water sewers and highway drains that are temporarily over-loaded due to excessive rainfall or due to blockage.
5. Surface water: The net rainfall falling on a surface (on or off the site) which acts as run-off which has not infiltrated into the ground or entered into a drainage system.
6. Infrastructure failure: Canals, reservoirs, industrial processes, burst water mains, blocked sewers or failed pumping stations.

Contaminated sites

Where the site risk assessment confirms that infiltration SuDS techniques are not appropriate, SuDS techniques that do not allow infiltration, such as swales lined with an impermeable membrane, can be used. It may be the case that only some areas of the site are contaminated and therefore infiltration SuDS techniques can be used elsewhere on the site. There may also be a requirement to remediate the contaminated soils, creating opportunities for the use of infiltration SuDS post-remediation.

Pol 04 Reduction of night time light pollution

(non-residential and residential institutions only)

Number of credits available	Minimum standards
1	No

Aim

To ensure that external lighting is concentrated in the appropriate areas and that upward lighting is minimised, reducing unnecessary obtrusive light pollution, energy consumption and nuisance to neighbouring properties.

Assessment criteria

The following is required to demonstrate compliance:

One credit

1 Where external obtrusive lighting has been eliminated through effective design that removes the need for external lighting without adversely affecting the safety and security of the site and its users.

OR alternatively, where the building does have external lighting, one credit can be awarded as follows:

2 All external lighting (except for safety and security lighting) can be automatically switched off between 23:00 and 07:00.

3 Illuminated advertisements, where specified comply with:
- 3.a The maximum luminance (CD/m²) outlined in Table 61 below (please refer to Additional information on page 396 for a definition of the different zones)
- 3.b In Zone E1 (see Table 61 below) the maximum luminance value shall be zero post-curfew.

4 If safety or security lighting is provided and will be used between 23:00 and 07:00:
- 4.a Safety and security lighting complies with the lower levels of lighting recommended during these hours in accordance with CIE 150-2003 and CIE 126-1997, for example by using an automatic switch to reduce the lighting levels at 23:00 or earlier.

Checklists and tables

Table 61: Recommendations for maximum luminance (CD/m²)

Illuminated Area (m²)	Zone E1	Zone E2	Zone E3	Zone E4
< 10.00	100	600	800	1000
≥ 10.00	N/A	300	600	600

Table 62: Environmental lighting zone

Zone	Surrounding	Lighting Environment	Examples
E1	Natural	Intrinsically dark	National parks or protected sites
E2	Rural	Low district brightness	Industrial or residential rural areas
E3	Suburban	Medium district brightness	Industrial or residential suburbs
E4	Urban	High district brightness	Town centres and commercial districts

Compliance notes

Ref	Terms	Description
Shell and core (non-residential and residential institutions only)		
CN1	Applicable assessment criteria	Both options: All criteria relevant to the building type and function apply. Refer to Appendix D – Shell and core project assessments on page 409 for a more detailed description of the shell and core assessment options.
Residential - Partially fitted and fully fitted		
CN2	Applicable Assessment criteria - Single and multiple dwellings	Both options: This issue is not applicable. Refer to Appendix E – Applicability of BREEAM New Construction to single and multiple dwellings, partially and fully fitted on page 412 for a more detailed description of residential assessment options.
General		
CN3	Setting a curfew	The Commission Internationale d'Eclairage (CIE) guidance recommends the setting of a curfew. This will normally include floodlighting, signage and all lighting that is not required for safety or security. Illuminated advertisements may be excluded from this requirement, but will need to comply with different levels of maximum luminance depending on the surrounding and background environment (see criterion 3 on the previous page) Where a different curfew time applies for other reasons (e.g. noise control), consideration should be given to the coordination of the curfews, e.g. allowing sufficient time of operation for the lighting after the conclusion of the activity to facilitate crowd dispersal, particularly where large numbers of spectators are involved.

Ref	Terms	Description
CN3.1	Non-security lighting considered to be essential between 23:00 and 07:00	Where non-security lighting is considered to be essential between 23:00 and 07:00, i.e. for buildings which open or operate between these times, the lighting system is able to automatically switch to the lower levels of lighting recommended in CIE 150-2003 and CIE 126-1997 for lighting during these hours (or provide these lower levels at all times).
CN3.2	Maximum luminance	When considering the zone in which an advertising sign is, or is intended to be, sited, the contrast with the surrounding or background should be taken into account (e.g. the surrounding could be unlit when viewed from the road or a residential window) and the zone adjusted accordingly. Where an illuminated sign lies on the boundary of two zones or can be observed from another zone, the illumination level used should be that applicable to the most rigorous zone.

Methodology

The following provides guidance on when and how to apply the criteria to the external lighting associated with a building being assessed.

1. Where the assessment is of an individual building on an existing site then only those areas affected by the works, i.e. within the construction zone, need to be assessed. Where the assessment is of a building that forms part of an entire new development, the criteria apply site-wide.
2. If the scope of the assessment covers a new extension only, then only new lighting specified as part of the extended works needs to be assessed.
3. Flush stud lights used for safety purposes in vehicle manoeuvring areas may be excluded from the assessment.
4. Where light fittings are specified to comply with specific security standards and these conflict with the BREEAM criteria, they can be excluded from the assessment of this issue. In these circumstances the assessor must obtain evidence confirming the specific security standards, and that they are applicable to the assessed development.

Evidence

Criteria	Interim design stage	Final post-construction stage
All	Design drawings. Relevant section or clauses of the building specification or contract or external lighting design data or calculations. In the case of the external lighting design, the M&E engineer or lighting designer must provide indicative examples of where and how the strategy complies with the assessment criteria.	BREEAM Assessor's site inspection report and photographic evidence AND EITHER Written confirmation from the project team that the solutions assessed at the design stage have been implemented OR Where the design has changed, evidence is provided for post-construction and as-built details.
1 on page 393	Night-time lighting levels report or any other relevant study.	BREEAM Assessor's site inspection report and photographic evidence or as-built drawings. Night-time lighting levels report or any other relevant study.

Additional information

Relevant definitions

Advertisements

Any word, letter, model, sign, placard, board, notice, awning, blind, device or representation, in the nature of, and employed wholly or partly for the purposes of advertisement or announcement. This also includes any hoarding or similar structure used, or designed or adapted for use for the display of advertisements.

Construction zone

For the purpose of this issue the construction zone is defined as the site which is being developed for the BREEAM-assessed building and its external site areas, i.e. the scope of the new works.

Illuminated advertisements

An advertisement which is designed or adapted to be illuminated by artificial lighting, directly or by reflection.

Lighting zones

The contrast with the surrounding or background, and therefore the lighting environment of the building, changes the perception of luminance. The maximum luminance of the advertisement needs therefore to be adapted depending on the lighting environment.

Other information

The design should be checked for compliance against the Commission Internationale d'Eclairage (CIE) guidance.

This gives four sets of recommendations:

1. Limits to the average upward light ratio of the luminaires, to restrict sky glow
2. Limiting illuminance at the windows of nearby properties for which light trespass might be an issue
3. Limiting the intensity of each light source in potentially obtrusive directions beyond the site boundaries
4. Limiting the average luminance of the building, if it is floodlit.

In each case the limiting values depend on the location of the site of the building (for example rural, urban or city centre). A calculation of illuminance (b) or intensity (c) is not required if all luminaires are cut-off types and angled so that light in potentially obtrusive directions is blocked.

Compliance with the International Dark Skies Association Model Ordinance Guidance: www.darksky.org/assets/documents/MLO/MLO_FINAL_June2011.pdf may also ensure the requirements for this credit are met.

Pol 05 Reduction of noise pollution (non-residential, residential institutions and multiple dwellings)

Number of credits available	Minimum standards
1	No

Aim

To reduce the likelihood of noise arising from fixed installations on the new development affecting nearby noise-sensitive buildings.

Assessment criteria

Applicability:

The following is required to demonstrate compliance:

One credit

1 Where there are, or will be, no noise-sensitive areas or buildings within an 800m radius of the assessed site.

OR

2 Alternatively, where the building does have noise-sensitive areas or buildings within an 800m radius of the site, one credit can be awarded as follows:
- 2.a Where a noise impact assessment has been carried out and the following noise levels measured or determined in accordance with the ISO 1996 series:
  - 2.a.i Existing background noise levels at the nearest or most exposed noise-sensitive development to the proposed development or at a location where background conditions can be argued to be similar
  - 2.a.ii The noise level resulting from the new noise source (see CN3.1 on page 399).

3 The noise impact assessment must be carried out by a suitably qualified acoustic consultant holding a recognised acoustic qualification and membership of an appropriate professional body (see Relevant definitions on page 400).

4 The noise level from the proposed site or building, as measured in the locality of the nearest or most exposed noise-sensitive development, is a difference no greater than +5dB during the day (07:00 to 23:00) and +3dB at night (23:00 to 07:00) compared to the background noise level.

5 Where the noise level from the proposed site or building is greater than the levels described in criterion 4 above, measures have been installed to attenuate the noise at its source to a level where it will comply with criterion 4 above.

Checklists and tables

None.

Compliance notes

Ref	Terms	Description
Shell and core (non-residential and residential institutions only)s		
CN1	Applicable assessment criteria	Shell only: This issue is not applicable. Shell and core: All criteria relevant to the building type and function apply. Refer to Appendix D – Shell and core project assessments on page 409 for a more detailed description of the shell and core assessment options.
Residential - Partially fitted & Fully fitted		
CN2	Applicable assessment criteria - Single dwellings	Both options: This issue is not applicable. Refer to Appendix E – Applicability of BREEAM New Construction to single and multiple dwellings, partially and fully fitted on page 412 for a more detailed description of residential assessment options.
CN2.1	Applicable assessment criteria - Multiple dwellings	Both options: These criteria will be applicable to multiple dwellings with communal HVAC systems only. Refer to Appendix E – Applicability of BREEAM New Construction to single and multiple dwellings, partially and fully fitted on page 412 for a more detailed description of residential assessment options.
General		
CN3	Standard not appropriate or not applicable	Where a suitably qualified acoustician confirms that ISO 1996:2007 is not an appropriate standard of assessment for the proposed building or site, their assessment of the likelihood of complaints from noise impact can be accepted for the purpose of assessing this issue.

Ref	Terms	Description
CN3.1	Compliance at the design stage. See criterion 2 on page 397.	At the design stage of assessment, where noise-sensitive areas or buildings are present, actual measurement is unlikely to be possible due to the planned but non-existent installation. In such situations compliance can be demonstrated through the use of acousticians' calculations or by scale model investigations. For such cases ISO 1996-2:2007 states that 'as universally agreed prediction models do not exist, the method adopted should be carefully described in the acoustician's report' and that 'when available, prediction models accepted by relevant authorities should be used'. Where prediction through these methods is not possible, measurement will be necessary using either a noise source similar to that proposed or, alternatively, measurement of the actual noise from the installation (once installed). Compliance with the latter approach requires a written commitment to appoint a suitably qualified acoustician to carry out the required measurements post installation, and a further commitment to attenuate the noise source in compliance with criteria 4 and 5 of BREEAM (if proved necessary by the measurements).
CN3.2	Untreated buildings	This assessment issue does not apply to buildings designed to be untreated, i.e. where internal spaces will not be serviced by heating, ventilation or air-conditioning systems and therefore have no noise generating plant. Examples of such building types could include industrial warehouse storage.
CN3.3	National or local alternative to ISO standard	It is possible to use a national or local equivalent to the ISO 1996 series; however this must be approved by BRE Global. The approved standards and weightings list can be used to check for previously approved standards or to propose a new national or local standard.

Methodology

None.

Evidence

Criteria	Interim design stage	Final post-construction stage
1	Design drawings highlighting: 1. All existing and proposed noise-sensitive buildings local to, and within, the site boundary 2. Proposed sources of noise from the new development 3. Distance (m) from these buildings to the assessed development.	As design stage. BREEAM Assessor's site inspection report and photographic evidence.

Criteria	Interim design stage	Final post-construction stage
2–3	The acoustician's report, acoustician's qualifications and professional status OR Relevant section or clauses of the building specification or contract requiring a noise assessment by a suitably qualified acoustician in compliance with ISO 1996:2007 OR A letter from the client or design team confirming that they will appoint an acoustician to carry out a noise assessment in compliance with ISO 1996.	The acoustician's report with measurements based on installed and operating plant.
4–5	Acoustician's report with recommendations for noise attenuation measures AND EITHER: 1. A marked-up design plan highlighting the specification of the acoustician's attenuation measures OR 2. A formal letter from the client or design team confirming where relevant, that attenuation measures recommended by an appointed suitably qualified acoustician will be installed.	BREEAM Assessor's site inspection report and photographic evidence confirming the existence of the specified noise attenuation measures OR A letter from the acoustician confirming that all specified attenuation measures have been installed to the required standard.

Additional information

Relevant definitions

Noise-sensitive area

Landscapes or buildings where the occupiers are likely to be sensitive to noise created by the new plant installed in the assessed building, including:

1. Residential areas
2. Hospitals, health centres, care homes, doctor's surgeries etc.
3. Schools, colleges and other teaching establishments
4. Libraries
5. Places of worship
6. Wildlife areas, historic landscapes, parks and gardens
7. Located in an area recognised as having outstanding natural beauty, scientific or ecological interest
8. Any other development that can be considered noise-sensitive.

Suitably qualified acoustician

An individual who holds a recognised acoustic qualification and membership of an appropriate professional body. Acousticians that meet the definition of a suitably qualified acoustician in Hea 05 Acoustic performance on page 120, will also meet the definition for the purposes of compliance with this issue.

Other information

None.

Innovation

Summary

The innovation category provides opportunities for exemplary performance and innovation to be recognised that are not included within, or go beyond the requirements of the credit criteria. This includes exemplary performance credits, for where the building meets the exemplary performance levels of a particular issue. It also includes innovative products and processes for which an innovation credit can be claimed, where they have been approved by BRE Global.

The cost-saving benefits of innovation are fostered and facilitated by helping encourage, drive and publicise accelerated uptake of innovative measures.

Inn 01 Innovation

(all buildings)

Number of credits available	Minimum standards
10	No

Aim

To support innovation within the construction industry through the recognition of sustainability related benefits which are not rewarded by standard BREEAM issues.

Assessment criteria

The following is required to demonstrate compliance:

Up to a maximum of 10 credits are available, with the total BREEAM score capped at 100%, in aggregate from a combination of the following:

Exemplary level of performance in existing BREEAM issues

1 Where the building demonstrates exemplary performance by meeting defined exemplary level performance criteria in one or more of the following BREEAM assessment issues (please refer to the relevant BREEAM issue within this scheme document for details of the exemplary level performance assessment criteria):
- 1.a Man 03 Responsible construction practices on page 56
- 1.b Man 05 Aftercare on page 74
- 1.c Hea 02 Indoor air quality on page 98
- 1.d Ene 01 Reduction of energy use and carbon emissions on page 150
- 1.e Ene 10 Flexible demand side response on page 211
- 1.f Tra 03a Alternative modes of transport on page 226 or Tra 03b Alternative modes of transport on page 235
- 1.g Wat 01 Water consumption on page 253
- 1.h Mat 01 Life cycle impacts on page 276
- 1.i Mat 03 Responsible sourcing of construction products on page 282
- 1.j Wst 01 Construction waste management on page 306
- 1.k Wst 02 Recycled aggregates on page 313
- 1.l Wst 05 Adaptation to climate change on page 330

Approved innovations

2 One innovation credit can be awarded for each innovation application approved by BRE Global, where the building complies with the criteria defined within an approved innovation application form.

Checklists and tables

None.

Compliance notes

Ref	Terms	Description
General		
CN1	Exemplary level of performance	Refer to the compliance notes within the individual assessment issues that contain exemplary performance levels.

Methodology

Exemplary level of performance in existing BREEAM issues

For information on the methodology for exemplary level credits refer to the Methodology section of the relevant BREEAM issues.

Approved innovations

Innovation applications can be submitted to BRE Global by a licensed BREEAM Assessor using the formal approved innovation application form (available from BREEAM Projects).

Evidence

Criteria	Interim design stage	Final post-construction stage
1 on the previous page	As defined within existing BREEAM issues.	As defined within existing BREEAM issues.
2 on the previous page	A copy of the approved innovation application form AND A copy of the innovation application report stating the application outcome as 'approved' AND Relevant documentary evidence demonstrating specification of the approved innovation.	As per interim design stage AND Relevant documentary evidence confirming that the project has achieved or installed the approved innovation as described and quantified within the approved innovation application form.

Additional information

Relevant definitions

Approved innovation

Any new technology, design, construction, operation, maintenance or demolition method or process that can be shown to improve the sustainability performance of a building and is of demonstrable benefit to the wider industry in a manner that is not covered elsewhere in BREEAM. In addition, the innovation has been approved by BRE Global in accordance with its published BREEAM Innovation credit procedures.

Other information

Applying for innovation credits

Refer to the BREEAM Innovation section documents available from BREEAM Projects for more information on BREEAM Innovation credit eligibility criteria, application process, application fees and previously approved innovations.

Appendices

Appendix A – National Scheme Operators (NSOs)

National Scheme Operators (NSOs) operate tailored, country-specific BREEAM schemes under licence from BRE Global. These organisations are selected to provide local knowledge, market presence and local stakeholder engagement through their governance structures.

BRE Global is the NSO for BREEAM UK and also for the pan country BREEAM International schemes. The BREEAM International schemes apply in any country in the world except the UK and countries where a NSO is operating a local scheme.

The schemes developed by National Scheme Operators must comply with the requirements of the BREEAM Core Technical Standard and the BREEAM Core Process Standard, both of which expand on the framework set out within the Code for a Sustainable Built Environment.

The NSOs and their local BREEAM schemes are listed on the BREEAM webpage: www.breeam.com, and there is a Technical Standards Finder tool available to help customers select the correct scheme. The local schemes must be used for assessments where appropriate; in these instances contact the local NSO for further information. Where a building falls outside of the scope of these local schemes, or there is no local NSO operating in a country, the pan country BREEAM International schemes are used.

Appendix B – Scope and education buildings

BREEAM International New Construction Version 6 has been tailored specifically for the assessment of the following educational establishments:

1. Preschools, including:
   a. Nursery schools[84]
   b. Children's centres[85]
2. Schools, including:
   a. Primary schools
   b. Secondary schools
   c. All age range schools (including education or teaching buildings at boarding schools)
   d. Non-acute special educational needs (SEN) schools
3. Universities and colleges
4. Higher education or vocational colleges and institutions, including:
   a. Teaching facilities
   b. Learning resource centres
   c. Laboratories, workshops or studios
   d. Student unions
   e. Or a mixture of the above types.

Acute special educational needs (SEN) schools

Acute SEN refers to children with severe disabilities or learning difficulties that prevent them from interpreting their surroundings without feeling anxious or distressed. These children can become easily distracted or overstimulated, or both. This group of pupils mainly include children with behavioural, emotional or social difficulties (BEDS) and children with communication and interaction disability (autistic spectrum disorder (ASD)).

This BREEAM scheme has not been specifically tailored to assess acute SEN schools. However assessment using the methodology is still possible, except where highly specialised accommodation is provided. Acute SEN schools therefore require a bespoke assessment.

For more information on SEN please refer to Building Bulletin 102 Designing for disabled children with special educational needs, published by the Department for Children Schools and Families (available from: www.education.gov.uk).

Student residential accommodation

BREEAM International New Construction Version 6 can be used to assess boarding school, college or University residential buildings. These types of building are classified as Residential institutions for the purpose of a BREEAM assessment.

Appendix C – Scope and residential institutions

BREEAM International New Construction Version 6 can be used to assess multi-occupancy residential buildings that are not suitable for assessment as residential dwellings. The BREEAM International New Construction Version 6 scheme provides a whole building assessment methodology which can also be applied to buildings which contain private living space, but also communal facilities within the same building, to allow assessment of the whole building.

BREEAM International New Construction Version 6 can be used to assess the following types of residential institutions:

1. Hotel, hostel, boarding and guest house
2. Student accommodation
3. Care homes that do not contain extensive or specialist medical facilities (limited consulting rooms and medical rooms are acceptable)
4. Sheltered housing
5. Other residential buildings that contain a mix of residential accommodation with communal areas such as some military accommodation.

Appendix D – Shell and core project assessments

Non-fitted, speculative new buildings (often referred to as shell only or shell and core buildings) can be assessed using the BREEAM International New Construction Version 6 scheme.

The BREEAM International New Construction Version 6 version can be applied to fully fitted, shell only and shell and core building projects. This section provides guidance to assessors and project teams on the application of BREEAM to shell only and shell and core projects.

A shell only or shell and core building project is defined as one where the developer's scope of works is the design and construction of the base building only, leaving a range of construction and fit-out works to be completed before the building is able to be occupied. This may include some or all of the following elements: the structure, building envelope, core building systems, including building servicing strategy and installations (such as HVAC) or plant support for installation of such systems and where present, fit-out of common areas.

In these projects, where areas of the development are not fully fitted, performance of the building and compliance with BREEAM is verified based on the developer's scope of works. This is measured using two standard project type options that in turn define appropriate assessment criteria applicable to that project type. While some projects will differ to some extent from the scope of these standard options, for the purpose of BREEAM, issues not included within the chosen option will be excluded from the assessment, even where they are within the developer's scope of works. This approach is necessary to ensure clarity, consistency and comparability within the property market. A fully filterable list of criteria or issues based on each individual project's scope would not enable comparability between BREEAM ratings, either in terms of performance benchmarking, or promotional or publicity purposes.

Defining the shell and core project type

For the purpose of defining the scope of assessment and BREEAM certification labelling, a non-residential new construction project that is not fully fitted out can be categorised in to one of the following types:

- Shell only assessment and certification
- Shell and core assessment and certification.

Shell only assessment

This assessment and certification option is available where the developer's scope of works covers new build works to the fabric, substructure and superstructure of the building only, including:

- External walls, windows, doors (external), roof, core internal walls, structural floors
- Hard and soft landscaping areas (where present and within the scope of works).

Shell and core assessment

This option is available where the developer's scope of works covers shell works, as described in option 1, plus core building services. Core building services relates to the installation of central or communal transport systems, water systems, fit-out of common areas, central mechanical and electrical systems, including HVAC, but without local fitting of systems within tenant areas. The systems will typically be centralised with capped-off distribution to each tenanted area (for future connection as part of a tenant's fit-out works).

The shell only and shell and core assessment options are available for all building types, apart from residential individual dwellings and apartment blocks, refer to Appendix E – Applicability of BREEAM New Construction to single and multiple dwellings, partially and fully fitted on page 412 for a more detailed description of residential assessment options.

Assessing new-build shell and core projects

In the main, the assessment process and application of the majority of the BREEAM assessment issues will be unaffected by the scope of new build shell only or shell and core works. This is because most of the BREEAM criteria are concerned with impacts, processes and management procedures that occur with any new build development, regardless of whether it is a shell and core or fully fitted project. However, several BREEAM issues and criteria are tailored for the assessment of fitted out buildings, such as acoustic performance. Therefore, additional guidance is given within the assessment issues in the form of a compliance note. These shell and core compliance notes confirm whether the assessment issue applies to a shell only or shell and core project and, where it does apply, how to assess it for the options or project types defined above.

Shell and core building assessments and minimum BREEAM standards

All minimum BREEAM standards remain applicable to shell and core building assessments for the developer's scope of works. The only exception is minimum standards for BREEAM issues, credits or criteria which are not assessed in a shell only or shell and core project (confirmed by the shell and core compliance note in each relevant issue).

BREEAM International New Construction Version 6 and the BREEAM International Non-Domestic Refurbishment 2015 scheme

BRE Global have developed a standalone BREEAM scheme to cover the refurbishment and fit-out stages of the life cycle for non-domestic buildings. Under this scheme, only criteria that fall within the scope of the tenant's fit-out works would be assessed.

By having a two part assessment for the shell and core projects, where the shell and core parts and the fit–out parts are assessed separately, BREEAM provides a flexible yet robust way of assessing shell and core projects.

The diagram in Figure 6 below outlines the relationship between the International New Construction and the International Refurbishment and Fit-out schemes.

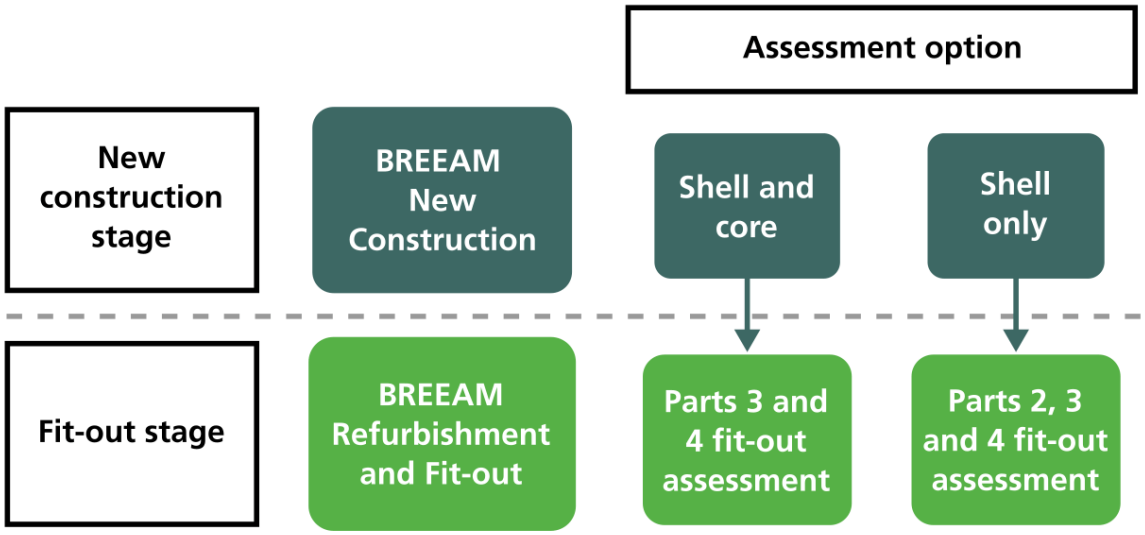

Figure 6: International New Construction and the International Refurbishment and Fit-out schemes and the assessment options

The scope of the BREEAM International New Construction, Shell only and Shell and core options, and BREEAM International Refurbishment and Fit-out schemes have been defined using recognised industry definitions, such as the British Council for Offices definition of Category A and B fit-out as far as possible. However, in practice, there is no fixed industry standard definition of refurbishment and fit-out works, with a large degree of variability from project to project. Due to this variability and also the need to ensure a consistent definition is used for assessment comparability purposes, the BREEAM International Refurbishment and Fit-out scheme has defined a number of optional assessment 'parts'. The scope for each of these assessment parts has largely been based on setting boundaries around the key physical parameters of the building. Under that scheme, clients are able to seek assessment certification against any combination of parts according to the scope of their refurbishment and fit-out works, therefore providing a highly flexible scheme.

The scope of Part 1 of the BREEAM International Refurbishment and Fit-out scheme aligns with option 1, the shell only option of the BREEAM International New Construction scheme. Parts 1 and 2 combined align with option 2, the shell and core option of the BREEAM International New Construction scheme. Parts 3 and 4 then cover the scope of work that is covered under the tenants fit-out works and would, therefore, be used to 'top up' a Shell and Core Assessment post fit-out.

Assessment types of the BREEAM International Non-Domestic Refurbishment 2015 scheme:

- Part 1 - Fabric and structure: external envelope including walls, roof, windows and floor
- Part 2 - Core services: centralised mechanical and electrical plant including heating, cooling and ventilation
- Part 3 - Local services: localised services including lighting, local heating, cooling and ventilation
- Part 4 - Interior design: interior finishes, furniture, fittings and equipment.

Further information on the BREEAM International Non-Domestic Refurbishment 2015 scheme can be found on the BREEAM website (www.breeam.com).

Appendix E – Applicability of BREEAM New Construction to single and multiple dwellings, partially and fully fitted

Due to the diverse way homes are built and sold around the world, BREEAM International New Construction offers four different classification routes for residential assessments.

This section provides guidance to assessors and project teams on the application of BREEAM for residential developments.

To carry out an assessment the assessor and project team must first define the project as either a single or multiple dwelling, then state whether it will be 'partially' or 'fully' fitted out. This must be decided upon at the beginning of the assessment process, within the Scoring and Reporting tool.

Single or multiple dwellings

Definition of a single dwelling

A single dwelling is a permanent residential building, detached from any other building.

Otherwise referred to as a 'home' or 'family unit', the 'single dwelling' is intended to be occupied by one single household or family. Single dwellings must have no common areas or shared services with their surrounding dwellings.

Single dwellings are typically built on plots of land, greater in scale than the ground floor area, offering a privately owned, outdoor space. However, this may not always be the case for dwellings constructed on densely packed plots of land such as those built within towns or cities. For single dwellings that join onto other dwellings, as long as the other dwellings are not being assessed, then the 'single dwelling' criteria applies.

Allowances can be made for dwellings with additional extensions or suites intended for extended family members, without changing the description from 'single dwelling'.

Definition of multiple dwellings

Multiple dwellings are any number of permanent residential buildings greater than one. They must be located on the same plot of land and can either be joined together within the same building envelope or separated.

For example, a single, building envelope could consist of an apartment block or a row of terraces. Alternatively, it could be a group of 'single dwellings' built on the same plot of land.

Partially and fully fitted dwellings

The intention of the partial and fully fitted criteria is to recognise the need for greater flexibility during the 'Fit-out' stage in response to the Turn-key property market. Turn-key properties, are new homes sold on the open market as complete and intended for immediate occupation by the new homeowner.

Definition of Partially Fitted dwellings

These are new Turn-key homes intended to be occupied by the new homeowner where due to local building practices and cultural aspects, even though the property is considered 'complete' at the point of sale, the new homeowner is still required to fit-out their new property with specific fixtures and fittings.

While BREEAM Residential aspires to remain flexible with regards to the specification of different fixtures and fittings by the new homeowner; for the new dwelling to be certified as a BREEAM partially fitted home, particular elements must always be present during the scope of works regardless of building practice or cultural differences.

This assessment and certification option is available where the developer's scope of works covers new build works to the fabric, sub and superstructure of the building, plus the necessary core, central and localised systems for occupiers to live comfortably within each and every dwelling. Depending on climate and design features of the new home, those elements are:

Mandatory features of a partially fitted dwelling:

- Roof, external walls, internal and separating walls and structural floors, windows and external doors (for each dwelling)
- Potable water supply
- Plumbing and drainage
- Mechanical and electrical systems including:
  - Light fixtures and fittings
  - Heating, cooling and ventilation systems.

Mandatory features of a partially fitted dwelling (if present)

- Fit-out of communal areas
- Installation of central or communal transport systems
- Hard and soft landscaping areas.

For these assessments, the scope of works being undertaken must be specified clearly and provided for the accurate certification of the project.

Definition of Fully Fitted dwellings

A fully fitted dwelling is where, in addition to the core, central and localised systems, additional fixtures and fittings have also been provided to mitigate environmental impacts while the dwelling is in use throughout its lifespan.

- Interior finishes such as floor, wall and door finishes, and furniture (e.g. kitchens and bathrooms)
- Hot and cold potable and non-potable water fittings
- Internal fittings such as recycling bins, washing line and white goods
- Monitoring equipment such as energy meters and display devices.

Partially fitted and fully fitted dwelling assessments and minimum BREEAM standards

All minimum BREEAM standards remain applicable to partially fitted assessments for the developer's scope of works. The only exceptions are:

- Minimum standards for BREEAM issues, credits or criteria which are not assessed in a partially fitted project (confirmed by the residential – partially and fully fitted compliance notes in each issue)
- Wat 01 Water consumption on page 253, where the minimum standard can be excluded if water fittings are not going to be installed on behalf of the new homeowner or occupant.

Appendix F – Examples of BREEAM New Construction certificates

Examples of BREEAM New Construction certificates for the interim Design Stage and final Post-construction stage are provided in Figure 7 below and Figure 8 below, respectively.

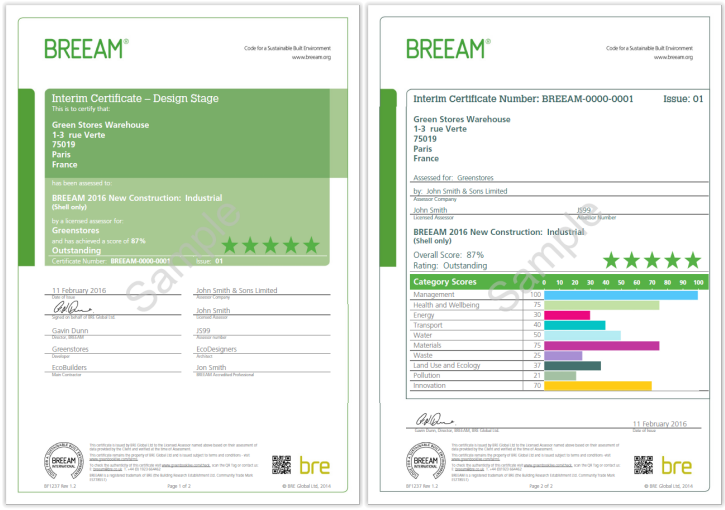

Figure 7: Example of Interim Certificate at Design Stage

Figure 8: Example of Final Certificate at Post-construction stage

Appendix G – Considerate constructor scheme requirements

Organisational, local or national considerate constructor scheme requirements (guidance for scheme administrators)

The purpose of this appendix is to provide guidance for considerate construction scheme administrators or operators, against which they can determine whether their scheme is potentially eligible for recognition by BREEAM as a 'compliant scheme' and therefore whether performance, as assessed or rated by that scheme, is appropriate for the purpose of awarding BREEAM credits.

Where the administrator has reviewed their scheme against the requirements below and wishes to have the scheme listed by BREEAM as a 'compliant scheme', they should contact the BREEAM office at BRE Global, providing the following information:

1. A description of the scheme's operation, including how it monitors and verifies compliance and to what standards it (or its assessors) are accredited
2. The scheme's requirements
3. How the scheme scores or rates contractor and site performance against that code of practice
4. If relevant, the number of projects that have used the scheme and the average score or level of performance achieved.

BRE Global will then inform the scheme operator of the next steps in the review and listing process.

Please note: BRE Global do not provide translation services and therefore considerate construction scheme administrators or operators must submit translated documents (in English) alongside the relevant sections of the original documents.

Operational scheme requirements

1. The scheme has a code of practice (see below for scope).
2. The assessment and scoring for the scheme is structured such that it is possible to determine and rate the performance of the contractor or site against the scheme as a whole, and for individual code of practice items, on the basis of:
   a. Non-compliance
   b. Compliance (level required to achieve two BREEAM credits)
   c. 'Beyond' compliance (if applicable), e.g. top quartile performance
   d. Exemplary practice, e.g. top 10% performance.
3. The scheme has defined a baseline of performance against which performance of individual items and overall project performance is determined. This baseline should broadly align with widely recognised good practice on construction sites within the country of assessment or wider international region.
4. The performance of contractors and sites are independently monitored and verified by individuals or service providers appointed by the scheme administrator.
5. The scheme administrator demonstrates what measures they have in place to ensure that those who undertake the assessment and verification have the necessary skills, knowledge and experience to do so competently.
6. Construction sites are visited at least once by the monitor during the construction phase to verify compliance with, and rate performance against, the scheme's code of practice (or more frequently for sites where the construction phase is longer than 12 months).
7. Construction site performance is reported by the monitor and an overall score or compliance determined for each site visit.
8. A certificate of performance or compliance is awarded to the contractor by the scheme administrator.
9. The scheme administrator operates a public complaints procedure and investigates complaints accordingly.

Scope of scheme's code of practice

The scheme's code of practice must include or account for the following categories and items:

Environmental awareness and impact mitigation

Demonstrate constructor awareness, consideration and mitigation of the impact of the site on the environment.

1. Environmental Management Systems or environmental policy
2. Management and prevention of light, noise, air, land and water pollution
3. Energy and water saving measures or processes
4. Waste reduction and diversion from landfill measures or processes
5. Responsibly sourced and low impact construction materials
6. Locally sourced labour and suppliers
7. Monitoring and targeting of environmental impacts
8. Protection of ecological features
9. Low or zero carbon sources of energy
10. Construction site operative awareness and training.

Safe and adequate access

Demonstrate that the constructor operates the site in a manner that ensures safe access to and around the site.

1. Site traffic management plan
2. Unobstructed, clearly signed and safe roads, footpaths and diversions
3. Accessible, safe and signed site and site accommodation for all genders or abilities
4. Secure site and boundary
5. Provision of safety information and emergency procedures
6. Provision of signs, notices and other information in the common local languages
7. Protection of the public from site activities, e.g. plant movement, debris etc.
8. Management of site visitors.

Safe and considerate working environment

Demonstrate that the constructor is operating the site in a clean, safe and accountable manner in order to ensure the wellbeing of site operatives and to minimise the risk to their health and safety.

1. Provision of clean, well maintained and appropriately sized or located or screened site facilities (showers, changing or drying facilities, or smoking areas or canteens)
2. Occupational health guidance and provision of emergency information or procedures, first aiders and first aid equipment
3. Clean and well maintained work areas and plant
4. Monitoring or preventing anti-social or criminal behaviour on site and around the perimeter, e.g. littering, abusive or offensive language, vandalism or graffiti
5. Provision of clean and appropriate Personal Protective Equipment (PPE)
6. Implementation, monitoring and compliance with a health and safety plan produced for the site (a plan which sets out procedures to ensure construction work is carried out safely for the protection and welfare of site workers and others who may be affected by the work)
7. Professional appearance and behaviour of site operatives
8. Training needs of site operatives.

Good neighbour

Demonstrate that the constructor operates the site in a manner that is considerate to the surrounding neighbours and those who visit the locality within the site's vicinity.

1. Communication, notification and accessible information concerning site activities or a programme or information, including emergency procedures or contacts
2. Accessible site management and comments procedure
3. Maintenance and cleanliness of the site, perimeter and adjacent roads, and site access
4. Dust and noise prevention measures
5. Site image, including visually appropriate and well maintained site hoardings and boundary and advertised scheme involvement
6. Wider community engagement.

Checklists

Checklist A1

See Man 03 Responsible construction practices on page 56.

1 Safe and adequate access

This section is intended to demonstrate that the constructor operates the site in a manner that guarantees safe and appropriate access to, around and on the site. The following items demonstrate compliance with this section:

Table 63: Checklist A1-1 - Safe and adequate access requirements

Ref	Criteria	Y	Evidence or reference required	Validation and justification
a	Appropriate and safe access to the site is provided. This must include as a minimum: — Provision of parking on or near to the site OR a public transport node with an average frequency under 30 minutes within 500m OR a dedicated transport service to a major public transport node provided by the contractor — Good lighting AND adequate barriers AND uniform surfaces, i.e. no trip hazards outside the site boundary — All accesses to be clean and mud free — Hoarding or scaffolding, which forms part of, or is external to the site boundary, to be well lit at night AND scaffold netting is in place and well maintained.		See copy of the parking plan and check transport and dedicated service timetables and view other facilities are on site.	
b	Appropriate and safe access on site is provided. This must include as a minimum: — Footpaths marked with ramps and signs — Pathways wide enough for wheelchairs — Accessibility of all areas by visually or hearing impaired visitors — All site hazards advertised at the site entrance.		View on site and check that the list of hazards is complete.	
c	Site entrances and exits are clearly marked for visitors and delivery drivers to see.		View on site.	

Ref	Criteria	Y	Evidence or reference required	Validation and justification
d	Site reception is clearly signposted OR all visitors are escorted to the reception.		Check on arrival for the signs OR see a copy of the induction procedure.	
e	The post box has been placed on the pavement to avoid the postman from entering the site.		View on site.	
f	Where there are minority communities speaking a different language in the area or working on site, notices are printed in the common local language.		Check the area and check that the staff register for a minority culture community. Where this is present on- or off-site, check for signs in the community's language.	
g	All road signs or names can be seen OR when a road sign or name is obstructed a replacement has been erected.		View on site.	
h	Where a site is in an area with severe congestion it has a delivery point remote from the site; deliveries are then made in smaller vehicles and timed to cause the least inconvenience.		View procedures on site.	

2 Good Neighbour

This section is intended to demonstrate that the constructor operates the site in a manner that is considerate to the surrounding neighbours. The following items demonstrate compliance with this section:

Table 64: Checklist A1-2 - Good neighbour requirements

Ref	Criteria	Y	Evidence or reference required	Validation and justification
a	Introductory letters have been or will be sent to all neighbours AND there is a commitment to write and thank neighbours at the end of the contract for their patience AND provide a feedback form.		See copies of letters with a list of addresses. A copy of this commitment should be provided or a copy of a standard letter that is always sent at the end of a project. A copy of the feedback form must be provided alongside a procedure to monitor the results and implement changes for future work.	
b	Site hours and noisy work restrictions are appropriate to the area, in particular when the site is located near: — Houses — Schools — Hospitals — Industrial units — Major public transport nodes — City centres — Shopping facilities.		Copy of statement of intent, policy, agreement etc. to be provided.	
c	The site boundary (which includes all areas affected by the works) is clearly and safely marked and appropriate to the environment: — The colour of the hoarding has been considered in terms of the surrounding environment — Pedestrians have a suitable, safe and protected passage around the site boundary — There are well lit warning signs for the benefit of the pedestrian and road user — The site's surroundings are seen by the public as being tidy and clean.		Ask the site manager if any thought was given to the hoarding and the location of the site. Is the hoarding clearly and safely marked, clean, neat and well maintained? Ensure that there are no complaints about the site being untidy or that if there were, this was quickly rectified and not repeated.	
d	There is a complaints book available AND evidence that complaints are being dealt with immediately.		Inspect the complaints book and check responses for timeliness.	

Ref	Criteria	Y	Evidence or reference required	Validation and justification
e	Local people are appropriately informed by the use of a notice board: — Of the site progress — Of the company contact details (telephone number or website or email address).		View on site.	
f	Light is shielded from the neighbours.		Copy of the temporary works indicating light shielding, or the site manager must demonstrate how the light shielding works or is not applicable.	
g	Site personnel are discouraged from using local facilities in their site clothes. Examples of how this might be achieved include : — A dedicated staff canteen — Staggered breaks for different gangs — Provision of showers or wash rooms — Provision of lockers — A request to leave PPE (Personal Protective Equipment) on site.		View on site. Check procedures with the site manager.	
h	There is a volume restriction on radio use or there is a radio ban in place.		Check if a restriction or ban is in place and how this is enforced.	

3 Environmentally Aware

This section is intended to demonstrate that the constructor has considered the impact of the site on the environment and has implemented measures to mitigate this impact. The following items demonstrate compliance with this section:

Table 65: Checklist A1-3 - Environmentally aware requirements

Ref	Criteria	Y	Evidence or reference required	Validation and justification
a	There are restrictions on the effects of light pollution and all lights are directional and non-polluting. If there is a site-specific environmental policy which sets restrictions on lighting, this point can be awarded.		View on site.	
b	Energy saving measures are implemented on site. Examples of this include: — Low energy lighting — Switching off equipment when not in use — Installing thermostats — Installing timers — Choosing energy efficient equipment. If there is a site-specific environmental policy which defines energy saving measures, this point can be awarded.		View on site.	
c	An impact minimisation strategy review is in place for the site. The review should consider the impact of the site in environmental terms and how any adverse effects are being minimised, e.g. protection of ecological features, pollution control.		View impact minimisation strategy.	
d	Water saving measures are implemented on site and monitored. If there is a site-specific environmental policy which indicates how water saving measures are managed and monitored on site, this point can be awarded.		View procedures on site.	
e	Alternative energy sources have been considered.		View on site.	
f	Fuel oil spillage equipment is available.		View on site. Ensure the spillage equipment is located where spillages may occur to ensure a rapid response time.	

Ref	Criteria	Y	Evidence or reference required	Validation and justification
g	Sumps are provided in cases of heavy water run-off. If there is a site-specific environmental policy which indicates how heavy water run-off will be minimised and dealt with on site, this point can be awarded.		View on site.	
h	Materials and equipment are tidily stacked and protected and covered where necessary AND there is adequate space for new materials to be stored in secured covered areas to avoid damage, theft and to protect from weather.		View on site. Ensure that where the space has been provided, it is being used correctly.	

4 Safe and considerate working environment

This section is intended to demonstrate that the constructor is operating the site in a clean and safe manner in order to ensure the wellbeing of its workers and to minimise the risk to their health and safety. The following items demonstrate compliance with this section:

Table 66: Checklist A1-4 - Safe and considerate working environment requirements

Ref	Criteria	Y	Evidence or reference required	Validation and justification
a	Adequate facilities are provided on site for workers and visitors. These must include as a minimum: — Separate male, female and disabled toilets — Working usable showers AND suitable changing areas — Lockers in the drying room — Dedicated smoking area — Suitable and safe accommodation (where provided).		View on site.	
b	Site facilities are well maintained and clean. This must cover as a minimum: — Areas around the canteen, offices and skips — Site welfare facilities (including toilets and changing areas) — Dedicated smoking area.		View on site.	

Ref	Criteria	Y	Evidence or reference required	Validation and justification
c	Private or visually-impacting areas are screened. These must include as a minimum: — Areas around the canteen, offices and skips, where necessary — Toilets — Dedicated smoking area.		View on site.	
d	Clean Personal Protective Equipment (PPE) is available for use by visitors.		Check company policy and procedure and if it is being implemented on site.	
e	Health and Safety procedures are in place for the following issues: — Appropriate training of all staff including non-native operatives to understand health and safety (H&S) best practices and information displayed on site — Operatives' exposure to the sun — Operatives' identification; all operatives to be provided with a photo identification clip card — Reporting of all incidents (minor and serious) and near misses — Ensuring that an appropriate number of first aiders and first aid equipment are available for the site.		Check company policy and procedures and how these are enforced. Check first aid book, in particular for minor accidents. Check the first aiders list and their qualifications (qualifications must have been obtained within the last three years). Check that each first aider has a box with basic equipment and that they have access to more equipment if necessary, and that they know where to find it.	
f	There is posted material indicating the nearest police station and hospital (with Accident & Emergency facilities) in the following areas as a minimum: — Site reception — Site canteen — Main site office.		Spot check managers, operatives, reception staff to check they know this information or at least where they would find it. Check induction talk.	
g	An inspection has been carried out by a Health and Safety inspector or equivalent.		View on site.	
h	Emergency escape routes are well identified and there is a clear emergency evacuation procedure AND drills are carried out regularly.		View on site. Written proof of the fire drill procedure.	

Checklist A2

See Man 04 Commissioning and handover on page 66.

Table 67: Checklist A2 - Home user guide requirements

Checklist A2 - Home user guide requirements		YES/NO
Part 1 – Operational issues		
a. Environmental strategy or design and features	1. Details of any specific environmental or energy design strategy or features including an overview of the reasons for their use (e.g. environmental and economic savings and restrictions on making alterations) and how they should best be operated. Strategies or features could include passive solar design, super insulation, energy efficient timber windows, heat recovery systems, solar hot water systems, photovoltaics, passive vents or the use of certified timber or SuDS within the boundary of individual properties.	
b. Energy	1. Sufficient information about the building, the fixed building services and their maintenance requirements, for example: a. Provide a suitable set of operating and maintenance instructions aimed at achieving economy in the use of fuel and power in a way that occupiers can understand. The instructions should be directly related to the particular systems installed in the dwelling and account for the different demands likely to be placed on the system during the year b. Details of any renewable systems and how they operate c. Details of low energy light fittings, their use and their benefits, e.g. energy and cost savings compared to traditional light fittings d. Details of any energy labelling scheme for domestic equipment or appliances e. General information on energy efficiency f. Details on how to use and maintain an energy meter where one is installed or provided.	
c. Water use	1. Details of water saving measures and tips. 2. External water use and efficiency, e.g. the use of water butts or other types of rainwater recycling systems.	
d. Recycling and waste	1. Information about a local authority or government collection scheme (if applicable). 2. If the home is not covered by a local collection scheme, details and location of communal recycling bins, skips or facilities. 3. Information on the location and use of any recycling and compost bins. 4. Information on where residents can obtain information or guidance on recycling and sustainable waste disposal, e.g. local authority or private organisation.	

Checklist A2 - Home user guide requirements		YES/NO
e. Links, references and further information	1. References or links to other information including websites, publications and organisations providing information on how to run the home efficiently and in the best environmentally sound way. As a minimum, this should include links to: a. Further good practice guidance on how to save energy b. The company responsible for the construction of the property c. The company responsible for the management of the home (where applicable). 2. In all instances both an address or telephone contact number and a URL should be provided.	
f. Provision of information in alternative formats	1. Include details of the procedure for obtaining a copy of the guide in alternative formats, including alternative languages, Braille, large print or audio cassette or CD. This should include the contact details of the person or organisation responsible for producing the guide.	
Part 2 – Site and surroundings		
a. Recycling and waste	1. Information on what to do with waste not covered by a standard weekly local authority collection scheme, for example fridges or freezers, computer equipment, batteries and other potentially hazardous equipment. In some areas the local authority will collect these items. If this is the case, details and information of such a collection should be provided. 2. Information and location of local recycling facilities and waste tips.	
b. Sustainable (urban) drainage systems (SuDS)	1. Details of SuDS within the site boundary including an overview of the reasons and benefits behind their use (e.g. prevention of localised flooding) and advice on maintenance and operation.	
c. Public transport	1. Details of local public transport facilities including maps and timetables and the location of nearby bus stops, trains, or subways or metro stations. 2. Details of cycle storage and cycle paths in the area including, if available, cycle path network maps for the whole town or local area. 3. Details of car parking and information on available park and ride schemes, car sharing schemes or car pools or car hire in the area. 4. Details on how to get to local amenities in the area by public transport or cycling.	
d. Local amenities	1. Details of the location of food shops, post boxes, postal facilities, bank or cash points, pharmacies, schools, medical centres, leisure centres, community centres, places of worship, public houses, children's play areas, outdoor open access public areas. 2. Other local amenities such as places of interest or cultural value, areas of beauty, wildlife, conservation, allotments etc.	

Checklist A2 - Home user guide requirements		YES/NO
e. Responsible purchasing	1. Include information about the purchasing of: a. Energy and water efficient domestic equipment or appliances b. Electrical equipment, including light fittings and bulbs c. Timber products from sustainable sources d. Organic food procurement or food growing or local produce or local food provision, e.g. farmers markets, organic box schemes etc.	
f. Emergency information	1. Contact details for emergency services including: a. Location of local minor injuries clinics or hospitals or similar facilities b. Location of nearest police and fire station.	
g. Links, references and further information	1. References or links to other information including websites, publications and organisations providing information on how to reduce the environmental impact in terms of transport, the use of local amenities, responsible purchasing etc. Such references or links may include links to: a. The local authority (including information about recycling and waste tips) b. Local transport providers (e.g. bus or train companies) c. Local amenities. In all instances both an address or telephone contact number and a web link should be provided.	
Developer confirmation		
By entering a 'YES' against the criteria above, I confirm that all dwellings of this specification type on the ENTER SITE NAME site meet the stated criteria.		
Signature: Date: Print Name:		

Checklist A3

See Hea 06 Accessibility on page 133.

Table 68: Checklist A3 - Access strategy checklist [86]

Ref	Requirements	YES/NO
1	**Approach**	
	The strategy sets out the approach that the applicant has adopted towards access, with particular reference to the inclusion of disabled people, people of different age groups, genders, ethnicity, stamina and fitness levels, and parents with children. This should include how relevant local, regional and national development or planning policies have been taken account of. The strategy indicates how the approach outlined within will inform decisions taken throughout the development process.	
2	**Consultation**	
	The strategy provides information on the results of any consultation carried out (or to be carried out) on access issues with (depending on the scale of development): 1. Relevant parties and bodies (see Compliance notes under Man 01) 2. Technical specialists, e.g. access, highway, crime prevention and urban design advice.	
3	**How access will be achieved**	
	The strategy explains how: 1. The layout provides practical access 2. Surrounding roads, footpaths and sight lines will be linked 3. Lighting, views, signs and desire lines are used to improve access.	
	Diagrams are produced to show: 1. How people can move to and through the place 2. Priority access arrangements for different users, e.g. pedestrians, cyclists and motorised vehicles.	
	The strategy explains how: 1. Internal access will be designed, provided and used. For speculative buildings the strategy should demonstrate options for proposed layouts and detail the flexibility of the design to take into account the speculative nature of the development.	
	The strategy explains how: 1. Visibility of entrances and entrance areas and facilities (e.g. toilets, conference rooms etc.) will be addressed in the design 2. Levels and gradients change within public spaces, including pavements and dropped kerbs, bus stops, parking spaces (including disabled parking spaces) 3. Symbols and pictures will be used (where appropriate) to help people navigate.	
	The strategy shows public and private spaces and explains how the design has helped make these areas safe.	

Ref	Requirements	YES/NO
	The strategy shows that disabled people will not be segregated but will be able to move up and down in a building and use the same entrances, corridors and rooms as everyone else without detours.	
	The strategy explains how access for the emergency services will be provided. This may include areas for congregation in the event of an emergency which should include provision for disabled refuge points.	

Checklist A4

See Hea 06 Accessibility on page 133

Lifetime homes design criteria

This checklist should not be used on its own. Please refer to the Lifetime Homes website to view the details of each of the 16 individual criteria. This checklist briefly summarises all 16 criteria.

Development Name:

Checklist A4 Hea 06 Accessibility		YES/NO
Lifetime Homes Design Criteria	**Lifetime Homes Standard**	
(1) Parking (width or widening capability)	(1)a 'On plot' (non-communal) parking: Where a dwelling has car parking within its individual plot boundary, at least one parking space length should be capable of enlargement to achieve a minimum width of 3300mm.	
	(1)b Communal or shared parking: Where parking is provided by communal or shared bays, spaces with a width of 3300mm, in accordance with the specification detailed on the Lifetime Homes - parking website, should be provided.	
(2) Approach to dwelling from parking (distance, gradients and widths)	The distance from the car parking space of Criterion 1 to the dwelling entrance (or relevant block entrance or lift core), should be kept to a minimum and be level or gently sloping. The distance from visitors' parking to relevant entrances should be as short as practicable and be level or gently sloping.	
(3) Approach to all entrances	The approach to all entrances should preferably be level or gently sloping, and in accordance with the specification detailed on the Lifetime Homes - approach to dwelling website.	
(4) Entrances	All entrances should: a) Be illuminated b) Have level access over the threshold c) Have effective clear opening widths and nibs as specified below. In addition, main entrances should also: d) Have adequate weather protection e) Have a level external landing.	

Checklist A4 Hea 06 Accessibility		YES/NO
Lifetime Homes Design Criteria	**Lifetime Homes Standard**	
(5) Communal stairs and lifts	(5)a Communal Stairs: Principal access stairs should provide easy access in accordance with the specification detailed on the Lifetime Homes - communal stairs website, regardless of whether or not a lift is provided.	
	(5)b Communal Lifts: Where a dwelling is reached by a lift, it should be fully accessible in accordance with the specification detailed on the Lifetime Homes website.	
(6) Internal doorways and hallways	Movement in hallways and through doorways should be as convenient to the widest range of people as possible, including those using mobility aids or wheelchairs, and those moving furniture or other objects. As a general principle, narrower hallways and landings will need wider doorways in their side walls. The width of doorways and hallways should conform to the specification detailed on the Lifetime Homes - internal doorways and hallways website.	
7) Circulation space	There should be space for turning a wheelchair in dining areas and living rooms and basic circulation space for wheelchair users elsewhere.	
(8) Entrance level living space	A living room or living space should be provided on the entrance level of every dwelling.	
(9) Potential for entrance level bed-space	In dwellings with two or more storeys, with no permanent bedroom on the entrance level, there should be space on the entrance level that could be used as a convenient temporary bed-space.	
(10) Entrance level WC and shower drainage	Where an accessible bathroom, in accordance with criterion 14 of this list, is not provided on the entrance level of a dwelling, the entrance level should have an accessible WC compartment, with potential for a shower to be installed, as detailed in the specification on the Lifetime Homes - entrance level shower and drainage website.	
(11) WC and bathroom walls	Walls in all bathrooms and WC compartments should be capable of firm fixing and support for adaptations such as grab rails.	
(12) Stairs and potential through-the-floor lift in dwelling	The design within a dwelling of two or more storeys should incorporate both: a) Potential for stair lift installation; and b) A suitable identified space for a through-the–floor lift from the entrance level to a storey containing a main bedroom and a bathroom satisfying Criterion (14) Bathrooms on the next page.	

Checklist A4 Hea 06 Accessibility		YES/NO
Lifetime Homes Design Criteria	**Lifetime Homes Standard**	
(13) Potential for fitting of hoists and bedroom or bathroom	Structure above a main bedroom and bathroom ceilings should be capable of supporting ceiling hoists and the design should provide a reasonable route between this bedroom and the bathroom.	
(14) Bathrooms	An accessible bathroom, providing ease of access in accordance with the specification detailed on the Lifetime Homes - bathrooms website should be provided in every dwelling on the same storey as a main bedroom.	
(15) Glazing and window handle heights	Windows in the principal living space (typically the living room), should allow people to see out when seated. In addition, at least one opening light in each habitable room should be approachable and usable by a wide range of people, including those with restricted movement and reach.	
(16) Location of service controls	Service controls should be within a height band of 450mm to 1200mm from the floor and at least 300mm away from any internal room corner.	
Developer Confirmation		
By entering a 'YES' against the above Lifetime Homes criteria, I confirm that all dwellings of this specification type on the [ENTER SITE NAME_____] site meet the current Lifetime Homes criteria.		
Signature: Date: Print Name:		

Checklist A5

See Up to four credits – Basic route (option 2): Energy efficient design features on page 151.

To award credits all the criteria for that credit AND any previous credit(s) must have been achieved or filtered out. To get all four of the available credits from Checklist A5 all applicable criteria must have been achieved.

Table 69: Criteria to award credits using the energy efficient features checklist (Checklist A5)

Credits	Lighting	Hot water	LZC	Building fabric	Heating	Cooling and ventilation
1	Criterion 1 (Non-residential) Criterion 3 (Residential)	Criterion 7	-	Criterion 10	Criterion 16	Criterion 17 (Residential) Criterion 18 Criterion 21 (Non-residential)
2	Criterion 2 (Non-residential) Criterion 4 (Residential)		Criterion 8	Criterion 13 Criterion 15		Criterion 19 (Non-residential) Criterion 20 (Residential)
3	Criterion 5 (Residential - Multiple dwellings)		Criterion 9	Criterion 11 Criterion 14		Criterion 22 (Non-residential)
4	Criterion 5 (Residential - Single dwellings) Criterion 6 (Residential - Multiple dwellings)			Criterion 12		

Table 70: Checklist A5 - Energy efficient features for assessments using the basic route (option 2) in Ene 01

Ref	Energy efficient features - Criteria and notes	Building type
Lighting		
1	Internal daylit and non-daylit areas have switching controls that take account of absence or occupancy, or daylighting as recommended by ASHRAE Standard 90.1 and the California Energy Code. Adequate lighting controls must be provided to all ancillary areas (as applicable) such as: 1. Storerooms and cold stores. 2. Plant and control rooms. 3. Toilet, washroom, and shower areas. 4. Circulation areas, corridors, and stairwells.	Non-residential
2	Where at least 80% of general internal luminaires in fixed fittings achieve an efficacy of at least 80 luminaire lumens per watt or greater. *Note: General internal lighting refers to all internal light fittings, but excludes those used for emergency purposes. The assessor should note that the benchmark is for individual fittings, not the average lumens per circuit watt.*	
3	An information leaflet explaining efficacy in terms of lighting and the benefits of purchasing high efficacy Low Energy Lamps (LELs) is provided in each dwelling.	Residential
4	75% of the fixed internal fittings as a percentage of the total number of fixed light fittings within habitable rooms have been fitted with LELs. *See note on habitable rooms below.*	
5	100% of the fixed internal fittings as a percentage of the total number of fixed light fittings within habitable rooms have been fitted with LELs. *Note: Habitable rooms are defined as follows:* *1. Living rooms or dining rooms* *2. Kitchen or utility rooms* *3. Bedrooms* *4. Hallways* *5. Studies* *6. Offices* *7. Playrooms, games rooms or leisure rooms* *8. Bathrooms* *9. WCs.*	
6	All internal space lighting in the communal areas, excluding statutory safety lighting, has fixed fittings fitted with: 1. LELs 2. Movement detecting control devices (PIR) 3. Daylight cut-off sensors OR timers. *Note: For residential lighting criteria, LELs are deemed as bulbs that have a luminous efficacy greater than 65 lumens per circuit watt.*	Residential - Multiple dwellings

Ref	Energy efficient features - Criteria and notes	Building type
Water heat generator efficiency		
7	Hot water is supplied via a self-contained system that has an efficiency of ≥ 85% (either central or decentralised) OR where decentralised gas fired storage heaters are specified that have an efficiency of ≥ 85%. OR Where heat pumps are specified for hot water the criteria can be awarded provided that the COP is ≥ 4.5. *Note: The water heating system is designed in accordance with the recommendations of ASHRAE Standard 90.1 and the controls specified comply with the guidance for hot water systems. Where the building is not heated, this criterion is not applicable.*	All buildings
Low and zero carbon technologies		
8	At least 10% of the total electricity or heating and cooling demand is generated by on-site or near-site LZC technologies. *See note on LZC technologies below.*	All buildings
9	At least 20% of the total electricity or heating and cooling demand is generated by on-site or near-site LZC technologies. *Note: The low and zero carbon technologies listed in BREEAM issue Ene 04 Low carbon design on page 178 can be used to demonstrate compliance. Other systems may be acceptable as part of a LZC strategy under this issue but are not inherently considered as LZC technologies. Acceptability will be dependent on the nature of the system proposed. The BREEAM Assessor must confirm acceptability with BRE Global if in doubt.*	

Ref	Energy efficient features - Criteria and notes	Building type
Building fabric		
10	5% improvement on the U-value requirements for walls, roofs, ground floor, windows, and doors, in ASHRAE Standard 90.1 (for all buildings except low rise residential buildings) or ASHRAE Standard 90.2 (for low rise residential buildings).	All buildings
11	10% improvement on the U-value requirements in ASHRAE Standard 90.1 or 90.2 (as applicable).	
12	15% improvement on the U-value requirements in ASHRAE Standard 90.1 or 90.2 (as applicable).	
13	Pressure test shows air permeability ≤ 50% of leakage value of current national standards. If national standards are not available, 2m³/h/m²@ 50Pa is the maximum value for air permeability to achieve this criterion.	
14	Pressure test shows air permeability ≤ 75% of leakage value of current national standards. If national standards are not available, 1.5m³/h/m²@ 50Pa is the maximum value for air permeability to achieve this criterion.	
15	The average g-value of the glazing is ≥ 60%.	

Ref	Energy efficient features - Criteria and notes	Building type
Space heat generator efficiency		
16	The seasonal efficiency of the source of space heating is ≥ 90%. The system must also comply with ALL of the following: 1. The heating system is to be designed in accordance with the recommendations of ASHRAE Standard 90.1. 2. At least 75% of the heat demand must be sourced by the heating system with the highest efficiency; the remaining top-up heat must be supplied by a high efficiency heating source ≥ 90%. 3. Where the heating system is comprised of an arrangement of multiple boilers or heat sources, the seasonal efficiency of the multiple boiler system must be ≥ 90%. 4. The overall system efficiency, i.e. the distribution and seasonal boiler efficiency, is ≥ 70% 5. The heating system controls must comply with ASHRAE Standard 90.1. 6. A form of variable flow control is fitted, i.e. variable speed pumps. Where CHP is specified, the criteria can be awarded provided that: 1. The CHP operates as the main boiler. 2. Remaining output is provided by boilers with an efficiency of ≥ 85%. 3. Boost output is provided by high efficiency boilers ≥ 80%. 4. The CHP plant must have an efficiency of ≥ 85%. 5. The system controls comply with the requirements outlined in ASHRAE Standard 90.1. OR Where heat pumps are specified for heating, the criteria can be awarded provided that the COP is ≥ 4.5. *Note:* 1. *To determine the seasonal efficiency of the boiler used for space heating the link below provides a list of boilers and their associated efficiencies. If the boiler used in the assessment is not on this list, the closest match can be used to demonstrate compliance: www.ncm-pcdb.org.uk/sap/.* 2. *Where demand is partly met by on-site LZC or near-site LZC forms of heating (e.g. solar hot water), then that system's output should be counted towards the overall system output for calculating system efficiency.* 3. *Where the building is not heated this criterion is not applicable.*	All buildings
Cooling and ventilation		
17	Criteria 1-4 in Hea 04 Thermal comfort have been achieved. AND Air-conditioning systems specified have: 1. A form of variable flow control fitted, i.e. variable speed drives. 2. Controls to prevent simultaneous heating and cooling. 3. Temperature and humidity (where applicable) set points selected for minimum energy consumption consistent with comfort conditions.	Residential

Ref	Energy efficient features - Criteria and notes	Building type
18	Where the design incorporates a system of providing low carbon cooling to completely displace the need for a mechanical cooling system. OR The cooling generator has a coefficient of performance (COP) of > 3.5. *Note: Compliance with this criterion will be shown if the design has used a low carbon cooling technology, such as, but not exclusively limited to:* *1. Night-time cooling, i.e. requires fabric to have a high thermal mass* *2. Ground coupled air cooling* *3. Displacement ventilation (not linked to any active cooling system)* *4. Ground water cooling* *5. Surface water cooling* *6. Evaporative cooling, direct or indirect* *7. Passive house (Passivhaus) cooling strategies* *8. Desiccant dehumidification and evaporative cooling, using waste heat* *9. Absorption cooling, using waste heat* *10. The building does not require any form of cooling* *The assessment of this criterion excludes specialist cooling systems (such as server rooms, cold food storage etc.). The assessor should confirm with BRE which specialist cooling systems may be excluded from the assessment of this criterion.*	All buildings
19	All ductwork and air handling units (AHUs) are certified to meet the best leakage standards. OR No mechanical ventilation (apart from where required as part of national building regulations; such systems should also comply with the leakage standards below). *Note: Examples of best practice standards are ductwork tested to EN 16798-3 class ATC 4 and AHUs tested to EN 1886 class L1 or ASHRAE Standard 62.1 Ventilation for acceptable indoor air quality and ASHRAE Standard 90.1 Energy standard for buildings.*	Non-residential
20	Where the specific fan power for the mechanical ventilation system specified is: 1. ≤ 0.5 W/litre/second for continuous extract ventilation systems. 2. ≤ 1.0 W/litre/second for whole house MVHR when running at each of its settings AND achieves a heat recovery efficiency of at least 85%. OR No mechanical ventilation (systems required as part of national building regulations are excluded from the requirements). *Note: Where the mechanical ventilation systems specified for the residential building are complex and more akin to the systems specified in item 21 on the facing page, then the criteria listed for item 21 should be applied to the assessment instead.*	Residential

Ref	Energy efficient features - Criteria and notes	Building type
21	Where the specific fan power for the mechanical ventilation system specified is: 1. ≤ 1.4 W/litre/second for central mechanical ventilation systems including heating only 2. ≤ 1.8 W/litre/second for central mechanical ventilation systems including heating and cooling AND The system: 1. Has a form of variable flow control fitted, i.e. variable speed drives. 2. Can be controlled in accordance with the recommendations of ASHRAE Standard 90.1. OR No mechanical ventilation (systems required as part of national building regulations are excluded from the requirements). *Note: Where the mechanical ventilation systems specified for the non-residential building are simple and more akin to the systems specified in item 20 on the previous page, then the criteria listed for item 20 should be applied to the assessment instead.*	Non-residential
22	Where a method of heat recovery is integrated into the design of the mechanical ventilation system it must: 1. Achieve a heat recovery efficiency of at least 75%. 2. Have a form of variable flow control fitted, i.e. variable speed drives. 3. Be controlled in accordance with the recommendations of ASHRAE Standard 90.1. *Note: Where the building is naturally ventilated this criterion is not applicable.*	

Checklist A6

See Wst 02 Recycled aggregates on page 313.

To demonstrate that the local best practice guidance for defining "granular fill and capping as a high grade use" is appropriate, the local guidance or standard must cover the requirements set out in Table 71 below and Table 72 below. Note: The extent and scope of this local guidance or standards will be checked by BRE waste experts to ensure that the overall effect is equivalent to the BREEAM requirements.

Table 71: Sampling and testing of processed or recovered product

Property description	Basic principle
General description	-
Aggregate composition (including organics)	Visual sorting of the plus 8mm fraction.
Particle size and grading	Size distribution of particles in an aggregate sample determined using test sieves (sieves meeting a national or equivalent standard for test sieves).
Fines content	Percentage of aggregate by mass passing a 0.063mm sieve.
Particle shape	Determination of the proportion (by mass) of flat or elongated particles.

Table 72: Requirement for additional testing of processed or recovered aggregate products by end use (note that tests and properties given in brackets are only required where the test is relevant to the end application or the local climate or is considered otherwise essential)

Test or property	Basic principle
(Surface abrasion resistance)	Determination through testing of the ability of aggregate particles to retain their shape characteristics under construction conditions and traffic (when relevant to the end use).
(Alkali silica reaction)	Aggregate reactivity in concrete (RILEM AAR3 or equivalent method) where there is concern about the possibility that the aggregate is alkali reactive.
(Resistance to freezing and thawing)	Resistance to fragmentation due to freezing and thawing action. Accelerated freeze-thaw test, magnesium sulfate soundness value or equivalent method.
(Polishing resistance)	Susceptibility of an aggregate to polishing (resistance to smoothing or loss of surface friction) when relevant to end use.
Bulk density	Determination of the loosely compacted bulk density of oven dry aggregate.
(Bearing capacity)	Determination of strength or bearing capacity of compacted aggregate or soil. Relevant to use of unbound aggregates in building or road foundations.
(Chlorides)	Determination of water soluble chloride content (relevant to use in concrete or mortar).

Test or property	Basic principle
Evidence that there is no release of dangerous substances	In particular emission of radioactivity, release of heavy metals, release of polyaromatic hydrocarbons. Evidence to be provided when required and in case of doubt.
Water solubility	Water solubility of aggregate (percentage by mass).
(Organic contamination)	Relevant to use in mortar or concrete. Determination of constituents affecting the setting and hardening of concrete; presence of lightweight organic contaminators.
Particle density	Specific gravity or relative density of aggregate.
(Plasticity of fines)	A high proportion of plastic fines may be detrimental in asphalt or road construction. Testing may not be necessary where the total fines content of the aggregate does not exceed an agreed value which has been determined from local satisfactory use. Where the amount of fines may be considered plastic or harmful, apply one of the following or other equivalent method: (a) sand equivalent value; (b) plasticity index; or (c) methylene blue value.
(Resistance to fragmentation or impact)	Test to assess resistance of aggregate particles to degradation under impact.
(Resistance to heat or thermal shock)	Relevant to application of aggregate in asphalt or bitumen. Change in physical properties of aggregates subjected to 700°C environment.
Sulfates and sulphides	When required, determination of acid soluble sulfate or total sulfur.
Water absorption	Increase in mass of a sample of oven dried aggregate due to the penetration of water into the water accessible voids.

Checklist A7

See LE 01 Site selection on page 339.

Table 73: Checklist A7-1 - Likelihood of significant contamination on site

Item No	Questions	Response	
Instruction: Items 1–5 below can be used to determine the likelihood of significant contamination being present in or on the ground across the total site for the purposes of a rapid evaluation against the LE 01 Site selection: Criterion 3 requirements: — If the construction zone records a YES against any of the questions then nationally recognised strategies for investigation of contamination should be followed, or where such strategies do not exist, a robust site investigation, risk assessment and appraisal should be carried out by a competent contaminated-land specialist covering the requirements of Table 74 on the facing page as a minimum. — If NO is recorded against all questions for the construction zone, then the site may be defined as having no significant contamination and further investigation is not required; in such a case the credit cannot be awarded. This checklist is a simple review and in such instances the option remains for a site investigation, risk assessment and appraisal to be carried out as defined in Table 74 where the client wishes to do so.			
1	Is the site registered by the local authority or any other appropriate organisation as contaminated?	Yes	No
2	Does the site have any historical or previous uses that may have caused the site to become contaminated (see LE 01 Site selection – Additional information on page 342 and also Checklist A7-3 below)? Where this cannot be answered because of a lack of information please tick 'yes', i.e. assume the worst case scenario.	Yes	No
3	Is the site within 250m of landfill (e.g. active, not active, capped)?	Yes	No
4	Is the site known or suspected to be contaminated (e.g. have studies already been undertaken on the site)?	Yes	No
5	Does the local authority or other appropriate organisation possess any information on the site that may give suspicions of contamination? Where this cannot be answered because of a lack of information please tick 'yes', i.e. assume the worst case scenario.	Yes	No

Table 74: Checklist A7-2 - Scope of site investigation, risk assessment and appraisal report

Item No	Content	Response	
Section 1: Preliminary investigation (desk study and site reconnaissance)			
Instruction: Historical research and review of available information from sources such as archives, plans and records from regulatory authorities to discover the past and current activities at a site and in the surrounding area to determine the potential for the presence of contamination. If the preliminary investigation gives cause to believe there may be contamination (or no records can be found) then further more detailed investigations will be required (sections 2 and 3). If not, then the site will not be considered contaminated for the purposes of this BREEAM issue and the credit cannot be awarded. The study must be carried out by a contaminated-land specialist as defined in the relevant definitions; ISO 10381:5[87] gives guidance on what the preliminary investigation should cover. For the purposes of BREEAM it should cover the following as a minimum:			
1.1	Purpose and aim of study.	Yes	No
1.2	Site location and layout plans.	Yes	No
1.3	Appraisal of site history.	Yes	No
1.4	Assessment of environmental setting, covering: — Geology, hydrogeology, hydrology — Industrial activity — Location of controlled waters (canals, estuaries, lakes, ponds, rivers, springs, aquifers) — Pollution incidents, landfill sites within 250m etc.	Yes	No
1.5	Assessment of current or proposed site use and surrounding land uses.	Yes	No
1.6	Review of any previous site contamination studies (desk-based or intrusive) or remediation works.	Yes	No
1.7	Preliminary (qualitative) assessment of risks: — Appraisal of potential contaminant sources, pathways and receptors — Conceptual site model — Identification of significant contamination.	Yes	No
1.8	Recommendations for intrusive contamination investigation if necessary.	Yes	No
Section 2: Site investigation report			
Instruction: The report must investigate each aspect highlighted by the desk study, this comprises exploratory holes constructed using the most appropriate method for the site to investigate the local subsurface strata (see ISO 10381-5:2005 for further information). The report must cover the following as a minimum:			

Item No	Content	Response	
2.1	Site investigation methodology: — Methods of investigation — Plan showing exploration locations — Justification of exploration locations — Sampling and analytical strategies.	Yes	No
2.2	Results and findings of investigation: — Ground conditions (soil and groundwater) — Discussion of soil, groundwater and surface water contamination.	Yes	No
2.3	Risk assessment: — As a minimum, based on contaminant pathway receptor model — Takes account of severity of consequences and likelihood of occurrence.	Yes	No
2.4	Where applicable, recommendations for remediation based on: — Proposed site use — Risk assessment findings — Technical and financial appraisal.	Yes	No
Section 3: Options for remediation			
Instruction: If remediation is deemed necessary following the site investigation, then a site-specific remediation methodology must be produced and followed. Consultation with the regulatory authorities may be required to ensure satisfactory design and implementation of the remediation programme. The report must cover the following as a minimum:			
3.1	Detailed outline of the works to be carried out: — Type, form and scale of contamination to be remediated — Remediation methodology — Site plans or drawings — Phasing of works and approximate timescales.	Yes	No
3.2	Consents, agreements and licences (discharge consents, waste management licence etc.).	Yes	No
3.3	Site management procedures to protect site neighbours, environment and amenity during works: — Health and safety procedures — Dust, noise and odour controls — Control of surface run-off.	Yes	No
3.4	Details of how the works will be validated to ensure the remediation objectives have been met: — Sampling strategy — Use of on site observations, visual or olfactory evidence — Chemical analysis — Proposed clean-up standards (i.e. contaminant concentrations).	Yes	No

Table 75: Checklist A7-3 - Previous site uses which can cause significant contamination

Polluting activity	Y/N	Polluting activity	Y/N	Polluting activity	Y/N
A list of the most common polluting activities and types of land contamination can be found in the list below or in Table 1 of the UNEP document: 'Identification and Management of Contaminated sites, A methodological guide'[88], UNEP and ADEME, ADEME editions, Paris, 2005 (www.unep.fr/scp/waste/land.htm)					
Agricultural uses		Manufacturing of asbestos		Timber and timber products industry	
Chemical works		Metal processing		Use as a scrap metal store	
Energy industry - Power stations		Paper, pulp and printing industries		Waste disposal	
Engineering and manufacturing processes		Petrol stations		Waste management facility	
Extractive industry and mineral processing		Premises for dry cleaning		Wood preserving yards	
Food processing industry		Production of metal		Works non-specified	
Gas works		Production of non-metals and their products		Demolition of buildings for any of the above uses	
Glass making and ceramics		Railway land		Mining	
Hospitals and cemeteries		Road vehicle maintenance		Waste management	
Infrastructure		Rubber industry		Mills	
Laboratories		Sewerage treatment		Oil refineries	
Landfill		Textile industry			

Schedule of changes to the scheme document

The BREEAM International New Construction Technical Manual may, from time to time, be revised and reissued. A reissue of a BREEAM version may be required for the following reasons:

1. To clarify criteria, compliance notes or schedule of evidence requirements
2. To update a reference or relevant definition
3. To update or amend calculation procedures
4. To amend the scope to allow for the inclusion of additional building types

This document provides details of any additions or changes made to the BREEAM International New Construction Version 6 scheme that have resulted in a reissue of the technical manual. It is important to note that in general a reissue does not result in changes, deletions or additions to the main assessment criteria or assessment issues. Fundamental changes to assessment criteria are typically made as part of a formal scheme update, resulting in a new BREEAM scheme version.

Scheme document reference	Version	Date
SD250	6.0.0	01/12/2021

Where a client or assessor has been referencing an issue of the Technical Manual that has subsequently been superseded, they may either continue to use and reference the superseded issue of the Technical Manual or, if deemed appropriate by the assessor, switch to the latest issue. When submitting their certification report the BREEAM Assessor must clarify in their report which issue of the Technical Manual they have used to complete the formal assessment of the building. If two different issues were used throughout the course of the assessment, reference the latest issue used.

Endnotes

1 For some assessment issues the number of credits available will vary by building type. Furthermore, some issues may not be applicable to certain building types or buildings which do not contain a particular function or area, e.g. a laboratory.
2 For schools and higher education buildings, see also Appendix B – Scope and education buildings.
3 For residential institutions, see also Appendix C – Scope and residential institutions.
4 ISO 15686-5:2008. Buildings and constructed assets. Service life planning - Part 5: Life cycle costing.
5 ISO 9972:2015 Thermal performance of buildings - Determination of air permeability of buildings - Fan pressurisation method
6 The Soft Landings Framework, for better briefing, design, handover and building performance in-use, Usable Buildings Trust (UBT), BSRIA BG 4/2009.
7 BREEAM 2011 and Soft Landings, an interpretation note for clients and designers, BSRIA BG 28/2011
8 CIBSE Lighting Guide LG10 Daylighting and window design, 1999.
9 EN 13779:2007 Ventilation for non-residential buildings - Performance requirements for ventilation and room-conditioning systems
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11 World Health Organization, Regional Office for Europe. Selected pollutants: WHO guideline for indoor air quality Internet. 2010 cited 2015 Oct 26. Available from: www.who.int/indoorair/publications/9789289002134/en/
12 ISO 16000-2:2006 Indoor air. Part 2: Sampling strategy for formaldehyde (2006). International Organization for Standardisation (ISO).
13 ISO 16000-3:2011 Indoor air. Part 3: Determination of formaldehyde and other carbonyl compounds in indoor air and test chamber air - Active sampling method (2011). International Organization for Standardisation (ISO).
14 European Concerted Action on Indoor Air Quality and its Impact on Man – Report No. 11: Guidelines for Ventilation Requirements in Buildings (1992). Commission of the European Communities.
15 ISO 16000-5:2007 Indoor air. Part 5: Sampling strategy for volatile organic compounds (VOCs) (2007). International Organization for Standardisation (ISO).
16 ISO 16000-6:2011 Indoor air. Part 6: Determination of volatile organic compounds in indoor and test chamber air by active sampling on Tenax TA® sorbent, thermal desorption and gas chromatography using MS or MS-FID (2011). International Organization for Standardisation (ISO).
17 ISO 16017-1:2001 Indoor, ambient and workplace air - Sampling and analysis of volatile organic compounds by sorbent tube or thermal desorbtion or capillary gas chromatography - Part 1: Pumped sampling (2001). International Organization for Standardisation (ISO).
18 EN 16402:2013 Paints and varnishes - Assessment of emissions of substances from coatings into indoor air - Sampling conditioning and testing (2013). European Committee for Standardisation (CEN).
19 ISO 16000-9:2006 Indoor air. Part 9 - Determination of the emission of volatile organic compounds from building products and furnishing - Emission test chamber method (2006). International Organization for Standardisation (ISO).
20 CEN/TS 16516:2013 Construction products - Assessment of release of dangerous substances - determination of emissions into indoor air (2013). European Committee for Standardisation (CEN).
21 Standard method for the testing and evaluation of volatile organic chemical emissions from indoor sources using environmental chambers Version 1.1 (Emission testing method for California Specification 01350) (2010). California Department of Public Health (CDPH).
22 ISO 16000-9:2006 Indoor air. Part 9 - Determination of the emission of volatile organic compounds from building products and furnishing - Emission test chamber method (2006). International Organization for Standardization (ISO).
23 CEN/TS 16516:2013 Construction products - Assessment of release of dangerous substances - determination of emissions into indoor air (2013). European Committee for Standardization (CEN).
24 Standard method for the testing and evaluation of volatile organic chemical emissions from indoor sources using environmental chambers Version 1.1 (Emission testing method for California Specification 01350) (2010). California Department of Public Health (CDPH).

25 EN 717-1:2004 Wood-based panels - Determination of formaldehyde release - Part 1: Formaldehyde emission by the chamber method (2004). European Committee for Standardisation (CEN).
26 EN 13999-1:2013 Adhesives - Short term method for measuring the emission properties of low-solvent or solvent-free adhesives after application - Part 1: General procedure (2013). European Committee for Standardisation (CEN).
27 EN 13999-2:2013 Adhesives - Short term method for measuring the emission properties of low-solvent or solvent-free adhesives after application - Part 2: Determination of volatile organic compounds (2013). European Committee for Standardisation (CEN).
28 EN 13999-3:2007+A1:2009 Adhesives - Short term method for measuring the emission properties of low-solvent or solvent-free adhesives after application - Part 3: Determination of volatile aldehydes (2009). European Committee for Standardisation (CEN).
29 EN 13999-4:2007+A1:2009 Adhesives - Short term method for measuring the emission properties of low-solvent or solvent-free adhesives after application - Part 4: Determination of volatile diisocyanates (2009). European Committee for Standardisation (CEN).
30 EN 16402:2013 Paints and varnishes - Assessment of emissions of substances from coatings into indoor air - Sampling conditioning and testing (2013). European Committee for Standardization (CEN).
31 EN 717-1:2004 Wood-based panels - Determination of formaldehyde release - Part 1: Formaldehyde emission by the chamber method (2004). European Committee for Standardization (CEN).
32 ISO 10580:2010 Resilient, textile and laminate floor coverings - Test method for volatile organic compound (VOC) emissions (2010). International Organization for Standardization (ISO).
33 EN 13999-1:2013 Adhesives - Short term method for measuring the emission properties of low-solvent or solvent-free adhesives after application - Part 1: General procedure (2013). European Committee for Standardization (CEN).
34 EN 13999-2:2013 Adhesives - Short term method for measuring the emission properties of low-solvent or solvent-free adhesives after application - Part 2: Determination of volatile organic compounds (2013). European Committee for Standardization (CEN).
35 EN 13999-3:2007+A1:2009 Adhesives - Short term method for measuring the emission properties of low-solvent or solvent-free adhesives after application - Part 3: Determination of volatile aldehydes (2009). European Committee for Standardization (CEN).
36 ISO/IEC 17025:2005 General requirements for the competence of testing and calibration laboratories (2005). International Organization for Standardisation (ISO).
37 EN 15457:2014 Paints and varnishes - Laboratory method for testing the efficacy of film preservatives in a coating against fungi (2014). European Committee for Standardisation (CEN).
38 EN 15458:2014 Paints and varnishes - Laboratory method for testing the efficacy of film preservatives in a coating against algae (2014). European Committee for Standardisation (CEN).
39 Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006 (2008). European Union.
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41 Approved Document F, Means of Ventilation, HM Government, 2010
42 ISO 16000-2:2006 Indoor air. Part 2: Sampling strategy for formaldehyde (2006). International Organization for Standardization (ISO).
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44 EN 12469:2000 Biotechnology. Performance criteria for microbiological safety cabinets, BSi.
45 EN ISO 14644-7:2004 Clean rooms and associated controlled environments. Separative devices (clean air hoods, gloveboxes, isolators and mini-environments)
46 PD CEN/TR 16589 Laboratory installations - Capture devices with articulated extract arm
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75 ISO 5149 Refrigerating systems and heat pumps – Safety and environmental requirements. ISO, 2014.
76 Ammonia Refrigeration Systems Code of Practice. Institute of Refrigeration, 2009.
77 Guideline Methods of Calculating TEWI Issue 2, (2006), BRA Specification.
78 Energy Technology List
79 EN 378-1 Refrigerating systems and heat pumps - Safety and environmental requirements Part 1: Basic requirements, definitions, classification and selection criteria. 2008 + A2:2012
80 EN 15502-1:2012 Gas-fired heating boilers Part 1: General requirements and tests.
81 EN 14792:2005 Stationary Source emissions - Determination of mass concentration of nitrogen oxides (NO_X) - Reference method: Chemiluminescence.
82 C697 The SuDS Manual. CIRIA, 2007.
83 Flood Estimation Handbook. Centre for Ecology and Hydrology, 1999.
84 Nursery school or education means full-time or part-time education suitable for children who have not attained compulsory school age (whether provided at schools or elsewhere), i.e. facilities or buildings for the teaching of children who are between the ages of two or three to five years old.
85 Children's centres are multi-agency service hubs where young children and their families can receive early education, full day childcare, parental support and child and family health services, such as access to health visitors

and health screening. Children's centres will often be allied to a local primary school, on or adjacent to the school site.

86 Adapted from Design & Access Statements: How to write read and use them (CABE, 2006)

87 ISO 10381-5:2005, Soil quality - Sampling - Part 5: Guidance on the procedure for the investigation of urban and industrial sites with regard to soil contamination

88 UNEP and ADEME, Identification and Management of Contaminated sites, A methodological guide, ADEME editions, Paris, 2005 (http://www.unep.fr/scp/waste/land.htm)

BREEAM®

www.breeam.com

BREEAM International New Construction

Version 6.0

Technical Manual – SD250

PRÁZDNA STRANA

Podmienky a pravidlá

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Ochranné známky

BRE, BRE Global, BREEAM, Smartwaste a Green Guide sú ochranné známky, ktoré vlastní spoločnosť BRE alebo BRE Global a nesmú sa používať bez písomného súhlasu spoločnosti BRE alebo BRE Global.

Poďakovanie

BREEAM International New Construction Version 6 bolo možné vytvoriť vďaka pokračujúcemu úsiliu mnohých zanietených zamestnancov skupiny BRE Group, prevádzkovateľov národných schém (NSO), členov technickej pracovnej skupiny, posudzovateľov BREEAM, zákazníkov a tých, ktorí reagovali na naše konzultačné výzvy a stretnutia alebo poskytli spätnú väzbu iným spôsobom. Spoločnosť BRE Global tiež vyjadruje svoju vďaku tým, ktorí podporujú BREEAM tak, že pokračujú v špecifikácii a uplatňovaní tejto metódy a prispievajú k udržateľnému stavebnému prostrediu.

Obrázok na obálke: Budova Flow v Prahe - prvá budova v Českej republike, ktorá získala hodnotenie BREEAM Outstanding v rámci BREEAM International New Construction 2016.

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Obsah

Materiály

Zoznam tabuliek

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O spoločnosti BRE Global

Spoločnosť BRE Global Ltd (súčasť skupiny BRE Group) je nezávislý schvaľovací orgán tretej strany, ktorý ponúka certifikáciu požiarnych, bezpečnostných a trvalo udržateľných produktov a služieb na medzinárodnom trhu.

Poslaním spoločnosti BRE Global je „chrániť ľudí, majetok a planétu“. Pri dosahovaní tohto cieľa sa

zameriavame na nasledovné:

1. Výskum a tvorba noriem
2. Testovanie a certifikácia v oblasti protipožiarnej ochrany, elektroniky, bezpečnosti a udržateľnosti
3. Vývoj metód posúdenia udržateľnosti na svetovej úrovni
4. Uskutočňovanie výskumu a poradenstva pre klientov a regulačné orgány
5. Propagácia štandardov a poznatkov v celom priemysle prostredníctvom publikácií a podujatí
6. Vypracovanie a zabezpečovanie školení

Testovanie a schvaľovanie produktov spoločnosti BRE Global vykonávajú uznávaní odborníci v našich svetovo uznávaných testovacích laboratóriách.

Spoločnosť BRE Global je správcom viacerých popredných svetových značiek vrátane nasledovných:

1. Building Research Establishment's Environmental Assessment Method (BREEAM) - popredná svetová metóda environmentálneho hodnotenia budov.
2. LPCB (Loss Prevention Certification Board) na schvaľovanie požiarnych a bezpečnostných produktov a služieb.

Spoločnosť BRE Global Ltd je obchodnou dcérskou spoločnosťou BRE Trust, registrovanej výskumnej a vzdelávacej charitatívnej organizácie, ktorá vlastní skupinu BRE Group.

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O tomto programovom dokumente

Tento dokument je technickou príručkou pre BREEAM International New Construction, verzia 6. Popisuje normu environmentálnej výkonnosti, podľa ktorej sa môžu hodnotiť nové budovy na celom svete a získať hodnotenie BREEAM New Construction.

Tento programový dokument a informácie, ktoré sú v ňom uvedené, sú určené na používanie vyškolenými, kvalifikovanými a licencovanými medzinárodnými posudzovateľmi BREEAM v súlade s procedurálnymi a prevádzkovými požiadavkami BREEAM (ako je opísané v prevádzkovej príručke BREEAM, SD5070) podľa podmienok licencie BREEAM. Tento dokument by mali posudzovatelia, ktorí nie sú členmi BREEAM, používať len na referenčné účely.

Zmeny tohto dokumentu schémy BREEAM

Tento dokument schémy podlieha revízii a spoločnosť BRE Global ho môže z času na čas znovu vydať. Nižšie je uvedený harmonogram uverejnenia jednotlivých vydaní tohto dokumentu.

Odkaz na dokument schémy	Verzia	Dátum
SD250	6.0.0	01/12/2021

Úvod do BREEAM

BREEAM (Building Research Establishment's Environmental Assessment Method) je prvou schémou hodnotenia udržateľnosti zastavaného prostredia na svete a v Spojenom kráľovstve výrazne prispel k tomu, že sa pri navrhovaní, výstavbe a používaní budov venuje pozornosť udržateľnosti. BREEAM je v súčasnosti medzinárodným štandardom, ktorý je prispôsobený, prevádzkovaný a uplatňovaný na miestnej úrovni prostredníctvom siete medzinárodných prevádzkovateľov, posudzovateľov a odborníkov z odvetvia. Uplatňovanie a používanie systému BREEAM pomáha klientom merať a znižovať vplyvy ich budov na životné prostredie a tým vytvárať aktíva s vyššou hodnotou a nižším rizikom.

K dnešnému dňu sa BREEAM použil na certifikáciu viac ako 590 000 hodnotení budov počas ich celého životného cyklu a uplatňuje sa vo viac ako 85 krajinách.

Ciele BREEAM

- Zmierniť vplyv životného cyklu budov na životné prostredie.
- Umožniť uznanie budov podľa ich prínosu pre životné prostredie.
- Poskytnúť dôveryhodné environmentálne označenie pre budovy.
- Stimulovať dopyt a vytvárať hodnotu pre udržateľné budovy, stavebné produkty a dodávateľské reťazce.

Ciele BREEAM

- Zabezpečiť uznanie budov s malým vplyvom na životné prostredie na trhu.
- Zabezpečenie začlenenia najlepších environmentálnych postupov do plánovania, navrhovania, výstavby a prevádzky budov a širšieho zastavaného prostredia.
- Definovať spoľahlivú, nákladovo efektívnu normu výkonnosti, ktorá prevyšuje normu požadovanú predpismi.
- Vyzvať trh, aby poskytoval inovatívne a nákladovo efektívne riešenia, ktoré minimalizujú vplyv budov na životné prostredie.
- Zvýšiť povedomie vlastníkov, používateľov, projektantov a prevádzkovateľov o výhodách a hodnote budov so zníženým vplyvom životného cyklu na životné prostredie.
- Umožniť organizáciám preukázať pokrok pri dosahovaní podnikových environmentálnych cieľov.

BREEAM je vyvinutý a funguje tak, aby spĺňal nasledujúce základné princípy:

- Zabezpečiť **kvalitu životného prostredia** prostredníctvom dostupného, holistického a vyváženého merania vplyvov na životné prostredie.
- Používať **kvantifikované opatrenia** na určenie kvality životného prostredia.
- Prijať **flexibilný prístup**, ktorý podporuje a odmeňuje pozitívne výsledky a vyhýba sa predpísaným
- riešeniam.
  Využívať **spoľahlivé vedecké poznatky** a **osvedčené postupy** ako základ pre kvantifikáciu a kalibráciu nákladovo efektívnej a prísnej výkonnostnej normy na definovanie kvality životného prostredia.
- Zohľadniť **sociálne a ekonomické prínosy** dosiahnutia zahrnutých environmentálnych cieľov.
- Poskytnúť **spoločný medzinárodný rámec** hodnotenia, ktorý je prispôsobený „miestnemu“ kontextu vrátane regulácie, klímy a odvetvia.
- **Integrovať stavebných odborníkov** do vývojových a prevádzkových procesov, aby sa zabezpečilo široké porozumenie a dostupnosť.
- Prijať **certifikáciu tretích strán**, aby sa zabezpečila nezávislosť, dôveryhodnosť a konzistentnosť značky.
- Ak je to možné, prijať **existujúce priemyselné nástroje**, postupy a iné normy, aby sa podporil vývoj v oblasti politiky a technológií, využili sa existujúce zručnosti a znalosti a minimalizovali sa náklady.
- Technicky a prevádzkovo sa zosúladiť s **príslušnými medzinárodnými normami** vrátane súboru noriem o „udržateľnosti stavebných prác“, ktoré pripravil technický výbor Európskeho výboru pre normalizáciu CEN/TC 350, ako aj s ďalšími medzinárodnými iniciatívami, ktoré podporujú harmonizáciu pri hodnotení výkonnosti udržateľnosti aktív stavebného prostredia počas ich životného cyklu.
- Spolupracovať s reprezentatívnym okruhom **zainteresovaných strán** s cieľom informovať o prebiehajúcom vývoji v súlade so základnými princípmi a tempom zmien výkonnostných noriem (zohľadnenie politiky, regulácie a schopnosti trhu).

Ciele, zámery a zásady BREEAM sú obsiahnuté v základnej technickej norme, ktorú vlastní a spravuje spoločnosť BRE Global. Uplatňuje sa prostredníctvom súboru schém BREEAM, ktoré pokrývajú aspekty životného cyklu zastavaného prostredia. Tieto schémy sú vyvíjané na miestnej úrovni a prevádzkované viacerými rôznymi organizáciami v jednotlivých krajinách, ktoré označujeme ako prevádzkovateľov národných schém (NSO).

Úplný zoznam prevádzkovateľov národných schém a schém BREEAM nájdete na webovej stránke BREEAM(www.breeam.com).

Schémy BREEAM

Spoločnosť BRE Global je prevádzkovateľom národnej schémy BREEAM v Spojenom kráľovstve. Vyvíjame a prevádzkujeme niekoľko systémov BREEAM pre Spojené kráľovstvo a na medzinárodnej úrovni, ktoré sú určené na hodnotenie environmentálnych vlastností stavieb v rôznych fázach životného cyklu a tieto zahrňujú:

- **BREEAM Communities** pre hlavné plánovanie väčšieho spoločenstva budov. **CEEQUAL** pre stavebné inžinierstvo, infraštruktúru, terénne úpravy a práce na verejných priestranstvách.
- **BREEAM New Construction** pre novostavby obytných a neobytných budov.
- **Home Quality Mark** pre novostavby obytných budov (len v Spojenom kráľovstve).
- **BREEAM In-Use** pre existujúce budovy v prevádzke.
- **BREEAM Refurbishment and Fit-out** pre vybavenie a rekonštrukciu bytových a nebytových budov.

Nezávislí posudzovatelia BREEAM, vyškolení, kvalifikovaní a licencovaní spoločnosťou BRE Global, môžu vykonať hodnotenie BREEAM s použitím tohto dokumentu schémy a súvisiacich nástrojov na podávanie správ a výpočty.

Po dokončení hodnotenia a zabezpečení kvality vydá spoločnosť BRE Global certifikát BREEAM. Certifikát BREEAM poskytuje formálne overenie, že posudzovateľ vykonal hodnotenie budovy v súlade s požiadavkami tejto schémy a jej normami a postupmi kvality .

Certifikát BREEAM poskytuje všetkým zainteresovaným stranám záruku, že hodnotenie budovy podľa BREEAM v čase certifikácie presne odráža jej výkonnosť podľa normy BREEAM.

Každý, kto si chce overiť hodnotenie budovy podľa BREEAM, môže tak urobiť buď kontrolou certifikátu BREEAM, ktorý obsahuje certifikačnú značku (pozri Obr. 1 nižšie), alebo vyhľadaním zoznamu budov BREEAM na stránke BREEAM Projects(www.breeam.com/projects). Príklady certifikátu BREEAM pre novostavby nájdete v Prílohe F - Príklady certifikátov BREEAM New Construction na str. 414.

Obr. 1: Certifikačná značka BREEAM

Zabezpečenie kvality a konzistentnosti

Všetky schémy BREEAM sú vypracované a používané prevádzkovateľmi národných schém v súlade s Kódexom pre udržateľné zastavané prostredie. Kódex pre udržateľné zastavané prostredie je súbor strategických zásad a požiadaviek, ktoré definujú integrovaný prístup k projektovaniu, riadeniu, hodnoteniu a certifikácii environmentálnych, sociálnych a ekonomických vplyvov zastavaného prostredia.

Tento Kódex sa interpretuje prostredníctvom základného procesu a technických noriem BREEAM. V týchto prepojených dokumentoch sú stanovené požiadavky, ktoré musí spĺňať systém, ktorý je v súlade s kódexom, aby sa k nemu mohol pripojiť. Normy zabezpečujú, aby všetky vyhovujúce schémy používané prevádzkovateľmi národných schém používali spoločný vedecký a výkonnostný základ a zároveň aby tieto schémy zodpovedali miestnym požiadavkám, normám a postupom.

S cieľom zabezpečiť kompetentnosť, nestrannosť a výkonnosť sú všetci prevádzkovatelia národných schém povinní udržiavať činnosť schém v súlade s medzinárodne dohodnutými normami a požiadať o akreditáciu od národného akreditačného orgánu.

Spoločnosť BRE Global je akreditovaný certifikačný orgán UKAS (Akreditačná služba Spojeného kráľovstva) (č. 0007). Rozsah našej akreditácie podľa normy ISO/IEC 17065 „Hodnotenie súladu - Požiadavky na orgány certifikujúce produkty, procesy a služby“ si môžete overiť na webovej stránke UKAS, ktorá zahŕňa aj schému BREEAM SD123 „Environmentálne hodnotenie zastavaného prostredia - certifikácia procesu“.

Spoločnosť BRE Global je tiež certifikovaná podľa normy ISO 9001 „Systémy riadenia kvality - požiadavky“ pre všetky svoje činnosti súvisiace s BREEAM.

Spoločnosť BRE Global ako akreditovaný certifikačný orgán má otvorenú a zodpovednú štruktúru riadenia.

BREEAM prevádzkuje sériu technických pracovných skupín, ktoré poskytujú spoločnosti BRE Global prístup k celému radu odborníkov, ktorí môžu preskúmať normy a schémy spoločnosti BRE Global s cieľom zabezpečiť ich spoľahlivosť z vedeckého, technického a trhového hľadiska, ako aj zabezpečiť, aby bol vývoj noriem a schém otvorený väčšej externej a nezávislej kontrole.

O BREEAM International New Construction, verzia 6

Schéma BREEAM International New Construction, verzia 6, je metóda hodnotenia založená na výkone a certifikačná schéma pre nové budovy.

Hlavným cieľom BREEAM International New Construction, verzia 6, je spoľahlivým a nákladovo efektívnym spôsobom zmierniť vplyv životného cyklu nových budov na životné prostredie. Dosahuje sa prostredníctvom integrácie a využívania schémy klientmi a ich projektovými tímami v kľúčových fázach procesu projektovania a výstavby.

Klient môže prostredníctvom posudzovateľa BREEAM a procesu certifikácie BRE Global nezávisle a spoľahlivo merať, hodnotiť a zohľadňovať výkonnosť svojej novej budovy v porovnaní s osvedčenými postupmi.

Výkonnosť sa kvantifikuje pomocou viacerých individuálnych opatrení a súvisiacich kritérií, ktoré sa vzťahujú na celý rad environmentálnych otázok, pozri Tabuľku 1 nižšie, ktoré sú nakoniec vyjadrené ako jedno certifikované hodnotenie BREEAM, t. j. značka . Ak chcete zistiť, ako sa vypočítava hodnotenie BREEAM, pozri časť Bodovanie a hodnotenie budov hodnotených podľa BREEAM na str. 28.

Tabuľka 1: Environmentálne časti a otázky hodnotenia v BREEAM International New Construction, verzia 6

Časť	Otázky hodnotenia
Riadenie	Súhrn projektu a návrh Plánovanie nákladov životného cyklu a životnosti Zodpovedné stavebné postupy Uvedenie do prevádzky a odovzdanie Následná starostlivosť
Zdravie a pohoda	Vizuálny komfort Kvalita vnútorného vzduchu Bezpečná izolácia v laboratóriách Tepelný komfort Akustické vlastnosti Prístupnosť Nebezpečenstvá Súkromný priestor Kvalita vody
Energia	Zníženie spotreby energie a emisií uhlíka Monitorovanie energie Vonkajšie osvetlenie Projekt s nízkymi emisiami uhlíka Energeticky účinné chladiarenské skladovanie Energeticky účinné dopravné systémy Energeticky účinné laboratórne systémy Energeticky účinné zariadenia Priestor na sušenie Flexibilná reakcia na strane dopytu
Doprava	Dostupnosť verejnej dopravy Blízkosť občianskej vybavenosti Alternatívne možnosti dopravy Maximálna kapacita parkovacích miest Plán dopravy Domáca kancelária

Úsek	Otázky hodnotenia
Voda	Spotreba vody Monitorovanie vody Zisťovanie únikov vody Zariadenia na efektívne využívanie vody
Materiály	Vplyvy životného cyklu Pevné terénne úpravy a ochrana hraníc Zodpovedné získavanie materiálov Izolácia Projektovanie pre trvanlivosť a odolnosť Účinnosť materiálov
Odpad	Nakladanie so stavebným odpadom Prevádzkový odpad Špekulatívne povrchové úpravy podláh a stropov Prispôsobenie sa klimatickým zmenám Funkčná prispôsobivosť
Využívanie pôdy a ekológia	Výber miesta Ekologická hodnota miesta a ochrana ekologických prvkov Minimalizácia vplyvu na existujúcu ekológiu miesta Zlepšenie ekológie miesta Dlhodobý vplyv na biodiverzitu
Znečistenie	Vplyv chladív NO_x emisie Odtok povrchovej vody Zníženie nočného svetelného znečistenia Zníženie hlučnosti
Inovácie	Inovácie

Kedy a ako sa zapojiť do BREEAM International New Construction

Načasovanie zapojenia a používania schémy BREEAM International New Construction prostredníctvom posudzovateľa BREEAM je nevyhnutné na zabezpečenie bezproblémovej integrácie metodiky do procesu obstarávania novostavieb. Bez toho bude ohrozená schopnosť optimalizovať environmentálne vlastnosti budovy z hľadiska nákladov a dosiahnuť požadované hodnotenie BREEAM. Vymenovanie posudzovateľa BREEAM alebo odborného poradcu na začiatku projektu pomôže dosiahnuť cieľové hodnotenie bez zbytočného vplyvu na flexibilitu projektových rozhodnutí, rozpočtov a potenciálnych riešení.

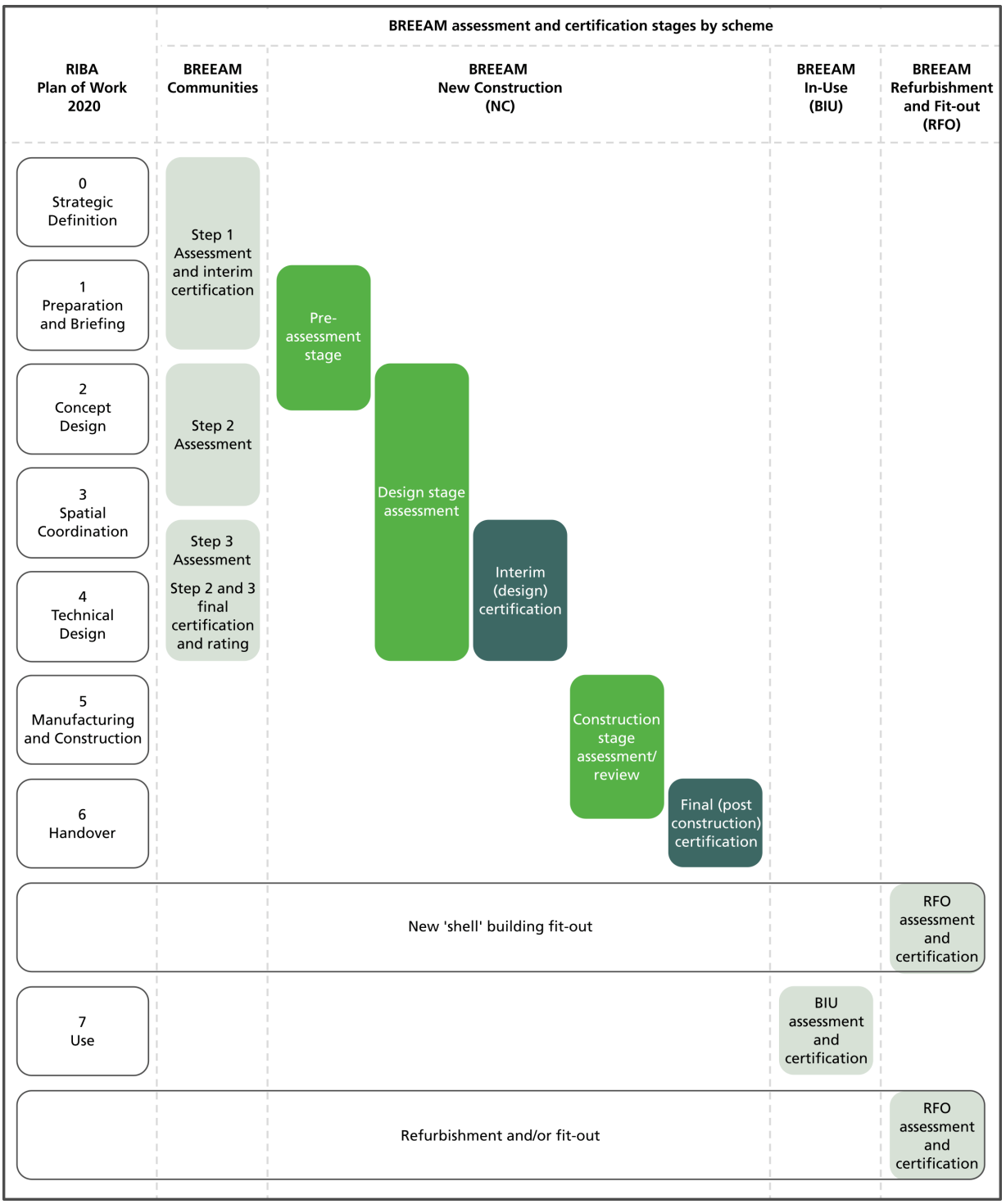
Obr. 2 na nasledujúcej strane slúži na zdôraznenie prepojenia medzi fázami hodnotenia a certifikácie BREEAM International New Construction, verzia 6 a Plánom práce RIBA 2020.

Tento obrázok môže klientom pomôcť pri načasovaní ich zapojenia do schémy BREEAM a vymenovania posudzovateľa BREEAM.

Klienti si môžu pozrieť aktuálne zoznamy licencovaných posudzovateľov BREEAM International New Construction a odborníkov na poradenstvo BREEAM na projektoch BREEAM(www.breeam.com/projects).

Je dôležité si uvedomiť, že BREEAM odráža predovšetkým celkovú výkonnosť budovy, a nie len možnosti alebo obmedzenia kladené na konkrétne zainteresované strany zapojené do procesu obstarávania. To znamená, že klient, projektový tím, hlavný dodávateľ a posudzovateľ BREEAM, ako aj ďalšie odborné disciplíny, zohrávajú dôležitú úlohu počas celého procesu obstarávania, ak sa má dosiahnuť požadovaná úroveň výkonnosti, ktorá sa prejaví v certifikovanom hodnotení BREEAM.

Za orientáciu stručného popisu k udržateľnosť je v prvom rade zodpovedný klient. Na uľahčenie tohto procesu spoločnosť BRE Global odporúča, aby klienti a ich projektové tímy spolupracovali s posudzovateľom BREEAM alebo odborníkom na poradenstvo BREEAM najneskôr vo fáze prípravy a krátkej fáze (RIBA Fáza 1 alebo ekvivalent) a v ideálnom prípade, ak je to možné, aj skôr. Zabezpečí sa tým, že sa stanovia realistické ciele, ktoré sa dajú splniť, že sa vymedzia a pochopia príslušné zodpovednosti a že sa budú hľadať a uplatňovať nízkonákladové alebo beznákladové riešenia vplyvov na životné prostredie všade tam, kde je to možné.



Obr. 2: Fázy hodnotenia a certifikácie BREEAM a fázy Plánu práce Kráľovského inštitútu britských architektov (RIBA)

Ako používať BREEAM International New Construction

Tento dokument schémy BREEAM je technický dokument, ktorý bol vytvorený s cieľom:

1. Umožniť kvalifikovaným a licencovaným posudzovateľom BREEAM dokončiť posúdenie podľa BREEAM a urobiť hodnotenie
2. Umožniť spoločnosti BRE Global dokončiť preskúmanie zabezpečenia kvality hodnotiacej správy posudzovateľa BREEAM v súlade s normami, pre ktoré je BRE Global akreditovaný.
3. Pôsobiť ako pomôcka pre odborníkov na poradenstvo BREEAM (AP) pri uľahčovaní práce projektového tímu, pokiaľ ide o definovanie, monitorovanie a úspešné dosiahnutie požadovaného hodnotenia BREEAM
4. Pôsobiť ako referencia pre klientov a členov projektového tímu, ktorých navrhovaná budova je predmetom hodnotenia BREEAM.

Dokument schémy je rozdelený na nasledujúce časti:

1. Úvod do BREEAM
2. Rozsah schémy BREEAM International New Construction
3. Bodovanie a hodnotenie budov hodnotených podľa BREEAM vrátane minimálnych noriem a referenčných hodnôt hodnotenia BREEAM
4. Dôkazné požiadavky BREEAM
5. Kritériá hodnotenia
6. Prílohy
7. Kontrolné zoznamy

V časti **Rozsah** sú opísané typy budov a stupne hodnotenia, na ktoré možno uplatniť túto schému BREEAM. Prílohy A až F poskytujú dodatočné usmernenia pre stanovenie rozsahu pre konkrétne typy budov a projektov. V časti Rozsah môžu klienti a posudzovatelia BREEAM skontrolovať, či ide o správnu schému BREEAM, ktorú majú použiť pre svoj projekt.

V časti **Bodovanie a hodnotenie** je znázornené, ako sa meria a hodnotí posudzovaná výkonnosť budovy. Uvádzajú sa v nej referenčné úrovne hodnotenia BREEAM, minimálne normy BREEAM pre každú úroveň hodnotenia a váhy environmentálnych častí BREEAM. Obsahuje aj popis problematiky hodnotenia BREEAM a „kreditov“ vrátane „inovačných kreditov“ BREEAM a spôsobu výpočtu a vyjadrenia výkonnosti na základe týchto kreditov ako hodnotenia BREEAM.

Upozorňujeme, že na účely formálneho hodnotenia a certifikácie musí skutočnú výkonnosť budovy podľa BREEAM určiť posudzovateľ BREEAM pomocou príslušných nástrojov na podávanie správ a výpočtu BREEAM.

V časti **Požiadavky na dôkazy BREEAM** sú uvedené usmernenia pre posudzovateľov a projektové tímy o rôznych typoch a formách dôkazov, ktoré posudzovateľ BREEAM vyžaduje na preukázanie súladu s kritériami BREEAM. Toto zahŕňa popis toho, prečo BREEAM vyžaduje kontrolovateľný dôkazový materiál.

Časť **Kritériá hodnotenia** obsahuje jednotlivé otázky hodnotenia BREEAM, ktoré sú rozdelené do 10 environmentálnych častí. Každá otázka definuje úroveň výkonnosti (kritériá hodnotenia), na základe ktorej hodnotená budova preukazuje súlad (s použitím príslušných informácií o projekte, t. j. dôkazov) s cieľom získať príslušný počet dostupných kreditov BREEAM.

Väčšina bodov a kreditov BREEAM je obchodovateľná, čo znamená, že klient a jeho projektový tím si môžu vybrať, na čo sa zamerajú, aby dosiahli požadované hodnotenie BREEAM. Niektoré otázky BREEAM majú minimálne normy, čo znamená, že na dosiahnutie konkrétneho hodnotenia BREEAM je potrebné dosiahnuť špecifické kredity alebo kritériá (minimálne normy BREEAM sú uvedené v časti Bodovanie a hodnotenie budov hodnotených podľa BREEAM).

Každá otázka BREEAM je štruktúrovaná nasledovne:

1. **Informácie o otázke**: Obsahuje odkaz na hodnotenú otázku, názov, počet dostupných kreditov[1] a informáciu, či je daná otázka súčasťou minimálnych štandardov BREEAM.
2. **Cieľ:** V tejto časti sa uvádza všeobecný cieľ otázky a vplyv, ktorý sa ňou meria alebo zmierňuje.
3. **Kritériá hodnotenia**: V tomto dokumente sú uvedené referenčné hodnoty a kritériá úrovne výkonnosti dobrej a najlepšej praxe. Ak budova spĺňa kritériá hodnotenia, ktoré určil posudzovateľ BREEAM, môže byť udelený príslušný počet kreditov BREEAM. Niektoré otázky majú kritériá vzorovej úrovne; ak budova preukáže, že spĺňa kritériá vzorovej úrovne, môže jej byť udelený kredit za inováciu BREEAM (viac informácií nájdete v časti Inovácie na str. 401). K dispozícii je maximálne 10 inovačných kreditov.
4. **Kontrolné zoznamy a tabuľky**: Táto časť obsahuje všetky kontrolné zoznamy a tabuľky, na ktoré sa odkazuje v časti o kritériách hodnotenia. Môže zahŕňať tabuľky referenčných hodnôt alebo kritériá výkonnosti špecifické pre jednotlivé typy budov.
5. **Poznámky** o súlade Tieto poznámky poskytujú dodatočné usmernenia, ktoré podporujú uplatňovanie a výklad hlavných kritérií hodnotenia vrátane spôsobu hodnotenia súladu na konkrétnom mieste alebo pre konkrétny typ budovy alebo projektu, napr. len pre plášť.
6. **Metodológia**: Táto časť obsahuje opis metodológie použitej na určenie počtu kreditov BREEAM dosiahnutých za danú úroveň výkonnosti budovy. Zahŕňa napríklad postupy výpočtu alebo usmernenie o tom, ako systémy, normy alebo kvalifikácie, ktoré nie sú súčasťou schémy BREEAM a na ktoré sa odkazuje v kritériách hodnotenia, súvisia s týmito kritériami.
7. **Dôkazy:** Táto časť popisuje typy informácií o projekte, ktoré musí poskytnúť projektový tím alebo klient posudzovateľovi BREEAM, aby bolo možné overiť výkonnosť budovy na základe kritérií posúdenia a tak odôvodniť udelenie príslušného počtu kreditov BREEAM. V časti o dôkazných požiadavkách BREEAM sú uvedené ďalšie usmernenia týkajúce sa dôkazných požiadaviek.
8. **Dodatočné informácie:** Táto časť obsahuje všetky ďalšie informácie relevantné pre uplatňovanie kritérií hodnotenia vrátane definície pojmov použitých v otázke hodnotenia alebo zdrojov ďalších informácií, ktoré môžu byť užitočné pri riešení danej otázky.

V **prílohách** sú uvedené podporné informácie týkajúce sa rozsahu pôsobnosti schémy BREEAM International New Construction, verzia 6, alebo jej kritérií hodnotenia.

Rozsah BREEAM International New Construction

Schéma BREEAM International New Construction sa môže použiť na posúdenie vplyvu životných cyklov nových budov na životné prostredie vo fáze projektovania a výstavby. „Novostavba“ je definovaná ako stavba, ktorej výsledkom je nová samostatná stavba alebo nová prístavba k existujúcej stavbe, ktorá sa po dokončení prác začne po prvýkrát prevádzkovať alebo používať.

Táto verzia schémy BREEAM International New Construction sa vzťahuje na nové budovy v krajinách, ktoré nemajú prevádzkovateľa národnej schémy BREEAM (NSO). Poznámka: Ak má krajina národnú organizáciu pre environmentálne hodnotenie, ktorá ponúka miestnu schému špecifickú pre danú krajinu a vhodnú pre daný typ budovy, musí sa pred BREEAM International uprednostniť jej schéma. Informácie o krajinách s miestnymi systémami nájdete v Prílohe A a tiež na webovej stránke BREEAM(www.breeam.com).

Typy budov, ktoré možno hodnotiť pomocou BREEAM International New Construction

Typy budov, ktoré sa môžu posudzovať a hodnotiť pomocou tejto verzie schémy, sú uvedené v Tabuľke 2 nižšie. Ďalšie usmernenia pre niektoré z uvedených typov budov sú uvedené aj v prílohách (pozri poznámky pod čiarou).

Tabuľka 2: Zoznam typov budov, na ktoré sa vzťahuje BREEAM International New Construction, verzia 6

Sektor	Typ budovy	Popis
Bytové	Bytové	Obydlia pre jednu rodinu Obydlia pre viaceré rodiny
Obchodné	Kancelárie	Všeobecné kancelárske budovy Kancelárie s výskumnými a vývojovými priestormi (len laboratóriá kategórie 1)
	Priemyselné	Priemyselná jednotka - skladovanie alebo distribúcia Priemyselná jednotka - spracovanie, výroba alebo servis vozidiel
	Maloobchod	Obchod alebo nákupné centrum Maloobchodný park alebo sklad Poskytovatelia služieb „cez pult“, napr. finančné, realitné a pracovné agentúry a stávkové kancelárie Výstavný priestor Reštaurácia, kaviareň a bar Donáška teplých jedál
Vzdelávanie[2]		Predškolské zariadenia Školy a vysoké školy Univerzity Inštitúcie vyššieho vzdelávania
Bytové zariadenia[3]	Dlhodobý pobyt	Bytový dom s poskytovaním starostlivosti Chránené bývanie Vysoká škola alebo škola s bytovým zariadením (internát) Zabezpečené bytové zariadenie miestnej samosprávy Vojenské kasárne

Sektor	Typ budovy	Popis
Hotely a bytové zariadenia	Krátkodobý pobyt	Hotel, ubytovňa, súkromný hotel a penzión Zabezpečené školiace centrum Rezidenčné školiace stredisko
Neštandardné typy budov	Na mieru	Spoločenské alebo návštevnícke centrum Radnica alebo občianske centrum Konferenčné zariadenie Divadlo alebo koncertná sála Športové alebo rekreačné zariadenie (s bazénom alebo bez neho) Knižnica Kino Nemocnice a iné zdravotnícke zariadenia Väznica Súd Policajná stanica Požiarna stanica Dopravný uzol (autobusová alebo železničná stanica) Galéria alebo múzeum Miesto pre bohoslužby Výskum a vývoj (laboratóriá kategórie 2 alebo 3 - iné ako vyššie vzdelávanie)

Výstavba zmiešaných objektov a typov budov

Stavby, ktoré pozostávajú z viacerých samostatných budov rôznych funkčných typov alebo z jednej budovy, ktoré plnia niekoľko rôznych funkcií, napr. kancelárie a maloobchod alebo maloobchod a bytové domy, si zvyčajne vyžadujú hodnotenie, a to hodnotenie a certifikát BREEAM pre každú jednotlivú budovu alebo funkčné použitie v rámci jednej budovy.

Toto je potrebné preto, lebo BREEAM definuje rozdielne kritériá a referenčné hodnoty pre niektoré otázky hodnotenia v závislosti od typu, funkcie a použitia budovy. V záujme zachovania porovnateľnosti a konzistentnosti hodnotenia a posúdenia BREEAM sa preto vyžaduje samostatné hodnotenie a posúdenie pre každý typ budovy, funkciu alebo použitie v rámci projektu.

Ďalšie pokyny k definovaniu budov so zmiešaným využitím na účely hodnotenia BREEAM nájdete v Usmernení 10 *Budovy so zmiešaným použitím a podobné budovy (alebo jednotky*).

Čiastočne novostavby, čiastočne projekty rekonštrukcie

V prípade projektov, ktoré sú kombináciou nových a rekonštruovaných priestorov, závisí výber systému od rozsahu novostavieb a rekonštrukčných prác.

V prípade menších projektov, ktorých celková plocha je menšia ako 1000 m², sa môže vykonať jedno hodnotenie BREEAM, ktoré sa vzťahuje na novostavbu aj na rekonštruované priestory. Výber schémy BREEAM New Construction alebo BREEAM Refurbishment and Fit-out bude vychádzať z toho, ktorá z nich (novostavba alebo rekonštrukcia) predstavuje väčšinu hodnotenej podlahovej plochy.

V prípade väčších projektov sa môže vykonať jedno hodnotenie novostavby, pretože zrekonštruované priestory by potom museli spĺňať náročnejšie kritériá novostavby. Ak ide prevažne o rekonštrukciu s prístavbou novostavby, potom schéma BREEAM pre rekonštrukcie a vybavenie obsahuje prahové hodnoty, na základe ktorých je možné vykonať jedno hodnotenie pre rekonštrukcie a vybavenie.

Ak nová prístavba presahuje tieto prahové hodnoty a nie je vhodné vykonať jedno hodnotenie BREEAM pre rekonštrukcie a vybavenie, existujú dve možnosti, ako je popísané nižšie.

Možnosť 1: Samostatné hodnotenia BREEAM pre novostavby a BREEAM pre rekonštrukcie a vybavenie

V rámci možnosti 1 sa vykonajú dve samostatné hodnotenia BREEAM, pričom hodnotenie BREEAM New Construction sa vykoná na novej prístavbe a posúdenie BREEAM pre rekonštrukcie a vybavenie sa vykoná na existujúcej rekonštrukcii alebo vybavení budovy. Je možné získať dva samostatné certifikáty a hodnotenia, v ktorých sa uvedie výkonnosť novostavby a existujúcej budovy, ktorá sa rekonštruuje alebo vybavuje.

Možnosť 2: Kombinované hodnotenia BREEAM na mieru pre novostavby a pre rekonštrukcie a vybavenie

V rámci možnosti 2 spoločnosť BRE Global vypracuje dokument s prílohou kritérií na mieru, v ktorom sa pre konkrétne otázky BREEAM určí, ktoré otázky a kritériá hodnotenia sa vzťahujú na projekt čiastočnej novostavby a čiastočnej rekonštrukcie. Odkazuje sa na príručku BREEAM pre rekonštrukcie a vybavenie a príručku BREEAM New Construction. Pre projekt je tiež vytvorený na mieru šitý nástroj na hodnotenie a podávanie správ.

V rámci vypracovania kritérií na mieru pre otázku Ene 01 Zníženie spotreby energie a emisií uhlíka na str. 150 umožňujeme, aby sa novostavba hodnotila podľa schémy New Construction a rekonštrukcia podľa schémy RFO. Nástroj vykoná plošne vážené priemerné skóre.

Pri určovaní vhodnej možnosti pre projekt čiastočnej novostavby, čiastočnej rekonštrukcie by mal posudzovateľ BREEAM preskúmať rozsah navrhovaných prác a zvážiť najmä rozsah rekonštruovaných prvkov, t. j. či ide o významnú rekonštrukciu, či dôjde k významnej zmene využitia a či tepelné a konštrukčné prvky budovy zostanú „v existujúcom stave“? Na základe týchto informácií by mal posudzovateľ klientovi poradiť najvhodnejšiu možnosť, ktorá verzia alebo schéma BREEAM je najprimeranejšia na maximalizáciu environmentálnych vlastností budovy .

Typy hodnotenia BREEAM International New Construction

V rámci schémy International New Construction je definovaných niekoľko typov hodnotenia, ktoré sa môžu použiť na posúdenie a hodnotenie vlastností novej budovy. Sú to:

- Nebytové priestory
  - Plne vybavené
  - Plášť a jadro (pozri Prílohu D - Hodnotenie plášťa a jadra projektu na strane 409)
  - Len plášť (pozri Prílohu D - Hodnotenie plášťa a jadra projektu na str. 409)
- Bytové priestory
  - Úplne vybavené (pozri Prílohu E - Uplatniteľnosť BREEAM New Construction na obydlia pre jednu rodinu a obydlia pre viaceré rodiny, čiastočne a úplne vybavené na str. 412)
  - Čiastočne vybavené (pozri Prílohu E - Uplatniteľnosť BREEAM New Construction na obydlia pre jednu rodinu a obydlia pre viaceré rodiny domy, čiastočne a úplne vybavené na str. 412).

Kritériá hodnotenia týchto možností sú jasne uvedené v tejto technickej príručke. Posudzovateľ by mal v spolupráci s klientom a projektovým tímom podľa potreby určiť, ktorý typ hodnotenia BREEAM je pre jeho projekt relevantný.

Podobné typy budov (alebo jednotiek) na tom istom mieste

V rámci jednej hodnotiacej správy BREEAM je možné posúdiť a hodnotiť viacero samostatných, ale podobných nebytových budov alebo jednotlivých jednotiek v rámci väčšieho stavebného celku. Ďalšie pokyny k typu hodnotenia nájdete v Usmernení 10 *Budovy so zmiešaným použitím a podobné budovy (alebo jednotky)*.

Plášť a jadro, špekulatívne budovy

Nezariadené, „špekulatívne“ novostavby, často označované ako budovy s plášťom a jadrom, možno hodnotiť pomocou schémy BREEAM International New Construction. Ďalšie podrobnosti o uplatňovaní schémy na tieto typy nových budov nájdete v Prílohe D - Hodnotenie plášťa a jadra projektu na str. 409.

Neštandardné typy budov

Neštandardné typy budov

Ak je typ budovy vyžadujúci hodnotenie uvedený ako neštandardná budova v Rozsahu BREEAM International New Construction: Tabuľka 2 na str. 23 alebo nie je vôbec uvedená, ale môže byť stále hodnotená pomocou BREEAM International New Construction. Takéto typy budov si budú vyžadovať vypracovanie súboru individuálnych kritérií hodnotenia, ktoré sa budú používať v spojení s touto schémou International New Construction. V takýchto prípadoch by sa posudzovatelia a klienti BREEAM mali obrátiť na spoločnosť BRE Global, kde im poradia a poskytnú informácie o ďalšom postupe. Ďalšie podrobnosti sú uvedené v Usmernení 23 *BREEAM Proces na mieru*.

Dátové centrá

Dátové centrá sa v súčasnosti v Spojenom kráľovstve hodnotia podľa BREEAM Data Centres 2010 (SD5068). V medzinárodnom meradle sa vyžaduje vypracovanie kritérií na mieru, ako je podrobne uvedené vyššie pre iné neštandardné budovy. V čase vytvárania tohto dokumentu spoločnosť BRE Global aktualizuje schému pre dátové centrá a vypracuje prílohu pre dátové centrá k tejto schéme International New Construction, takže nebude potrebné vypracovať kritériá na mieru.

Zahrnuté etapy životného cyklu budovy

Túto schému je možné použiť na posúdenie a hodnotenie environmentálnych vplyvov novostavby (vrátane vonkajších plôch daného miesta) v nasledujúcich fázach životného cyklu:

1. Fáza projektovania novostavby (DS) - vedie k predbežnému hodnoteniu BREEAM a certifikátu o hodnotení
2. Fáza po ukončení výstavby (PCS) - vedie ku koncovému hodnoteniu BREEAM a certifikátu o hodnotení.

Fáza projektovania

Hodnotenie vo fáze projektovania (DS) a predbežné hodnotenie BREEAM potvrdzuje výkonnosť navrhovanej novej budovy v etape projektovania životného cyklu. Hodnotenie a certifikácia sa v ideálnom prípade uskutočnia pred začatím prevádzky na danom mieste. Hodnotenie BREEAM je v tejto fáze označené ako „predbežné“, pretože nepredstavuje koncovú hodnotu novej budovy BREEAM.

Na dokončenie hodnotenia v tejto fáze musí byť projekt v takom štádiu, aby boli k dispozícii príslušné informácie o projekte, ktoré umožnia posudzovateľovi BREEAM hodnotiť a overiť výkonnosť budovy na základe kritérií definovaných v tomto dokumente schémy. Predbežné hodnotenie DS sa preto dokončí a osvedčí vo fáze návrhu schémy alebo podrobného návrhu.

Fáza po ukončení výstavby (PCS)

Posúdenie po ukončení výstavby (PCS) a hodnotenie BREEAM potvrdzuje konečnú výkonnosť budovy v štádiu výstavby novej budovy v rámci životného cyklu. Po praktickom dokončení stavebných prác sa dokončí a certifikuje záverečné hodnotenie PCS.

Existujú dva prístupy k hodnoteniu vo fáze po ukončení výstavby:

1. Preskúmanie po ukončení výstavby (PCR) na základe ukončeného predbežného posúdenia fázy návrhu
2. Hodnotenie po ukončení výstavby (PCA).

PCR slúži na potvrdenie toho, že výkonnosť a hodnotenie budovy v skutočnom stave sú v súlade s posúdením certifikovaným v predbežnej fáze projektovania. Ak nebolo vykonané predbežné hodnotenie DS, t. j. nebolo certifikované a vyžaduje sa hodnotenie a posúdenie BREEAM, môže sa vykonať úplné hodnotenie po ukončení výstavby.

Nezahrnuté etapy životného cyklu budovy

Schéma BREEAM International New Construction nie je určená na hodnotenie environmentálnych vplyvov budov v nasledujúcich fázach životného cyklu, a preto nie je vhodná na:

1. Projekty infraštruktúry (pozri CEEQUAL)
2. Projekty hlavného plánovania (pozri BREEAM Communities)
3. Rekonštrukcia a vybavenie existujúcich budov (pozri BREEAM International Refurbishment and Fit-out)
4. Existujúca budova v prevádzke alebo existujúca neobývaná budova (pozri BREEAM In-Use)

Bodovanie a hodnotenie budov posudzovaných podľa BREEAM

Referenčné hodnoty BREEAM

Celkovú výkonnosť projektu hodnoteného podľa BREEAM určuje niekoľko prvkov:

1. Rozsah hodnotenia
2. Referenčné úrovne BREEAM
3. Minimálne normy BREEAM
4. Váhy environmentálnych častí
5. Otázky hodnotenia BREEAM a kredity

Na nasledujúcich stranách je zhrnuté, ako sa tieto prvky spájajú do hodnotenia BREEAM pre projekt. Nasleduje popis a príklad popisujúci metodológiu pre výpočet hodnotenia.

Referenčné hodnoty BREEAM pre projekty hodnotené podľa schémy BREEAM International New Construction, verzia 6 , sú nasledovné:

Tabuľka 3: Referenčné hodnoty pomocou BREEAM

Hodnotenie BREEAM	% skóre
VYNIKAJÚCI	≥ 85
VÝBORNÝ	≥ 70
VEĽMI DOBRÝ	≥ 55
DOBRÝ	≥ 45
VYHOVUJÚCI	≥ 30
NEKLASIFIKOVANÝ	< 30

Referenčné hodnoty BREEAM umožňujú klientovi a všetkým ostatným zainteresovaným stranám porovnať výkonnosť budovy s inými budovami rovnakého typu s hodnotením BREEAM a s typickou výkonnosťou fondu budov v oblasti udržateľnosti.

Každé hodnotenie BREEAM predstavuje v tomto ohľade vo všeobecnosti výkon zodpovedajúci nasledovnému:

1. Vynikajúci: Menej ako 1 % najlepších budov (inovátor)
2. Výborný: 10 % najlepších budov (osvedčené postupy)
3. Veľmi dobrý: Najlepších 25 % budov (pokročilé osvedčené postupy)
4. Dobrý: Najlepších 50 % budov (stredné osvedčené postupy)
5. Vyhovujúci: Najlepších 75 % budov (štandardné osvedčené postupy)

Neklasifikované hodnotenie BREEAM predstavuje výkon, ktorý nie je v súlade s BREEAM, pretože nespĺňa minimálne normy výkonu BREEAM pre kľúčové environmentálne otázky alebo celkové prahové skóre potrebné na dosiahnutie aspoň hodnotenia „vyhovuje“.

Minimálne normy

V záujme zachovania flexibilného systému BREEAM sa pri posudzovaní a hodnotení projektu uplatňuje prístup založený na „vyváženom hodnotení“. To znamená, že na dosiahnutie určitej úrovne výkonu je možné obchodovať s väčšinou kreditov BREEAM, t. j. nedodržanie požiadaviek v jednej oblasti môže byť kompenzované dodržaním požiadaviek v inej oblasti, aby sa dosiahlo cieľové hodnotenie BREEAM.

Aby sa však zabezpečilo, že pri snahe o získanie konkrétneho hodnotenia sa nezanedbá výkon v základných environmentálnych otázkach, BREEAM stanovuje minimálne normy výkonu v kľúčových oblastiach, napr. v oblasti energií, vody, odpadu atď. Je dôležité mať na pamäti, že ide o minimálne prijateľné úrovne výkonu a nemali by sa nevyhnutne považovať za úrovne, ktoré predstavujú najlepšie postupy pre úroveň hodnotenia BREEAM.

Na dosiahnutie konkrétneho hodnotenia BREEAM je potrebné dosiahnuť minimálne celkové percentuálne skóre a dodržať minimálne normy, ktoré sú podrobne uvedené v Tabuľke 4 nižšie a ktoré sa vzťahujú na danú úroveň hodnotenia.

Tabuľka 4: Minimálne normy BREEAM podľa úrovne hodnotenia

Otázka BREEAM	**Minimálne normy podľa úrovne hodnotenia BREEAM**				
	Vyhovujúci	Dobrý	Veľmi dobrý	Výborný	Vynikajúci
Man 03 Zodpovedné stavebné postupy	Len kritérium 2 (Zdravie a bezpečnosť)	Len kritérium 2 (Zdravie a bezpečnosť)	Len kritérium 2 (Zdravie a bezpečnosť)	Jeden kredit (Ohľaduplná výstavba)	Dva kredity (Ohľaduplná výstavba)
Man 04 Uvedenie do prevádzky a odovzdanie	Žiadne	Žiadne	Žiadne	Kritérium 10 (Príručka pre používateľa budovy alebo domu)	Kritérium 10 (Príručka pre používateľa budovy alebo domu)
Man 05 Následná starostlivosť	Žiadne	Žiadne	Žiadne	Jeden kredit (sezónne uvedenie do prevádzky)	Jeden kredit (sezónne uvedenie do prevádzky)
Hea 01 Vizuálny komfort	Len kritérium 1 (vysokofrekvenčná záťaž)	Len kritérium 1 (vysokofrekvenčná záťaž)	Len kritérium 1 (vysokofrekvenčná záťaž)	Len kritérium 1 (vysokofrekvenčná záťaž)	Len kritérium 1 (vysokofrekvenčná záťaž)
02 Hea 02 Kvalita vzduchu v interiéri	Len kritérium 1 (bez azbestu)	Len kritérium 1 (bez azbestu)	Len kritérium 1 (bez azbestu)	Len kritérium 1 (bez azbestu)	Len kritérium 1 (bez azbestu)
Hea 06 Dostupnosť	Žiadne	Žiadne	Žiadne	Žiadne	Dva kredity (inkluzívny a prístupný projekt - len bytové domy a bytové zariadenia)

Otázka BREEAM	Minimálne normy podľa úrovne hodnotenia BREEAM				
	Vyhovujúci	Dobrý	Veľmi dobrý	Výborný	Vynikajúci
Hea 08 Súkromný priestor	Žiadne	Žiadne	Žiadne	Žiadne	Jeden kredit
Hea 09 Kvalita vody	Len kritérium 1 (minimalizovať riziko legionelózy)	Len kritérium 1 (minimalizovať riziko legionelózy)	Len kritérium 1 (minimalizovať riziko legionelózy)	Len kritérium 1 (minimalizovať riziko legionelózy)	Len kritérium 1 (minimalizovať riziko legionelózy)
Ene 01 Zníženie spotreby energie a emisií uhlíka	Žiadne	Žiadne	Žiadne	Štyri kredity (energetická hospodárnosť) ALEBO Štyri kredity - (Predpoveď prevádzkovej spotreby energie)*	Šesť kreditov (Energetická hospodárnosť) A Štyri kredity - (Predpoveď prevádzkovej spotreby energie)
Ene 02a Monitorovanie energie	Žiadne	Žiadne	Jeden kredit (Prvý čiastkový merací kredit)	Jeden kredit (Prvý čiastkový merací kredit)	Jeden kredit (Prvý čiastkový merací kredit)
Wat 01 Spotreba vody	Žiadne	Jeden kredit	Jeden kredit	Jeden kredit	Dva kredity
Wat 02 Monitorovanie vody	Žiadne	Iba kritérium 1 (vodomer v sieti)	Iba kritérium 1 (vodomer v sieti)	Iba kritérium 1 (vodomer v sieti)	Iba kritérium 1 (vodomer v sieti)
Mat 03 Zodpovedné obstarávanie stavebných produktov	Len kritérium 1 (legálne drevo)	Len kritérium 1 (legálne drevo)	Len kritérium 1 (legálne drevo)	Len kritérium 1 (legálne drevo)	Len kritérium 1 (legálne drevo)
Wst 01 Nakladanie so stavebným odpadom	Žiadne	Žiadne	Žiadne	Žiadne	Jeden kredit
Wst 03a Prevádzkový odpad	Žiadne	Žiadne	Žiadne	Jeden kredit	Jeden kredit
Wst 03b Prevádzkový odpad					

* V prípade „Predpovedania prevádzkovej spotreby energie“ v Ene 01 sa musí preukázať, že sa podstatne zlepšila prevádzková energetická hospodárnosť.

Váhy environmentálnych častí

Environmentálne váhy sú základom každej metódy environmentálneho hodnotenia budov, pretože poskytujú prostriedky na definovanie, a teda aj zoradenie relatívneho vplyvu environmentálnych otázok. V roku 2016 vyvinula spoločnosť BREEAM novú, nezávisle recenzovanú metodológiu váh, aby odvodila nové váhy kategórií na základe konsenzu, ktoré sa budú používať v schémach BREEAM prevádzkovaných spoločnosťou BRE Global (viac informácií nájdete v informačnom dokumente: Nová metodológia na generovanie váhových koeficientov kategórií BREEAM).

Tabuľka 5: Táto tabuľka ukazuje, ako sa môžu váhy líšiť v závislosti od typu projektu. V príklade je uvedený typ luxemburských váhových koeficientov

Environmentálna časť	Váha						
	Nebytové			Jednotlivé obytné domy		Viac obytných domov	
	Úplne vybavené	Len plášť:	Plášť a jadro	Čiastočne vybavené:	Úplne vybavené	Čiastočne vybavené:	Úplne vybavené
Riadenie	11,00 %	11,13 %	10,64 %	9,58 %	9,10 %	11,18 %	10,57 %
Zdravie a pohoda	19,00 %	12,66 %	13,87 %	21,64 %	21,70 %	21,58 %	21,49 %
Riziká	0,00 %	0,00 %	0,00 %	0,00 %	0,00 %	0,00 %	0,00 %
Energia	20,00 %	20,07 %	19,09 %	19,03 %	21,23 %	17,98 %	19,97 %
Doprava	6,00 %	8,50 %	6,77 %	5,74 %	6,13 %	6,10 %	6,41 %
Voda	7,00 %	3,30 %	7,90 %	6,69 %	6,36 %	6,32 %	6,73 %
Materiály	13,00 %	18,41 %	14,67 %	13,98 %	13,29 %	13,21 %	12,50 %
Odpad	6,00 %	7,43 %	6,77 %	5,65 %	5,37 %	6,10 %	5,77 %
Využívanie pôdy a ekológia	8,00 %	9,02 %	9,02 %	8,60 %	8,18 %	8,13 %	7,69 %
Znečistenie	10,00 %	6,54 %	12,28 %	9,10 %	8,65 %	9,38 %	8,87 %
Celkom	100,00 %	100 %	100 %	100 %	100 %	100 %	100 %
Inovácie (dodatočné)	10,00 %	10 %	10 %	10 %	10 %	10 %	10 %

Každá z uvedených environmentálnych častí pozostáva z rôzneho počtu hodnotených otázok a kreditov BREEAM (ako je opísané na inom mieste a podrobne definované v technických častiach tohto dokumentu schémy).

Prispôsobenie váhových koeficientov miestnym podmienkam

S cieľom poskytnúť váhové koeficienty prispôsobené miestnym podmienkam sa váhové koeficienty prehodnocujú pri prvom projekte, ktorý sa zaregistruje na hodnotenie v danej krajine alebo regióne. Tieto váhové koeficienty sa potom nastavia podľa potreby pre daný projekt a všetky ďalšie projekty v danej krajine alebo regióne počas platnosti aktuálnej verzie BREEAM International New Construction. Vývoj týchto váhových koeficientov vychádza zo spoľahlivých a nezávislých informácií poskytnutých „miestnymi odborníkmi“, ktorí poznajú miestne podmienky. Môže to byť člen projektového tímu, ak vie preukázať dostatočné znalosti environmentálnych podmienok regiónu alebo krajiny, alebo iná osoba alebo organizácia s príslušnými odbornými znalosťami.

Požadované informácie zostavuje posudzovateľ BREEAM pomocou formulára „Medzinárodné váhy BREEAM“ (k dispozícii v rámci projektov BREEAM). Posudzovateľ je zodpovedný za správne vyplnenie formulára „Environmentálne váhy“ a jeho odoslanie spoločnosti BRE Global, ktorá na základe týchto informácií vypracuje príslušné váhy pre danú krajinu alebo región.

Váhy sú prispôsobené na základe 10 technických kategórií, pričom kategórie sa považujú za „pevné“ alebo „premenlivé“. Pevné kategórie sú tie, ktoré sú definované ako kategórie s univerzálnym vplyvom, nezávislým od miestneho kontextu. Premenlivé kategórie sú tie, ktoré sú definované ako lokálne premenlivé v dôsledku sociálnych, environmentálnych, politických alebo ekonomických faktorov. Spoločnosť BRE Global zohľadní tieto faktory pri určovaní relatívnej dôležitosti technických častí.

Vplyv miesta

Okrem toho, že kultúra, hospodárstvo, klíma a pracovné postupy majú vplyv na váženie prisudzované častiam BREEAM a otázkam posúdenia (pozri Prispôsobenie váženia miestnym podmienkam vyššie), môžu tiež ovplyvniť vývoj kritérií a metódu posúdenia určitých otázok BREEAM.

Jedným z príkladov je možnosť recyklácie dažďovej vody v rámci hodnotenia BREEAM Wat 01 Spotreba vody na str. 253. V tomto prípade sa vyššie výkonnostné kritériá líšia podľa množstva dostupných zrážok. Posudzovateľ môže pomocou mapy na Obr. 4 na nasledujúcej strane (a ďalších informácií uvedených nižšie) určiť zónu, v ktorej sa budova nachádza a následne použiť túto klimatickú zónu na stanovenie vhodnej referenčnej hodnoty spotreby vody pre budovu v danej lokalite.

Na nasledujúcej mape sú vyznačené klimatické zóny Zeme podľa metódy Köppen-Geigerovej klasifikácie podnebia. Sú definované podľa rozsahu maximálnych a minimálnych teplôt, ako aj podľa celkového a sezónneho rozdelenia zrážok.

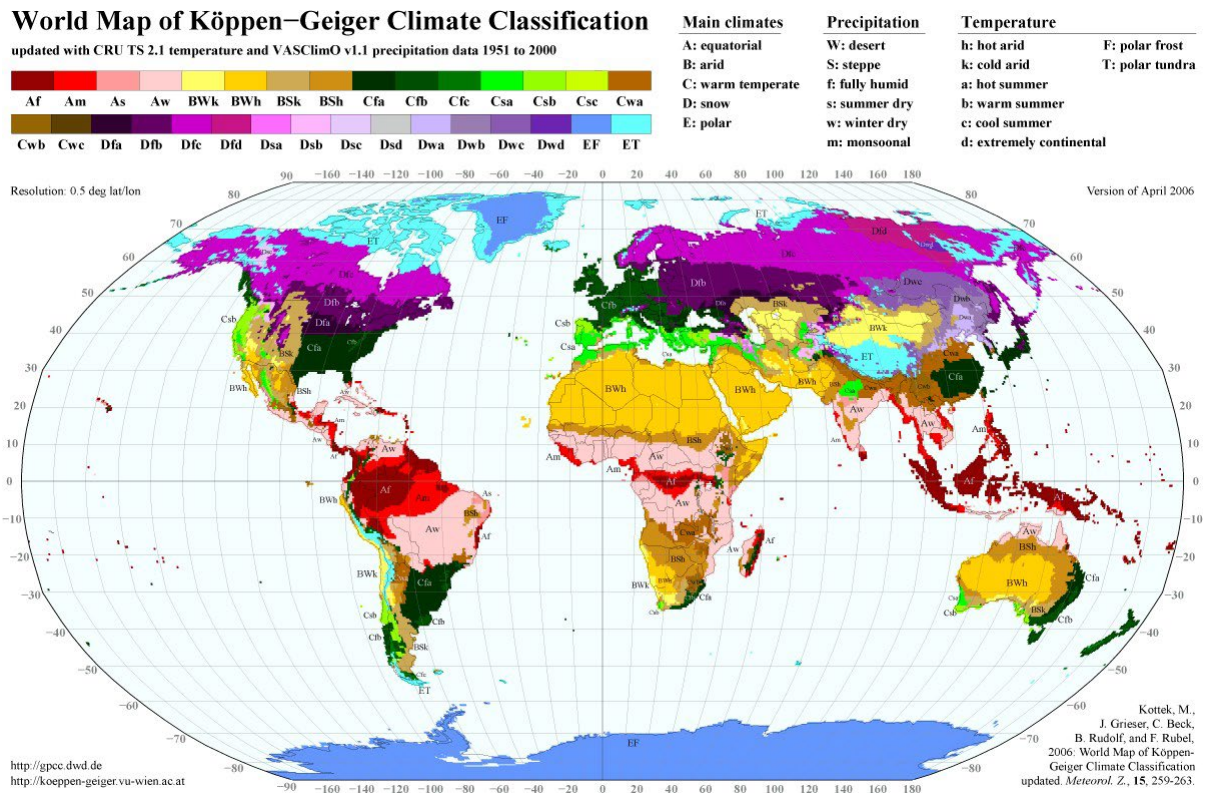
Na účely BREEAM sú klimatické zóny (pozri Obr. 3 na nasledujúcej strane) definované takto:

A. Rovníkové - tropické podnebie, kde sa teploty udržujú nad 18 °C
B. Suché podnebie (polosuché a púštne podnebie)
C. Teplé mierne podnebie - podnebie stredných zemepisných šírok (teplé, suché letá s chladnými, vlhkými zimami)
D. Sneh - mierny, spravidla od -3 °C do 10 °C (subarktické alebo mierne alpské oblasti a nízke zrážky)
E. Polárne - večne zamrznuté alebo tundrové podnebie

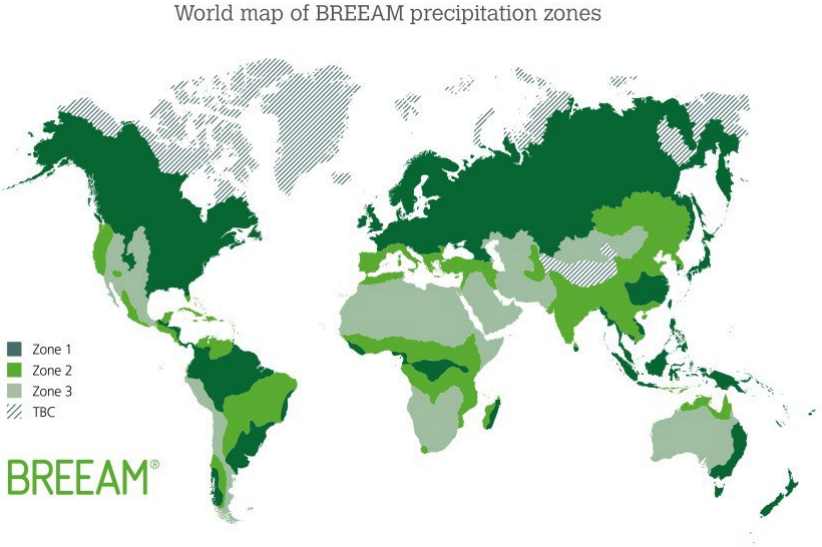
Na účely Wat 01 Spotreba vody na str. 253 sú zrážkové oblasti (pozri Obr. 4 na nasledujúcej strane) definované ako:

1. Zrážková zóna 1: zodpovedá Köppenovým zrážkovým oblastiam f (úplne vlhká) a m (monzúnová)
2. Zrážková zóna 2: zodpovedá Köppenovým zrážkovým oblastiam s (letná suchá) a w (zimná suchá)
3. Zrážková zóna 3: zodpovedá Köppenovým zrážkovým oblastiam S (step) a W (púšť)

Poradenstvo a usmernenie, ako vykonať klasifikáciu, nájdete na adrese: www.physicalgeography.net/fundamentals/7v.html.



Obrázok 3: Mapa sveta podľa Köppen-Geigerovej klimatickej klasifikácie



Obr. 4: Svetová mapa zrážkových zón BREEAM

Otázky hodnotenia BREEAM a kredity

BREEAM International New Construction, verzia 6, pozostáva z 57 jednotlivých hodnotiacich otázok, ktoré zahŕňajú deväť environmentálnych kategórií a desiatu kategóriu s názvom „Inovácie“ (popísané nižšie). Každá otázka sa týka konkrétneho environmentálneho vplyvu alebo otázky súvisiacej s budovou a je k nemu priradený určitý počet kreditov.

Kredity BREEAM sa udeľujú vtedy, ak budova preukáže, že spĺňa úrovne najlepších postupov definované pre danú problematiku, t. j. že zmiernila vplyv alebo v prípade Zdravia a pohody na str. 81, riešila konkrétny problém súvisiaci s používateľom budovy, napr. dobrý tepelný komfort, denné svetlo alebo akustiku.

Počet kreditov, ktoré sú k dispozícii pre jednotlivé otázky hodnotenia, sa líši a vo všeobecnosti platí, že čím vyšší je ich počet pre danú otázku, tým dôležitejšia je táto otázka z hľadiska zmiernenia jej vplyvu. Vo väčšine prípadov, keď je k dispozícii viacero kreditov, je počet udelených kreditov založený na kĺzavej stupnici alebo referenčnej hodnote, kde sú postupne vyššie štandardy výkonnosti budovy odmeňované vyšším počtom kreditov.

Je potrebné poznamenať, že okrem environmentálnych častí, celkového skóre a hodnotenia BREEAM, overená výkonnosť v jednotlivých hodnotených otázkach poskytuje používateľom aj dôveryhodný súbor kľúčových ukazovateľov výkonnosti budovy pre celý rad vplyvov na budovu, ktoré sa v nej prejavujú v prevádzkovej a stavebnej fáze. To znamená, že BREEAM je možné použiť okrem definovania celkových cieľov aj na definovanie úrovní výkonnosti na podporu špecifických cieľov organizačnej politiky pre jednotlivé environmentálne otázky. Pri stanovovaní projektových cieľov pomocou jednotlivých emisií a úrovní kreditov týmto spôsobom je potrebné postupovať opatrne, pretože to môže obmedziť flexibilitu projektovania a mať vplyv na náklady projektu.

Udeľovanie kreditov za inovácie

Jedným z cieľov BREEAM je podporovať inovácie v stavebníctve a jeho dodávateľskom reťazci. BREEAM to robí tak, že poskytuje dodatočné kredity za uznanie prínosov súvisiacich s udržateľnosťou alebo úrovňami výkonnosti, ktoré v súčasnosti nie sú uznané v rámci štandardných otázok a kritérií hodnotenia BREEAM. Týmto spôsobom BREEAM oceňuje budovy, ktoré presahujú rámec osvedčených postupov z hľadiska konkrétneho aspektu udržateľnosti, t. j. v prípade, že budova alebo jej obstarávanie preukázali inováciu.

Udeľovanie kreditov za inovácie umožňuje klientom a projektovým tímom zvýšiť výkonnosť ich budov v rámci BREEAM a okrem toho pomáha podporovať trh s novými inovatívnymi technológiami a konštrukčnými alebo stavebnými postupmi.

BREEAM udeľuje „inovačné kredity“ za inovácie v oblasti projektovania a obstarávania budov dvomi spôsobmi. Prvým je splnenie vzorových kritérií výkonnosti definovaných v rámci existujúcej otázky BREEAM, t. j. prekročenie štandardných kritérií hodnotenia BREEAM, a teda osvedčených postupov. Všimnite si, že nie všetky otázky hodnotenia majú kritériá vzorového výkonu. Druhým spôsobom je, že posudzovateľ BREEAM registrovaného projektu podá žiadosť spoločnosti BRE Global, aby sa konkrétna stavebná technológia alebo vlastnosť, dizajn alebo konštrukčná metóda alebo proces uznali ako „inovatívne“. Ak je žiadosť úspešná a následne sa overí súlad, môže sa udeliť „inovačný kredit“.

Za každý dosiahnutý „inovačný kredit“ je možné k celkovému skóre budovy pripočítať ďalšie 1 %. Maximálny počet „inovačných kreditov“, ktoré možno udeliť za jednu budovu, je 10; preto je maximálny možný dodatočný počet bodov za „inovácie“ 10 %. Koncové skóre BREEAM budovy bude obmedzené na 100 %. Inovačné kredity možno udeliť bez ohľadu na koncové hodnotenie budovy podľa BREEAM, t. j. možno ich udeliť na akejkoľvek úrovni hodnotenia BREEAM. Pozri Inn 01 Inovácie na str. 402, kde nájdete viac podrobností.

Miestne kódy a normy

Používanie miestnych kódov a noriem

Niektoré kritériá BREEAM vyžadujú súlad so špecifikovanými normami alebo dokumentmi o osvedčených postupoch. V niektorých krajinách môžu existovať miestne ekvivalenty týchto noriem a v týchto prípadoch BREEAM International umožňuje zamestnancom spoločnosti BRE Global s podporou posudzovateľov a projektového tímu preskúmať miestne normy v porovnaní s požiadavkami špecifikovanými v BREEAM a potvrdiť ich ekvivalenciu. Posudzovatelia musia poslať miestne normy na schválenie spoločnosti BRE Global. V ideálnom prípade budú príslušné časti noriem preložené do angličtiny; spoločnosť BRE Global však môže túto službu poskytnúť za poplatok.

Ak spoločnosť BRE Global schváli normu ako rovnocennú, miestna norma sa stane súčasťou schválených noriem pre danú krajinu, región alebo oblasť.

Zoznam schválených noriem a váh

Jednotlivé požiadavky na konkrétnu miestnu normu a zoznam schválených noriem sú uvedené v Zozname schválených noriem a váh (ASWL).

Každé hodnotenie BREEAM International musí pri predložení hodnotenia obsahovať verziu schválených noriem a zoznam váh, aby spoločnosť BRE Global mohla informovať, podľa ktorých noriem projektový tím pracoval a ktoré normy dodržal. Toto môže zahŕňať použitie „Pracovného hárku pre novú krajinu“ alebo, ak sa v danej krajine už uskutočnilo hodnotenie, „Pracovného hárku pre existujúcu krajinu“, ktorý sa upraví tak, aby vyhovoval konkrétnemu projektu.

Pre každé kritérium BREEAM, ktoré vyžaduje súlad s určenými normami alebo dokumentmi osvedčených postupov, je pravdepodobná kombinácia nasledujúcich troch situácií, keďže okolnosti sa v jednotlivých otázkach líšia.

1. Nie je špecifikovaná žiadna konkrétna miestna norma - projektový tím použije pri predkladaní hodnotenia zoznam schválených noriem a váh, aby informoval spoločnosť BRE Global, že bude pracovať podľa požiadaviek uvedených v kritériách alebo podľa predvolenej medzinárodnej normy.
2. Schválená miestna norma je špecifikovaná - pri predkladaní hodnotenia projektový tím používa schválené normy a váhové koeficienty, aby informoval spoločnosť BRE Global, že bude používať schválené miestne štandardy uvedené v „Pracovnom hárku pre existujúcu krajinu“. Tím musí tiež potvrdiť, že používané normy sú aktuálne.
3. Navrhuje sa neschválená miestna norma - pri najbližšej príležitosti projektový tím použije schválené normy a zoznam váh, aby informoval spoločnosť BRE Global, že bude pracovať podľa (zatiaľ neschválených) miestnych noriem. Tím bude musieť poslať príslušné časti normy spoločnosti BRE Global spolu s dôkazmi o jej spoľahlivosti. Poznámka: Proces schvaľovania miestnych noriem sa uskutočňuje vo veľmi skorých fázach hodnotenia projektu, t. j. pred predložením správy na certifikáciu, aby:
   a. Certifikácia nebude oneskorená a
   b. Projektový tím alebo klient majú istotu, podľa ktorých schválených noriem sa hodnotia vlastnosti ich budovy.

Ak spoločnosť BRE Global schváli miestny ekvivalent, pridá sa do „schválených noriem“ pre danú krajinu alebo región. Ak nie, pridá sa k „odmietnutým normám“ pre danú krajinu - je to uvedené pre informáciu a aby sa zabránilo duplicite.

Podrobnejšie informácie o tomto procese nájdete v prevádzkovej príručke BREEAM (SD5070), ktorá je k dispozícii v časti BREEAM Projects.

Výpočet hodnotenia budovy BREEAM

Posudzovateľ BREEAM musí určiť hodnotenie BREEAM pomocou príslušných hodnotiacich nástrojov a kalkulačiek. Výkonnosť v porovnaní so schémou BREEAM sa môže určiť aj pomocou nástroja BREEAM pre predbežné hodnotenie, ktorý je k dispozícii v časti BREEAM Projects. Licencovaný posudzovateľ BREEAM, ktorý rozumie všetkým podrobnostiam procesu, by mal informovať o každom odhade pred posúdením.

Postup určenia hodnotenia BREEAM je uvedený nižšie a príklad výpočtu je uvedený v Tabuľke 6.

1. Najprv je potrebné určiť rozsah hodnoteného projektu, t. j. len plášť alebo plášť a jadro. Príslušný hodnotiaci nástroj alebo kalkulačka BREEAM potom upraví bodové hodnotenie a váhy tak, aby odrážali hodnotené kategórie a jednotlivé kredity.
2. Posudzovateľ BREEAM potom pre každú z deviatich environmentálnych častí BREEAM určí (podľa potreby) počet udelených „kreditov“. Toto musí posudzovateľ BREEAM určiť v súlade s kritériami jednotlivých otázok hodnotenia (ako je podrobne uvedené v technických častiach tohto dokumentu).
3. Potom sa pre každú časť vypočíta percento dosiahnutých „kreditov“.
4. Percentuálny podiel „kreditov“ dosiahnutých v každej časti sa potom vynásobí príslušnou váhou časti. Týmto sa získa celkové skóre environmentálnej časti.
5. Výsledky jednotlivých častí sa sčítajú, čím sa získa celkové skóre BREEAM.
6. Celkové skóre sa potom porovná s referenčnými úrovňami hodnotenia BREEAM a za predpokladu, že boli splnené všetky minimálne normy, sa získa príslušné hodnotenie BREEAM.
7. Ku koncovému skóre BREEAM sa môže pripočítať ďalšie 1 % za každý získaný „inovačný kredit“ (až do výšky maximálne 10 % a celkové skóre BREEAM je obmedzené na 100 %).

Tabuľka 6: Príklad výpočtu skóre a hodnotenia BREEAM

Časť BREEAM	Dosiahnuté kredity	Dostupné kredity	Dosiahnuté kredity, %	Váženie častí (úplne vybavené)	Skóre časti
Riadenie	10	20	50,00 %	0,12	6,00 %
Zdravie a pohoda	17	21	80,95 %	0,14	11,33 %
Riziká	1	1	100,00 %	0,01	1,00 %
Energia	16	32	50,00 %	0,19	9,50 %
Doprava	5	11	45,45 %	0,08	3,63 %
Voda	5	9	55,56 %	0,06	3,33 %
Materiály	10	14	71,43 %	0,125	8,92 %
Odpad	3	13	23,07 %	0,075	1,73 %
Využívanie pôdy a ekológia	5	5	100,00 %	0,10	10,00 %
Znečistenie	9	12	75,00 %	0,10	7,44%
Inovácie	2	10	20,00 %	0,10	2,00 %
Koncové skóre BREEAM					64,88 %
Hodnotenie BREEAM				VEĽMI DOBRE	

Tabuľka 7: Minimálne normy pre hodnotenie BREEAM - veľmi dobre

Minimálne normy pre hodnotenie BREEAM - „veľmi dobre“	Dosiahnuté?
Man 03 Zodpovedné stavebné postupy na str. 56	Á
Hea 01 Vizuálny komfort	Á
Hea 02 Kvalita vnútorného vzduchu na str. 98	Á
Hea 09 Kvalita vody	Á
Ene 01 Zníženie spotreby energie a emisií uhlíka na str. 150	Nie je k dispozícii
Wat 01 Spotreba vody na str. 253	Á
Wat 02 Monitorovanie vody	Á
Mat 03 Zodpovedné získavanie stavebných produktov na str. 282	Á

Vypracovanie prípadových štúdií pre budovy s hodnotením BREEAM „Vynikajúci“

Projekty s certifikátom BREEAM „Vynikajúci“ by mali slúžiť ako vzor pre toto odvetvie. Ak majú byť príkladom, sú potrebné prípadové štúdie týchto projektov, aby sa na ne mohli iné projektové tímy a klienti odvolávať.

Projektový tím a klient projektov s hodnotením BREEAM „Vynikajúci“ budú požiadaní pred konečnou certifikáciou, aby poskytli buď prípadovú štúdiu budovy alebo informácie, ktoré spoločnosti BRE Global umožnia vypracovať prípadovú štúdiu. Tieto informácie sa budú vyžadovať v záverečnej fáze po ukončení výstavby a mali by sa poskytnúť spolu so záverečnou certifikačnou správou posudzovateľa BREEAM.

Spoločnosť BRE Global uverejní prípadovú štúdiu na webovej stránke BREEAM, na webovej stránke Green Book Live a v ďalších publikáciách týkajúcich sa BRE a BREEAM.

Požiadavky BREEAM na dôkazy

V tejto časti sú uvedené usmernenia pre posudzovateľov a projektové tímy o druhoch dôkazov potrebných na preukázanie súladu s požiadavkami BREEAM.

Prečo BREEAM vyžaduje dôkazy?

BREEAM je schéma hodnotenia a certifikácie treťou stranou, ktorá sa uplatňuje v súlade s medzinárodnými normami. Uplatňovanie medzinárodných noriem zabezpečuje, že certifikačné schémy, ako je BREEAM, sa vykonávajú konzistentným a spoľahlivým spôsobom. Hodnotiaca správa BREEAM a proces zabezpečenia kvality BRE Global sú základnými princípmi BREEAM, ktoré zabezpečujú konzistentnosť a dôveru v hodnotenie BREEAM udelené posudzovateľom.

Na zachovanie tejto konzistentnosti a dôveryhodnosti musia byť všetky rozhodnutia o certifikácii založené na overených a dôveryhodných informáciách o projekte, ktoré sa dajú dohľadať, t. j. založené na dôkazoch. Je to dôležité nielen z hľadiska zabezpečenia súladu s medzinárodnými normami, podľa ktorých BREEAM funguje, ale aj z hľadiska riadenia rizík pre klientov a posudzovateľov BREEAM v prípade, že výsledok certifikácie bude napadnutý.

Hodnotiaca správa a úloha posudzovateľa BREEAM

Posudzovateľ BREEAM určuje hodnotenie BREEAM a hodnotiaca správa je formálnym záznamom auditu posudzovateľa podľa kritérií definovaných v tejto Technickej príručke pre schému BREEAM. Certifikát BREEAM, ktorý vydáva spoločnosť BRE Global, poskytuje záruku, že služba poskytnutá posudzovateľom (t. j. proces vypracovania hodnotiacej správy) bola vykonaná v súlade s požiadavkami schémy. Účelom certifikátu je preto poskytnúť klientovi dôveru vo výkon a postupy posudzovateľa pri určovaní hodnotenia BREEAM.

Úlohou posudzovateľa je zhromažďovať informácie o projekte a používať ich na kompetentné a nestranné posúdenie výkonnosti podľa schémy BREEAM. Na udelenie kreditu BREEAM musí byť posudzovateľ bez akýchkoľvek pochybností presvedčený, že zhromaždené dôkazy jednoznačne preukazujú splnenie všetkých príslušných kritérií definovaných v schéme BREEAM. Všetky dôkazy musia byť náležite uvedené vo formálnej správe vypracovanej posudzovateľom a na požiadanie sprístupnené spoločnosti BRE Global na účely kontroly zabezpečenia kvality.

Jasné, usporiadané a správne citované dôkazy pre každý problém a kritérium BREEAM uľahčujú efektívne zabezpečenie kvality a certifikáciu. Posudzovatelia BREEAM majú prístup k ďalším usmerneniam o odkazovaní na hodnotiacu správu v Usmernení pre posudzovateľov 01 a na webovom seminári „Proces podávania správ“, ktoré sú k dispozícii v časti Usmernenia pre posudzovateľov BREEAM v časti BREEAM Projects (www.breeam.com/projects).

Dôkazová dokumentácia

Dôkazy by sa nemuseli nevyhnutne získavať len pre účely posúdenia BREEAM. V mnohých prípadoch by mal byť posudzovateľ schopný získať ľahko dostupné a pripravené informácie o projekte na účely preukázania súladu. Z tohto dôvodu BREEAM nepredpisuje typ požadovaných dôkazov, ale v každej vydaní sú uvedené konkrétne dokumenty, ktoré sú skôr usmernením ako koncovým zoznamom.

Posudzovateľ a projektový tím zistia, že mnohé otázky hodnotenia si vyžadujú viac ako jednu informáciu alebo typ informácie na preukázanie súladu s jedným kritériom, prípadne môže stačiť jedna informácia na preukázanie súladu s viacerými kritériami.

Písomné záväzky v predbežnej fáze hodnotenia – Fáza projektovania

V predbežnej fáze hodnotenia projektu je prípustné použiť listy alebo e-maily na preukázanie zámeru splniť kritériá BREEAM (za predpokladu, že spĺňajú požiadavky na komunikačné záznamy uvedené nižšie). Z týchto dôkazov musia byť jasné aj opatrenia a dôkazy (alebo ich porozumenie), ktoré sa vykonajú a poskytnú na zabezpečenie predbežného dodržiavania súladu projektu, najmä v záverečnej fáze hodnotenia, t. j. po ukončení výstavby. Týmto sa zabezpečí, aby strana, ktorá prijala záväzky, jasne vedela, aké opatrenia a dôkazy je potrebné predložiť na preukázanie súladu s BREEAM v záverečnej fáze hodnotenia. Za mnohých okolností by napríklad nebolo prijateľné, aby projektový tím skopíroval kritériá BREEAM a vniesol ich do formálneho záväzku. V takomto záväzku by malo byť konkrétne uvedené, ako sa majú kritériá dosiahnuť v kontexte hodnotenia, pričom kopírovanie a vnášanie kritérií BREEAM často neposkytuje takú úroveň detailov.

I keď dokumenty o záväzkoch môžu zohrávať úlohu pri preukazovaní súladu, nenahrádzajú formálnejšie a zavedené typy informácií o projekte. Posudzovateľ nesmie udeliť kredity, ak má dôvod pochybovať o platnosti alebo zámere písomných záväzkov alebo ak sa nedá očakávať, že na potvrdenie súladu budú k dispozícii formálne informácie o projekte alebo špecifikácii.

Písomné záväzky v konečnej fáze hodnotenia - po výstavbe

Ako sa uvádza v časti Rozsah, existujú dva typy hodnotenia, ktoré možno vykonať vo fáze po ukončení výstavby, a to preskúmanie hodnotenia fázy projektovania po ukončení výstavby alebo hodnotenie po ukončení výstavby (ak sa nevykonalo hodnotenie vo fáze projektovania). Stĺpec „Konečná fáza po výstavbe“ v tabuľke dôkazov v každom vydaní predpokladá, že bolo dokončené hodnotenie vo fáze projektovania. Ak nebolo ukončené hodnotenie vo fáze projektovania, posudzovateľ bude musieť preskúmať dôkazy „predbežnej fázy projektovania“ aj „konečnej fázy po výstavbe“ uvedené v tabuľke dôkazov a zabezpečiť, aby boli spolu s hodnotením predložené dostatočné dôkazy na preukázanie splnenia kritérií.

Dôkazy predložené vo fáze po ukončení výstavby musia reflektovať dokončenú stavbu, a preto musia preukazovať, čo sa skutočne vykonalo. Ak boli napríklad vo fáze projektovania špecifikované čiastkové merače, vo fáze po ukončení výstavby by sa malo preukázať, že boli skutočne nainštalované. Vhodným dôkazom môže byť správa z inšpekcie na mieste s podpornými fotografiami alebo výkresy v skutočnom stave, na ktorých je zobrazené umiestnenie čiastkových meračov.

Dokumenty o záväzkoch nemožno použiť na preukázanie súladu v konečnej fáze hodnotenia po ukončení výstavby. Jedinou výnimkou sú prípady, keď kritériá vyžadujú, aby sa tento úkon uskutočnil po ukončení výstavby, t. j. po odovzdaní stavby a prípadne počas jej prevádzky. Príkladom môže byť písomný záväzok vlastníka alebo používateľa budovy, ktorým sa zaviaže vykonať hodnotenie po kolaudácii. Posudzovateľ BREEAM nesmie udeliť kredity BREEAM, ak má dôvod pochybovať o platnosti alebo zámere písomných záväzkov alebo ak nie je neprimerané očakávať formálnu dokumentáciu, napr. harmonogram služieb alebo zmluvu o odborných službách, podobne ako v prípade písomných záväzkov vo fáze projektovania.

Zásady dokazovania, ktoré posudzovatelia BREEAM a BRE Global Quality Assurance dodržiavajú

Ako je uvedené vyššie, ak sú v tabuľke „Dôkazy“ v rámci každého problému hodnotenia uvedené konkrétne dôkazy, musí ich získať a overiť posudzovateľ BREEAM.

Pri určovaní vhodnosti dôkazov pre každú otázku musia posudzovatelia BREEAM zohľadniť zásady uvedené v Tabuľke 8. Ak dôkazy spĺňajú zásady uvedené v Tabuľke 8 nižšie a prípadne usmernenia uvedené v časti „Spoľahlivosť dôkazov“, takéto dôkazy sú prípustné na účely hodnotenia a kontrol globálneho zabezpečenia kvality BRE.

Tieto zásady nie sú uvedené v hierarchickom poradí a všetky sú rovnako dôležité pri zvažovaní, ktorý typ dôkazu predložiť na preukázanie súladu pre každú otázku alebo kritérium.

Tabuľka 8: Zásady dokazovania BREEAM

	Zhrnutie	Princíp	Cieľ	Otázka na kontrolu
1	Dôkazy poskytnuté pre všetky kritériá pre všetky požadované kredity	Dôkazy musia preukazovať, že sú splnené VŠETKY relevantné* kritériá a čiastkové kritériá pre každý požadovaný kredit, a ak je to relevantné, musia byť poskytnuté podporné poznámky o súlade, definície atď.	Úplnosť	Sú zahrnuté všetky kritériá a čiastkové kritériá? Boli zohľadnené všetky príslušné poznámky a definície týkajúce sa súladu?
2	Jednoznačné hodnotenie	Hodnotenie musí preukázať jednoznačný súlad a toto hodnotenie musí byť podložené dôkazmi. Dôkazy (a podporné poznámky) musia tretej strane, ktorá vykonáva kontrolu, jasne preukázať, že kritériá boli splnené.	Kompatibilita nezávislého preskúmania	Ak by tretia strana (napr. BRE Global) preskúmala moju správu s predloženými dôkazmi, bola by schopná potvrdiť súlad a udeliť rovnaké kredity ako ja?
3	Spoľahlivé	1. Pri výbere dôkazov sa vždy uistite, že sú spoľahlivé a relevantné pre danú fázu hodnotenia. 2. Vybrané dôkazy obsahujú všetky relevantné základné informácie s potrebnými zložkami, ktoré sa považujú za spoľahlivé. (Pozri časť Spoľahlivosť na ďalšej strane, kde nájdete podrobnosti o oboch týchto zásadách).	Preukázanie toho, že dôkazy sú spoľahlivé a pochádzajú zo spoľahlivého zdroja.	Je toto najspoľahlivejšia forma dôkazu, ktorá je k dispozícii na preukázanie splnenia tohto kritéria? Obsahujú dôkazy všetky relevantné základné informácie? Sú úplne kontrolovateľné?
4	Použitie existujúcich dôkazov	Na preukázanie súladu použite existujúce informácie o projekte. Vo väčšine prípadov by sa dôkazy na účely súladu s BREEAM nemali „vytvárať“.	Minimalizuje množstvo dôkazov a znižuje čas a náklady na dodržiavanie predpisov.	Existujú už spoľahlivé dôkazy, ktoré spĺňajú uvedené zásady a ktoré môžem použiť? Ak musím požiadať o ďalšie dôkazy, žiada projekt o kredity v prípade, že súlad nie je dostatočne preukázaný?

* Ak posudzovateľ alebo projektový tím považuje konkrétne kritériá za „nerelevantné“ pre posúdenie, malo by to byť plne odôvodnené a následne predložené ako technická otázka na preskúmanie spoločnosti BRE Global.

Spoľahlivosť dôkazov

Spoľahlivé dôkazy potvrdzujú, že hodnotenie bolo vykonané správne a budova spĺňa kritériá pre požadované kredity BREEAM. Posudzovateľ by mal pri zhromažďovaní informácií o projekte a hodnotení, či sú poskytnuté dôkazy čo najspoľahlivejšie, zvážiť nasledujúce skutočnosti:

- Existuje viac ako jeden dôkaz, ktorý by sa mohol použiť na preukázanie súladu?
- Je vybraný dôkaz najspoľahlivejším a najvhodnejším dôkazom na preukázanie splnenia konkrétneho kritéria?

Všetky dôkazy predložené na účely hodnotenia BREEAM musia byť spoľahlivé, pokiaľ ide o ich zdroj a sledovateľnosť. Nižšie je uvedený zoznam minimálnych informácií, ktoré musí posudzovateľ očakávať pri predložení určitých typov dôkazov.

Komunikačné záznamy: Všetky komunikačné záznamy použité ako dôkaz musia poskytovať jasné potvrdenie názvu miesta, totožnosti autora a jeho úlohy, dátumu a totožnosti príjemcu.

Formálne korešpondenčné listy: Musia byť na hlavičkovom papieri spoločnosti alebo organizácie s podpisom (elektronický podpis je prípustný). V ideálnom prípade by mali byť listy zabezpečeným dokumentom. (Ďalšie informácie nájdete v častiach týkajúcich sa písomného záväzku.)

Zápisnica zo zasadnutí: Musí obsahovať dátum, miesto a informácie o účastníkoch (mená, organizácie a úlohy) spolu so záznamom o stretnutí a dohodnutých opatreniach.

Výkresy: Všetky výkresy musia obsahovať názov budovy alebo miesta, fázu (v prípade potreby), názov výkresu, dátum, číslo revízie a mierku.

Špecifikácie: Zo špecifikácie musí byť zrejmé, že sa vzťahuje na hodnotený projekt a musí obsahovať dátum a číslo revízie. Ak sú k dispozícii časti špecifikácií, posudzovateľ by mal uviesť odkaz na výpis a predložiť minimálne prvú stranu špecifikácie s podrobným uvedením názvu projektu, čísla a dátumu revízie.

Správa z kontroly na mieste: Správa z kontroly na mieste musí obsahovať názov budovy alebo miesta, dátum, autora a súhrnný text, v ktorom sa podrobne uvedie, čo bolo zistené, a potvrdí sa súlad. Na podporu textu v správe možno použiť fotografické dôkazy.

V prípade iných druhov dôkazov, ktoré nie sú uvedené v zozname, by mal posudzovateľ použiť vyššie uvedené ako pomôcku na určenie druhu vhodných dôkazov. Vo väčšine prípadov by mali dôkazy použité na posúdenie súladu vždy obsahovať aspoň kľúčové informácie, ako je názov projektu, autor, dátum, čísla revízií atď.

Riadenie

Zhrnutie

Táto kategória podporuje prijatie postupov udržateľného riadenia v súvislosti s projektovaním, výstavbou, uvedením do prevádzky, odovzdaním a následnou starostlivosťou, aby sa zabezpečilo, že sa stanovia spoľahlivé ciele udržateľnosti, ktoré sa budú sledovať počas prevádzky budovy. Otázky v tejto časti sa zameriavajú na začlenenie opatrení v oblasti udržateľnosti do kľúčových fáz projektovania, obstarávania a počiatočného používania od počiatočnej fázy projektovej dokumentácie až po primerané zabezpečenie následnej starostlivosti.

Súhrnná tabuľka kategórií

Vydanie	Kredity	Zhrnutie kreditov
Man 01 Súhrn projektu a návrh	4	Konzultácie so zainteresovanými stranami, ktoré zahŕňajú realizáciu projektu a príslušné tretie strany. Vymenovanie majstra udržateľnosti s cieľom uľahčiť stanovenie, monitorovanie a dosahovanie výkonnostných cieľov BREEAM pre projekt.
Man 02 Plánovanie nákladov životného cyklu a životnosti	4	Uznávanie a podpora používania nákladov životného cyklu a plánovania životnosti a zdieľanie údajov s cieľom zvýšiť informovanosť a porozumenie.
Man 03 Zodpovedné stavebné postupy	6	Hlavný dodávateľ preukazuje správne postupy environmentálneho riadenia a ohľaduplnosť voči susedom v rámci svojich činností na mieste. Vplyvy na energiu, vodu a dopravu súvisiace s lokalitou sú monitorované a vykazované s cieľom zabezpečiť priebežné dodržiavanie predpisov počas výstavby, odovzdávania a ukončovania a zlepšiť informovanosť a porozumenie pre budúce projekty.
Man 04 Uvedenie do prevádzky a odovzdanie	4	Harmonogram uvedenia do prevádzky vrátane optimálnych časových harmonogramov a primeraného testovania a uvedenia do prevádzky všetkých systémov služieb budovy a stavebného materiálu v súlade s osvedčenými postupmi. Kontrola, testovanie, identifikácia a odstraňovanie chýb prostredníctvom vhodnej metódy. Poskytnutie netechnickej príručky pre používateľov budovy a školenia používateľov alebo školenia obsluhy vhodne načasované v súvislosti s odovzdaním a navrhovaným obsadením.
Man 05 Následná starostlivosť	3	Poskytnutie potrebnej infraštruktúry a zdrojov na poskytovanie podpory následnej starostlivosti používateľom budov. Sezónne činnosti spojené s uvedením do prevádzky sa dokončia v priebehu minimálne 12 mesiacov po tom, ako sa budova začne v podstatnej miere využívať. Klient alebo nájomca budovy sa zaviažu vykonať hodnotenie po začatí používania (POE) jeden rok po prvom používaní budovy a šírene zistení z hľadiska výkonnosti budovy po začatí používania.

Man 01 Súhrn projektu a návrh (všetky budovy)

Počet dostupných kreditov	Minimálne normy
4	Nie

Cieľ

Poznať a podporiť integrovaný proces navrhovania, ktorý optimalizuje výkon budovy.

Posudzovacie kritériá

Táto požiadavka je rozdelená do dvoch častí:

- Konzultácie so zainteresovanými stranami (2 kredity)
- Majster udržateľnosti (2 kredity)

Na preukázanie súladu sa vyžaduje nasledovné:

Jeden kredit - konzultácie so zainteresovanými stranami (odovzdanie projektu)

1 Pred dokončením koncepčného návrhu sa vypracuje jasný dokument o udržateľnosti, v ktorom sa stanoví nasledovné:
- 1.a Požiadavky klienta, napr. požadované podmienky vnútorného prostredia
- 1.b Ciele a zámery v oblasti udržateľnosti vrátane cieľového hodnotenia BREEAM, obchodných cieľov atď.
- 1.c Časové harmonogramy a rozpočet
- 1.d Zoznam konzultantov a odborných stretnutí, ktoré sa môžu vyžadovať, napr. vhodne kvalifikovaný akustik (SQA) atď.
- 1.e Obmedzenia projektu, napr. technické, právne, fyzické, environmentálne.

2 Pred dokončením koncepčného návrhu sa strany zainteresované na realizácii projektu (pozri Relevantné definície na str. 48) stretnú, aby určili a definovali svoje úlohy, záväzky a príspevky pre každú z kľúčových fáz realizácie projektu.

3 Pri definovaní úloh a zodpovedností pre každú kľúčovú fázu projektu je potrebné zohľadniť nasledujúce skutočnosti:
- 3.a Požiadavky koncového používateľa
- 3.b Ciele projektu a stratégia projektu
- 3.c Osobitné požiadavky na inštaláciu a konštrukciu a obmedzenia
- 3.d Posúdenie rizík pri projektovaní a výstavbe, napr. národné predpisy o bezpečnosti a ochrane zdravia pri práci alebo osvedčené postupy, posúdenie rizika baktérie Legionelly
- 3.e Legislatívne požiadavky, napr. miestne stavebné predpisy, požiadavky na kultúrne dedičstvo
- 3.f Obstarávanie a dodávateľský reťazec
- 3.g Identifikácia a meranie úspešnosti projektu v súlade s cieľmi projektu
- 3.h Rozpočet a technické znalosti obyvateľov pri údržbe všetkých navrhovaných systémov
- 3.i Udržateľnosť a prispôsobivosť návrhov
- 3.j Požiadavky na vypracovanie projektovej dokumentácie a dokumentácie pre koncového používateľa
- 3.k Požiadavky na uvedenie do prevádzky, odbornú prípravu a podporu následnej starostlivosti.

4 Projektový tím preukáže, ako príspevky zainteresovaných strán do realizácie projektu a výsledky konzultačného procesu ovplyvnili alebo zmenili pôvodný projektový zámer. V prípade potreby sem patrí plán realizácie projektu, komunikačná stratégia a návrh koncepcie.

Jeden kredit - konzultácie so zainteresovanými stranami (tretia strana)

5 Pred ukončením etapy koncepčných prác projektový tím konzultoval všetky relevantné zainteresované tretie strany, čo zahŕňa minimálny obsah konzultácií (pozri CN3 na nasledujúcej strane).

6 Projekt musí preukázať, ako príspevky zainteresovaných strán a výsledky konzultácií ovplyvnili alebo zmenili pôvodný návrh projektu a koncepcie.

7 Pred dokončením podrobného projektu bola všetkým príslušným stranám poskytnutá konzultačná spätná väzba, ktorá bola prijatá príslušnými stranami prijatá.

Dodatočne len pre Vzdelávanie:

8 Pri konzultáciách sa použila metóda, ktorú vykonala nezávislá strana (pozri Relevantné definície na str. 48).

Jeden kredit - Majster udržateľnosti (projekt)

9 Bol vymenovaný majster udržateľnosti, ktorý uľahčí stanovenie a dosiahnutie výkonnostných cieľov BREEAM pre projekt. Vo fáze projektovania je na plnenie tejto úlohy určený odborník na udržateľnosť, ktorý plní túto úlohu vo fáze uskutočniteľnosti (príprava a stručný popis).

10 Definované výkonnostné ciele BREEAM boli formálne dohodnuté (pozri Relevantné definície na str. 48) medzi klientom a projektantom alebo projektovým tímom najneskôr vo fáze koncepčných prác.

11 Na získanie tohto kreditu pri predbežnom hodnotení vo fáze projektovania sa musia v návrhu projektu preukázateľne dosiahnuť dohodnuté výkonnostné ciele BREEAM. Toto musí byť preukázané prostredníctvom hodnotiacej správy a posudzovateľa BREEAM vo fáze projektovania.

Jeden kredit - Majster udržateľnosti (proces monitorovania)

12 Úspešnosť v oblasti udržateľnosti (projekt) (kritériá 9 až 11) bola dosiahnutá.

13 V priebehu celého procesu projektovania je vymenovaný majster udržateľnosti, ktorý monitoruje pokrok v porovnaní s dohodnutými výkonnostnými cieľmi BREEAM a formálne informuje klienta a projektový tím o pokroku.

14 Majster udržateľnosti sa musí zúčastňovať na kľúčových stretnutiach projektu a projektového tímu počas fáz koncepčného návrhu, rozpracovaného návrhu a technického návrhu (pozri Relevantné definície na str. 48). Podávanie správ sa musí vykonávať minimálne počas každej fázy etapy a pred jej ukončením.

Kontrolné zoznamy a tabuľky

Žiadne.

Poznámky o súlade

Ref	Podmienky	Popis
Hrubá stavba a jadro (iba nebytové a bytové inštitúcie)		
CN1	Príslušné hodnotiace kritériá	Obidve možnosti: Platia všetky kritériá týkajúce sa typu a funkcie budovy. Podrobnejší popis možností vyhodnotenia hrubej stavby a jadra nájdete v Prílohe D - Posúdenie projektu hrubej stavby a jadra na strane 409.

Ref	Definície pojmov	Popis
Obytné - čiastočne a úplne vybavené		
CN2	Príslušné hodnotiace kritériá - Obydlia pre jednu rodinu	Obidve možnosti: Platia všetky kritériá týkajúce sa typu a funkcie budovy. Pozri CN2.2 nižšie, kde nájdete podrobnejšie informácie o úlohe majstra udržateľnosti. Pozri Prílohu E – Uplatniteľnosť BREEAM New Construction na obydlia pre jednu rodinu a obydlia pre viaceré rodiny, čiastočne a úplne vybavené na str. 412, kde nájdete podrobnejší popis možností hodnotenia bytových domov.
CN2.1	Príslušné hodnotiace kritériá - Obydlia pre viaceré rodiny	Obidve možnosti: Platia všetky kritériá týkajúce sa typu a funkcie budovy. Pozri Prílohu E – Uplatniteľnosť BREEAM New Construction na obydlia pre jednu rodinu a obydlia pre viaceré rodiny, čiastočne a úplne vybavené na str. 412, kde nájdete podrobnejší popis možností hodnotenia bytových domov.
CN2.2	Majster udržateľnosti pre obydlia pre jednu rodinu	V prípade obydlí pre jednu rodinu môže posudzovateľ BREEAM International New Construction konať ako majster na udržateľnosť. V takejto situácii bude stále potrebné riešiť všetky konflikty záujmov, ktoré by mohli vzniknúť.
Všeobecné		
CN3	Minimálny obsah konzultácií. Pozri kritérium 5 na predchádzajúce strane.	Minimálny obsah konzultácií závisí od budovy a rozsahu projektu, ale zvyčajne zahŕňa: 1. Funkčnosť, kvalita vyhotovenia a vplyv (vrátane estetiky) 2. Zabezpečenie vhodného vnútorného a vonkajšieho vybavenia (pre budúcich obyvateľov, návštevníkov a používateľov budovy) 3. Riadiace a prevádzkové dôsledky 4. Dôsledky na zdroje údržby 5. Vplyv na miestnu komunitu, napr. vplyv miestnej dopravy a premávky 6. Možnosti spoločného využívania zariadení a infraštruktúry s komunitou a príslušnými zainteresovanými stranami, ak je to dôležité a vhodné pre daný typ budovy 7. Dodržiavanie zákonných (národných alebo miestnych) požiadaviek na konzultácie 8. Inkluzívny a prístupný projekt V prípade typov vzdelávacích budov minimálny obsah zahŕňa aj: 9. Ako najlepšie navrhnúť budovu a pozemok, aby sa uľahčilo učenie 10. Ak rozsah prác zahŕňa zmeny vnútorného usporiadania a funkcie, v rámci konzultácií sa zvažuje, ako by mohol projekt čo najlepšie zabezpečiť celý rad spoločenských priestorov zodpovedajúcich potrebám žiakov, študentov a ostatných používateľov. V prípade typov budov obsahujúcich technické priestory alebo funkcie, napr. laboratóriá, dielne atď., minimálny obsah zahŕňa aj: 11. Široké požiadavky koncových používateľov na takéto zariadenia vrátane vhodného dimenzovania, optimalizácie a integrácie zariadení a systémov.

Ref	Definície pojmov	Popis
CN3.1	Hodnotenie a udeľovanie dostupných kreditov pre majstra udržateľnosti	Dodatočný kredit sa udeľuje za vymenovanie majstra udržateľnosti vo fáze výstavby a odovzdania (pozri otázku BREEAM Man 03 Zodpovedné stavebné postupy na str. 56). Cieľom kreditu v časti Man 03 Zodpovedné stavebné postupy na str. 56 je podporiť a odmeniť dodávateľov a projektové tímy, ktoré vymenujú majstra udržateľnosti, a tým zabezpečia pokračovanie cieľov udržateľnosti počas fázy výstavby a to, že postavená budova spĺňa cieľové hodnotenie klienta BREEAM.
CN3.2	Výkonnostné ciele súvisiace s BREEAM. Pozri kritériá 9 až 13 na str. 45.	Ak by výkonnostné ciele podľa BREEAM stanovené na konci fázy koncepčného projektovania neboli dosiahnuté pri hodnotení po fáze výstavby, kredity pridelené vo fáze posúdenia predbežného projektovania pre menovanie majstra udržateľnosti sa musia pri konečnom hodnotení zamietnuť (pozri Relevantné definície na nasledujúcej strane).
CN3.3	Národné predpisy o bezpečnosti a ochrane zdravia a osvedčené postupy	Ak v hodnotenej krajine neexistujú žiadne národné predpisy v oblasti bezpečnosti a ochrany zdravia, je potrebné preukázať, že BUĎ: Hlavný dodávateľ má systém riadenia bezpečnosti a ochrany zdravia pri práci v súlade s normou OHSAS 18001:2007, ALEBO Práce sa budú vykonávať v súlade s Medzinárodným kódexom postupov bezpečnosti a ochrany zdravia pri práci v stavebníctve vydaný Združením práce.

Metodológia

Žiadna.

Dôkazová dokumentácia

Kritériá	Predbežná fáza projektu	Konečná fáza po výstavbe
Konzultácie so zainteresovanými stranami		
1–8	Zoznam zainteresovaných strán, s ktorými sa konzultovalo. Plán konzultácií, v ktorom sa stanoví postup a rozsah konzultácií. Program alebo zápisnice z konzultačných stretnutí. Dokumentácia preukazujúca spätnú väzbu konzultácií a následné opatrenia.	Ako fáza projektovania.
Kredity majstra udržateľnosti		

Kritériá	Predbežná fáza projektu	Konečná fáza po výstavbe
9–14	Menovací dekrét majstra udržateľnosti. Príslušná časť alebo ustanovenia špecifikácie budovy alebo zmluvy. Program projektu s uvedením termínov, do ktorých sa majú dokončiť kľúčové fázy prác (príprava a projektovanie). Zápisnice zo stretnutí, zaznamenaná korešpondencia alebo harmonogramy, ktoré môžu preukázať, že otázky BREEAM sú pravidelným bodom programu a že sa na nich zúčastňuje majster udržateľnosti. Správa o pokroku majstra udržateľnosti (pre každú fázu prác). Hodnotiaca správa BREEAM vo fáze projektovania.	Ako v štádiu projektovania, plus konečná hodnotiaca správa po ukončení výstavby.

Dodatočné informácie

Relevantné definície

Odborný poradca BREEAM (AP)

Osoba vyškolená a kvalifikovaná spoločnosťou BRE ako špecialista na udržateľnosť stavebného prostredia, environmentálne projektovanie a hodnotenie. Úlohou BREEAM AP je uľahčiť projektovému tímu úspešne naplánovať činnosti, stanoviť priority a dohodnúť kompromisy potrebné na dosiahnutie cieľového hodnotenia BREEAM pri formálnom hodnotení projektu. Požiadavky BREEAM spĺňajú len kvalifikované osoby, ktoré sú členmi asociovaného členského systému BRE. Toto členstvo zabezpečuje udržiavanie primeranej úrovne spôsobilosti prostredníctvom pravidelného ďalšieho odborného vzdelávania (CPD) v kľúčových relevantných oblastiach. Zoznam a kontaktné údaje AP BREEAM nájdete na adrese: www.greenbooklive.com.

Výkonnostné ciele súvisiace s BREEAM

Výkonnostné ciele BREEAM sa konkrétne vzťahujú na požadované hodnotenie BREEAM a minimálne normy. Nemusí to nevyhnutne zahŕňať jednotlivé cielené otázky alebo kredity BREEAM, s ktorými sa môže obchodovať v priebehu vývoja projektu. Pri schvaľovaní cieľa BREEAM sa odporúča zamerať sa na jednotlivé otázky, kredity a kritériá BREEAM alebo niektoré z nich uprednostniť. Tým sa zabezpečí dosiahnutie dohodnutého cieľa bez potenciálne nákladných zmien návrhu v neskoršej fáze.

Koncepčné projektovanie

Fáza koncepčných prác zahŕňa vypracovanie stratégií a rámcových návrhov pre plánovanie lokality, stavebnú formu, konštrukčný návrh, systémy služieb budovy, rámcové špecifikácie a predbežné informácie o nákladoch.

Komunikačná stratégia

Komunikačná stratégia je definovaná ako stratégia, ktorá stanovuje, kedy sa bude projektový tím stretávať, ako bude efektívne komunikovať a aké budú protokoly na vydávanie informácií medzi jednotlivými stranami, a to neformálne aj pri výmene informácií.

Spätná väzba z konzultácií

Ide o spätnú väzbu, ktorá sa zameriava na návrhy, pripomienky, odporúčania a výsledky konzultácií zainteresovaných strán. Toto zahŕňa aj to, ako návrhy a výsledky ovplyvnili alebo viedli k úpravám navrhovaného projektu a prevádzky a používania budovy.

Vypracovaný návrh

Fáza vypracovania projektových prác zahŕňa koordináciu a aktualizáciu návrhov konštrukčného riešenia, systémov služieb budovy, rámcových špecifikácií, informácií o nákladoch a stratégií projektu.

Správa zariadení

V norme EN 15221-1:2006 sa uvádza, že správa zariadení je integrácia procesov v rámci organizácie s cieľom udržiavať a rozvíjať dohodnuté služby, ktoré podporujú a zlepšujú efektívnosť jej primárnych činností. Na účely posúdenia sa pod pojmom „dohodnuté služby" rozumejú služby súvisiace s údržbou a správou budovy, jej služieb a okolia vrátane interakcie so súvisiacimi činnosťami v budove a jej používateľmi.

Formálne dohodnuté

Pojem „formálne dohodnutý" sa vzťahuje na výkonnostné ciele BREEAM. Príkladom formálnych dohôd je zmluva alebo menovacie dekréty s architektom a ďalšími príslušnými členmi projektového tímu.

Nezávislá strana (pozri kritérium 8 na str. 45)

Na splnenie kritéria 8, ktoré sa týka použitia nezávislej strany, musí klient alebo projektový tím preukázať NIEKTORÚ z týchto možností:

1. Na uskutočnenie potrebných konzultácií využili stranu nezávislú od procesu projektovania, použitím vyhovujúcej metódy, ALEBO
2. Ak má konzultáciu vykonať organizácia zapojená do projektovania budovy, napr. architekt projektu, musí posudzovateľovi predložiť dôkazy, ktoré spoľahlivo preukazujú nezávislosť konzultačného procesu. BREEAM sa nepokúsila definovať, akú formu musia mať tieto dôkazy. Povinnosťou projektového tímu alebo príslušnej osoby je jasne preukázať posudzovateľov BREEAM dôveryhodnú úroveň nezávislosti.

Kľúčové stretnutia projektového tímu

Kľúčové stretnutia projektového tímu možno definovať ako stretnutia, na ktorých sa prerokúvajú a prijímajú zásadné rozhodnutia, ktoré ovplyvňujú alebo ovplyvňujú navrhovaný projekt budovy a jej výstavbu v súlade s projektom (a teda aj vplyv budovy na udržateľnosť a výkonnosť BREEAM). Na týchto stretnutiach sa zvyčajne zúčastňujú zástupcovia aspoň troch z nižšie uvedených strán:

1. Zástupcovia klienta alebo dodávateľ
2. Hlavný dodávateľ
3. Architekt
4. Stavební inžinieri
5. Servisní technici budovy
6. Nákladoví poradcovia
7. Environmentálni poradcovia
8. Poradcovia pre riadenie projektov

Kľúčové fázy

Definícia kľúčových fáz realizácie projektu zahŕňa:

- Koncepčné projektovanie
- Vytvorený projekt
- Výstavba
- Uvedenie do prevádzky a
- Odovzdanie do užívania.

Zainteresované strany na realizácii projektu

Účelom kritéria 1 na str. 44 je zohľadniť potrebu a zvážiť vstupy všetkých hlavných zainteresovaných strán projektu už v najranejšej praktickej fáze. Týmto sa zabezpečí hladké a úspešné plnenie cieľov udržateľnosti projektu. Medzi zainteresované strany na realizácii projektu preto patrí klient, používateľ budovy (ak je známy), projektový tím a hlavný dodávateľ. Pokiaľ ide o zapojenie dodávateľov, zabezpečuje sa ich účasť na formulovaní udržateľných projektových riešení, pripomienkovaní praktickej realizovateľnosti a stavebnej spôsobilosti (jedného alebo viacerých) projektových riešení a ich vplyvu na programovanie, náklady atď. BREEAM uznáva, že v prípade niektorých projektov nemusí byť dodávateľ prác tradične určený v počiatočných fázach projektu, a preto by nebolo možné splniť kritérium 1 na str. 44. V týchto prípadoch bude kritérium 1 na str. 44 splnené za predpokladu, že sa zapojí primerane skúsená osoba s významnými skúsenosťami v oblasti výstavby alebo zadávania podobných projektov pred vymenovaním

dodávateľa. Vhodnou skúsenou osobou môže byť dodávateľ, ktorý je v tejto fáze vymenovaný za konzultanta alebo vedúci stavebného projektu.

Plán realizácie projektu

Plán realizácie projektu je definovaný ako plán vypracovaný v spolupráci vedúceho projektu a hlavného projektanta s príspevkami ostatných projektantov a členov projektového tímu. Plán realizácie projektu stanovuje postupy a protokoly, ktoré sa majú použiť na vypracovanie návrhu. Niekedy sa označuje ako „plán kvality projektu".

Relevantné tretie strany (pozri kritérium 5 na str. 45)

Patria sem okrem iného:

1. Skutoční alebo plánovaní používatelia budovy (ak sú známi) vrátane zamestnancov správy budov (FM) alebo osôb zodpovedných za každodennú prevádzku budovy a pozemkov
2. Reprezentatívna konzultačná skupina z existujúcej komunity (ak ide o novú budovu v existujúcej komunite) alebo pre komunitu, ktorá je ešte vo výstavbe
3. Existujúce partnerstvá a siete, ktoré majú znalosti a skúsenosti s prácou na existujúcich budovách rovnakého typu
4. Potenciálni používatelia akýchkoľvek spoločných zariadení, napr. prevádzkovatelia klubov a komunitných skupín.

A v prípade potreby nasledovné:

5. Vo vzdelávacích budovách zástupcovia miestneho školského úradu, školskej rady atď.
6. Miestne alebo národné historické alebo pamiatkové skupiny (nad rámec akýchkoľvek požiadaviek týkajúcich sa zákonných konzultantov)
7. Dodávatelia a zástupcovia špecializovaných služieb a údržby v prípade, že funkcia budovy má osobitné technické požiadavky v zložitých prostrediach, napr. v budovách s laboratóriami.

Majster udržateľnosti (projekt a monitorovanie pokroku)

Členovia formálnych systémov schválených spoločnosťou BRE Global v súvislosti s poskytovaním poradenstva v oblasti projektovania. Poskytovatelia systémov alebo kvalifikácií, ktorí nie sú uvedení v zozname a ktorí sa domnievajú, že ich členovia spĺňajú túto definíciu a ktorí by chceli byť uvedení v zozname schválených členských systémov, by mali kontaktovať spoločnosť BRE Global.

V súčasnosti sa predpokladá, že túto požiadavku spĺňajú tieto schémy:

- Schéma členstva odborných poradcov BREEAM (AP)

Majstri udržateľnosti sú vyškolení a kvalifikovaní na poskytovanie poradenstva projektovému tímu v súvislosti s BREEAM. Dokážu uľahčiť včasné a úspešné stanovenie cieľov, plánovanie, stanovenie priorít a monitorovanie súladu s BREEAM v súvislosti s projektovaním budovy. Budú podliehať priebežnej odbornej príprave a požiadavkám na spôsobilosť, aby sa zabezpečilo udržiavanie ich znalostí.

Poznámka: Cieľom kreditov pre majstrov udržateľnosti je podporiť integrované projektovanie a stavebný proces, ktorý využíva BREEAM ako rámec na stanovenie, odsúhlasenie a dosiahnutie požadovanej úrovne udržateľnosti projektu. Kredity pre majstra udržateľnosti v tejto otázke BREEAM sa zameriavajú na dosiahnutie tohto cieľa prostredníctvom poskytnutia príslušných odborných znalostí počas prípravnej, stručnej a projektovej fázy projektu.

Fáza technického projektovania

Technické projektové práce sú fázou, v ktorej sa dokončujú všetky architektonické, konštrukčné a technické informácie o budove, špecializované návrhy subdodávateľov a špecifikácie.

Iné informácie

Žiadne.

Man 02 Plánovanie nákladov životného cyklu a životnosti (všetky budovy)

Počet dostupných kreditov	Minimálne normy
4	Žiadne

Cieľ

Zabezpečenie hodnoty počas celej životnosti podporovaním používania nákladov životného cyklu s cieľom zlepšiť projekt, špecifikáciu, údržbu a prevádzku počas celej životnosti a prostredníctvom šírenia správ o kapitálových nákladoch s cieľom podporiť ekonomickú udržateľnosť.

Kritériá hodnotenia

Táto otázka je rozdelená do troch častí:

- Náklady životného cyklu prvkov (2 kredity)
- Náklady životného cyklu komponentov (1 kredit)
- Vykazovanie kapitálových nákladov (1 kredit)

Na preukázanie súladu sa vyžaduje nasledovné:

Dva kredity - Náklady životného cyklu prvkov (LCC)

1 V štádiu koncepčného projektovania sa vykonal rámcový plán životného cyklu prvkov celého majetku spolu s posúdením všetkých možností projektu v súlade s dokumentom Budovy a vybudovaný majetok - plánovanie životnosti - časť 5: Náklady životného cyklu ISO 15686-5:20084.

2 Náčrt plánu životného cyklu prvkov:
- 2.a Poskytuje informáciu o budúcich reprodukčných nákladoch počas obdobia analýzy, ako to požaduje klient (napr. 20, 30, 50 alebo 60 rokov)
- 2.b Zahŕňa odhady životnosti, údržby a prevádzkových nákladov.

3 Na vhodných príkladoch poskytnutých projektovým tímom preukážte, ako bol elementárny plán LCC použitý na ovplyvnenie projektovania budovy a systémov a špecifikácie s cieľom minimalizovať náklady životného cyklu a maximalizovať kritickú hodnotu .

Jeden kredit - Hodnotenie možností na úrovni komponentov životného cyklu prvkov

4 Posúdenie možností životného cyklu prvkov na úrovni komponentov bolo vypracované do konca 4. etapy procesu (rovnocennej s etapou technického návrhu) v súlade s normou ISO 15686-5:2008 a zahŕňa tieto typy komponentov (ak existujú):
- 4.a Plášť , napr. obloženie, okná alebo strešná krytina
- 4.b Služby, napr. zdroj tepla, zdroj chladu alebo ovládacie prvky
- 4.c Povrchové úpravy, napr. steny, podlahy alebo stropy
- 4.d Vonkajšie priestory, napr. alternatívne tvrdé terénne úpravy, ochrana hraníc.

5 Na vhodných príkladoch poskytnutých projektovým tímom preukážte, ako sa hodnotenie možností LCC na úrovni komponentov použilo na ovplyvnenie projektovania budovy a systémov a špecifikácie s cieľom minimalizovať náklady životného cyklu a maximalizovať kritickú hodnotu.

Jeden kredit - Vykazovanie kapitálových nákladov

6 Nahláste investičné náklady na budovu prostredníctvom nástroja na hodnotenie a podávanie správ BREEAM.

Kontrolné zoznamy a tabuľky

Žiadne.

Poznámky o súlade

Ref	Podmienky	Popis
Hrubá stavba a jadro (iba nebytové a bytové inštitúcie)		
CN1	Príslušné hodnotiace kritériá	**Náklady životného cyklu prvkov, vykazovanie kapitálových nákladov a stratégia údržby, kritériá 1 na 3 a 6 vyššie** Obidve možnosti: Platia všetky kritériá hodnotenia relevantné pre typ budovy a funkciu. **Plán životného cyklu prvkov na úrovni komponentov, kritériá 4 na 5 na predchádzajúcej strane** Obidve možnosti: Plán musí obsahovať všetky typy komponentov, ktoré má investor nainštalovať. Pozri Prílohu D - Hodnotenie plášťa a jadra projektu na str. 409, kde nájdete podrobnejší popis možností posúdenia plášťa a jadra.
Bytové - čiastočne a úplne vybavené		
CN2	Príslušné hodnotiace kritériá - Obydlia pre jednu rodinu a obydlia pre viaceré rodiny	Obidve možnosti: Platia všetky kritériá týkajúce sa typu a funkcie budovy. Pozri Prílohu E – Uplatniteľnosť BREEAM New Construction na obydlia pre jednu rodinu a obydlia pre viaceré rodiny, čiastočne a úplne vybavené na str. 412, kde nájdete podrobnejší popis možností hodnotenia bytových domov.
Všeobecné		
CN3	Vhodné príklady Pozri kritérium 3 na predchádzajúcej strane.	Možnosti vybrané na preukázanie toho, ako sa minimalizovali náklady životného cyklu a maximalizovala kritická hodnota, musia byť primerané z hľadiska ich relatívneho vplyvu na náklady projektu, budúceho zaťaženia údržby budovy a veľkosti (objemu alebo plochy) a fázy projektu. V 2. etape, pri posudzovaní výstupov z **plánu životného cyklu prvkov**, by príklady mohli mať podobu hodnotenia prvkov (ak je to vhodné), vývoja koncepčného projektovania s cieľom znížiť náklady na údržbu alebo výmenu alebo zákazky na ďalšiu analýzu prvkov. Vo fáze 4, keď sa berú do úvahy výstupy z **úrovne komponentov** Vo fáze 4, keď sa posudzujú výstupy z **analýzy možností na úrovni komponentov**, budú mať príklady pravdepodobne podobu špecifikácií komponentov spolu s odôvodnením ich výberu (t. j. ako znižujú náklady životného cyklu a maximalizujú kritickú hodnotu).

Ref	Definície pojmov	Popis
CN3.1	Vopred definované špecifikácie	Ak je budova postavená podľa vopred definovanej štandardnej špecifikácie, môže sa na preukázanie zhody použiť plán životného cyklu prvkov pre túto špecifikáciu.
CN3.2	Koncové informácie o vykazovaní kapitálových nákladov nie sú k dispozícii	Pri hodnotení projektovej fázy, keď nie sú k dispozícii koncové informácie, je možné udeliť kredit, ak klient poskytne predpokladané kapitálové náklady, vrátane nepredvídaných nákladov a zaviaže sa poskytnúť tieto informácie pre záverečnú fázu hodnotenia. Ak v záverečnej fáze nie sú známe koncové kapitálové náklady, mal by sa poskytnúť najlepší odhad klienta alebo konzultanta pre náklady. Tieto údaje sa použijú pri budúcom porovnávaní výkonnosti podľa normy BREEAM a budú anonymizované.
CN3.3	Nezávislé hodnotenie častí	Všetky tri časti môžu byť udelené nezávisle od seba. Napríklad projektový tím sa môže zamerať na jeden kredit za posúdenie možnosti životného cyklu prvkov na úrovni komponentov v 4. etape, aj keď mu neboli udelené prvé dva kredity v 2. etape za vypracovanie základného plánu nákladov životného cyklu. Kredit za vykazovanie kapitálových nákladov sa môže udeliť aj nezávisle od ostatných dvoch častí.
CN3.4	Posúdenie možností nákladov na životný cyklus na úrovni komponentov - posudzovanie typov 4.a – strana 51	Posúdenie možností životného cyklu prvkov na úrovni komponentov by malo preskúmať všetky typy komponentov uvedené v bodoch 4.a-4.d (ak existujú). Nemusí sa však brať do úvahy každý jednotlivý príklad uvedený v rámci každého komponentu; stačí vybrať tie, ktoré s najväčšou pravdepodobnosťou umožnia hodnotné porovnania. Má sa zabezpečiť zváženie širokej škály možností a pomôcť zamerať analýzu na zložky, ktoré by mali z hodnotenia najväčší úžitok.
CN3.5	Obdobie štúdia plánu životného cyklu prvkov	Obdobie štúdia by mal v ideálnom prípade odsúhlasiť klient v súlade s predpokladanou životnosťou budovy. Ak však predpokladaná životnosť budovy ešte nebola oficiálne dohodnutá (vzhľadom na počiatočné štádiá procesu projektovania), na účely modelovania by sa mala použiť štandardná projektová životnosť 60 rokov.

Metodológia

Žiadna.

Dôkazová dokumentácia

Kritériá	Predbežná fáza projektu	Konečná fáza po výstavbe
1–3 na str. 51	Plán prvkov LCC.	Ako predbežná fáza projektovania.
4–5 na str. 51	Hodnotenie možností na úrovni komponentov LCC.	Ako predbežná fáza projektovania.
6 na predchádzajúcej strane	Predpokladané kapitálové náklady prostredníctvom nástroja na hodnotenie a podávanie správ BREEAM.	Kapitálové náklady prostredníctvom nástroja na hodnotenie a podávanie správ BREEAM.

Dodatočné informácie

Relevantné definície

Náklady životného cyklu (LCC)

Náklady na majetok alebo jeho časti počas celého životného cyklu pri splnení výkonnostných požiadaviek; metodológia systematického ekonomického hodnotenia nákladov životného cyklu počas obdobia analýzy, ako je definované v dohodnutom rozsahu.

Základný plán životného cyklu prvkov

Tento postup sa bežne používa na vypracovanie riešení na úrovni projektu počas hodnotenia možností. Náklady sú zvyčajne na úrovni stavebných prvkov na celý majetok. Informácie môžu byť kombináciou typických referenčných nákladov na kľúčové prvky, porovnávacieho modelovania nákladov alebo približných odhadov. Vyjadruje sa ako náklady na meter štvorcový hrubej vnútornej podlahovej plochy (GIFA) a uvádza sa na účely analýzy prvkov, ktorá je zosúladená s úrovňou plánov kapitálových nákladov.

Hodnotenie možností na úrovni komponentov životného cyklu prvkov

Plán životného cyklu prvkov na úrovni komponentov sa bežne používa na plánovanie výberu špecifikácie nákladov na úrovni systémov alebo komponentov počas vývoja projektu. Hodnotenie životného cyklu prvkov na úrovni komponentov na účely plánovania životnosti si vyžaduje identifikáciu prostredia budovy a ďalších miestnych podmienok a základných požiadaviek, ktoré sa majú splniť pri plánovaní životnosti budovy. Rozhodnutia by sa mali prijímať na základe:

- Pravdepodobnej projektovanej životnosti budovy (namiesto zmluvnej projektovanej životnosti)
- Minimálnych kritérií funkčnej výkonnosti pre každý komponent počas projektovanej životnosti budovy
- Komponentov, ktoré musia byť opraviteľné, udržiavateľné alebo vymeniteľné počas projektovanej životnosti budovy. Je potrebné porovnateľne modelovať len kľúčové rozdiely medzi komponentmi a systémami.

Kapitálové náklady

Kapitálové náklady na budovu zahŕňajú výdavky spojené s počiatočnou výstavbou budovy:

- Výstavba vrátane prípravných prác, materiálov, zariadení a práce
- Správa stavby
- Financovanie stavby
- Poistenie a dane počas výstavby
- Kontrola a testovanie.

Náklady súvisiace s obstarávaním pozemkov, vysporiadaním, projektovaním, zákonnými schváleniami a následnou starostlivosťou po začatí používania by sa nemali zahŕňať.

Iné informácie

Vykazovanie kapitálových nákladov

Nedostatok údajov o kapitálových nákladoch a nákladoch životného cyklu a prínosoch vyplývajúcich z udržateľnejšieho navrhovania budov predstavuje hlavnú prekážku pri zavádzaní udržateľnejších riešení. Cieľom tejto otázky je podporiť zdieľanie údajov s cieľom prekonať tieto prekážky a zabezpečiť, aby BREEAM naďalej podporoval nákladovo efektívne a finančne výhodné riešenia. Tieto informácie sa zhromažďujú s cieľom pomôcť pri výskume nákladov a úspor pri výstavbe udržateľných budov alebo budov s hodnotením BREEAM. Tieto informácie sa používajú na informovanie o obchodnom odôvodnení udržateľnosti a na priebežný vývoj BREEAM. Všetky poskytnuté údaje budú považované za dôverné a budú použité len anonymne.

Kedy vykonať výpočet nákladov životného cyklu

Náklady životného cyklu sú relevantné počas celého životného cyklu budovy alebo vybudovaného majetku, najmä počas plánovania, projektovania a výstavby projektu, ako aj počas fáz používania. (Viac informácie nájdete v norme ISO 15686-5.)

Štandardizovaná metóda výpočtu nákladov životného cyklu (SMLCC) pre stavebníctvo

Norma ISO 15686-5:2008 popisuje štandardizovanú metódu výpočtu nákladov životného cyklu (SMLCC) pre obstarávanie stavebných prác. Cieľom tejto príručky je poskytnúť nasledujúce informácie.

1. Odborníci na životný cyklus prvkov so štandardizovanou metódou uplatňovania nákladov životného cyklu, ktorá je použiteľná v stavebníctve a v kľúčových fázach procesu obstarávania.
2. Mapovanie procesov v jednotlivých fázach životného cyklu prvkov - pomoc pri štruktúrovaní spôsobu plánovania, tvorby, interpretácie a prezentácie výsledkov
   pre rôzne účely a úrovne plánovania životného cyklu prvkov .
3. Pokyny, ako definovať špecifické požiadavky klienta na výpočet nákladov životného cyklu a požadované výstupy a formy vykazovania - a rozhodnúť, akú metódu ekonomického hodnotenia použiť.
4. Zjednodušenie a demystifikácia - poskytnutím praktických pokynov, inštrukcií a definícií spolu s informatívnymi pracovnými príkladmi, ako vypracovať výpočet nákladov životného cyklu (pre stavebníctvo).
5. Metodológia prijatá v odvetví, ktorá uľahčí presnejšie, konzistentnejšie a spoľahlivejšie uplatňovanie odhadu a hodnotenia možností, čím sa vytvorí účinnejší a spoľahlivejší základ pre analýzu životného cyklu prvkov a referenčné porovnávanie. Cieľom normy ISO 15686-5:2008 je tiež pomôcť odstrániť nejasnosti týkajúce sa rozsahu a terminológie a riešiť obavy z neistoty a rizík, ktoré podkopávajú dôveru v náklady životného cyklu používané pri obstarávaní stavieb.

Man 03 Zodpovedné stavebné postupy

(všetky budovy)

Počet dostupných kreditov	Minimálne normy
6	Áno

Cieľ

Rozpoznať a podporovať staveniská, ktoré sú riadené environmentálne a sociálne ohľaduplným, spoľahlivým a zodpovedným spôsobom.

Kritériá hodnotenia

Táto problematika je rozdelená do štyroch častí:

- Environmentálne riadenie (1 kredit)
- Majster udržateľnosti (1 kredit)
- Ohľaduplná výstavba (až 2 kredity)
- Monitorovanie vplyvov staveniska (2 kredity)

Na preukázanie súladu sa vyžaduje nasledovné:

Predpoklad - Legálne vyťažené a obchodované drevo

1 Všetko drevo a produkty z dreva použité počas výstavby projektu je „legálne vyťažené a obchodované drevo“ (pozri Relevantné definície na str. 63).

Poznámka: Pre ostatné materiály nie sú v tejto fáze stanovené žiadne predbežné požiadavky.

Predpoklad - národné právne predpisy v oblasti bezpečnosti a ochrany zdravia

2 Zohľadňujú sa a uplatňujú všetky národné právne predpisy a nariadenia o bezpečnosti a ochrane zdravia pri práci na stavenisku (pozri CN3.6 na str. 62):

- 2.a Projektovanie majetku; minimalizácia zdravotných a bezpečnostných rizík
- 2.b Plánovanie a organizácia prác pred výstavbou; zhromažďovanie informácií o bezpečnosti a ochrane zdravia pri práci od všetkých príslušných zainteresovaných strán (pozri príslušné definície na str. 63).
- 2.c Zriadenie miesta; zavedenie zdravotných a bezpečnostných prvkov
- 2.d Stavba; riadenie, monitorovanie a podávanie správ o bezpečnosti a ochrane zdravia zamestnancov na stavenisku.

Jeden kredit - Environmentálne riadenie

3 Hlavný dodávateľ prevádzkuje systém environmentálneho riadenia (EMS), ktorý sa vzťahuje na jeho hlavné činnosti. EMS musí byť certifikovaný treťou stranou podľa normy ISO 14001/EMAS alebo rovnocennej normy.

4 Zavedenie osvedčených postupov a postupov prevencie znečistenia na mieste, ktoré projektový tím preukáže vyplnením kontrolného zoznamu uvedeného v Tabuľke 9 na str. 58. Na preukázanie súladu nie je potrebné dosiahnuť všetky opatrenia, avšak posudzovateľ a projektový tím musia preukázať, že zámer každej časti (t. j. kvalita ovzdušia) bol splnený.

Jeden kredit - Majster udržateľnosti (stavba)

5 Na monitorovanie projektu sa vymenuje majster udržateľnosti, aby sa zabezpečilo priebežné plnenie príslušných výkonnostných a procesných kritérií udržateľnosti, a teda aj cieľov BREEAM počas výstavby, odovzdávania a ukončovania prác. Na tento účel bude v ideálnom prípade majster udržateľnosti pôsobiť na stavenisku alebo bude pravidelne navštevovať stavenisko, aby vykonal náhodné kontroly, pričom bude mať na to príslušné oprávnenie a bude vyžadovať prijatie opatrení na odstránenie nedostatkov v dodržiavaní predpisov. Majster udržateľnosti bude dostatočne často monitorovať činnosti na stavenisku (pozri poznámku o súladeCN3.3 na str. 61), aby zabezpečil minimalizovanie rizík nedodržiavania predpisov. Na príslušných zasadnutiach projektového tímu bude podávať správy o pokroku vrátane identifikácie potenciálnych oblastí nesúladu a akýchkoľvek opatrení potrebných na zmiernenie.

6 Definovaný cieľový výkon BREEAM je požiadavkou zmluvy s hlavným dodávateľom (pozri Man 01 Súhrn projektu a návrh: CN3.2 na str. 47 a Man 01 Súhrn projektu a návrh - Príslušné definície na str. 48).

7 Na získanie tohto kreditu v záverečnej fáze hodnotenia po ukončení výstavby musí projekt preukázateľne dosiahnuť cieľové hodnoty výkonnosti súvisiace s BREEAM. Toto sa preukazuje prostredníctvom záverečnej hodnotiacej správy posudzovateľa BREEAM po ukončení výstavby.

Až dva kredity - ohľaduplná výstavba

8 Pre obydlia pre jednu rodinu:
- 8.a Jeden kredit možno udeliť, ak je osoba zodpovedná za zavedenie a dodržiavanie nasledujúcich ohľaduplných stavebných postupov počas celej etapy prác (pozri Relevantné definície na str. 63):
  - 8.a.i Udržiavanie čistoty a poriadku na stavenisku:
  - 8.a.ii Zníženie dopadov na komunitu prostredníctvom zapojenia komunity a susedov
  - 8.a.iii Neustále zlepšovanie bezpečnosti
  - 8.a.iv Záväzky rešpektovať a zabezpečiť spravodlivé zaobchádzanie so všetkými pracovníkmi
  - 8.a.v Vhodné vybavenie staveniska pre pracovníkov a návštevníkov.
- 8.b Ak dodávateľ získa šesť bodov v každej zo štyroch častí Kontrolného zoznamu, môžu byť udelené dva kredity A1 na strane 418

9 Pre všetky ostatné typy budov možno kredity BREEAM udeliť nasledovne:
- 9.a Jeden kredit, ak hlavný dodávateľ splní šesť položiek v každej zo štyroch častí Kontrolného zoznamu A1 na str. 418
- 9.b Dva kredity, ak hlavný dodávateľ splní všetky položky v každej zo štyroch častí Kontrolného zoznamu A1 na str. 418 A výkonnosť dodávateľa bola potvrdená nezávislým hodnotením a overením.

Až dva kredity - Monitorovanie vplyvov miesta

10 Zodpovednosť za monitorovanie, zaznamenávanie a vykazovanie údajov o spotrebe energie, vody a dopravy (ak sa merajú) vyplývajúca zo všetkých procesov na mieste (a špecializovaného monitorovania mimo miesta) počas celého programu bola pridelená jednej osobe. Na zabezpečenie spoľahlivého zberu informácií musí mať táto osoba príslušné oprávnenie a zodpovednosť požadovať požadované údaje a mať k nim prístup. V prípade vymenovania by túto úlohu mohol vykonávať majster udržateľnosti.

Prvý monitorovací kredit - Úžitková spotreba energie

Spotreba energie

11 Vyššie uvedené kritérium 10 bolo dosiahnuté.

12 Monitorovanie a zaznamenávanie údajov o spotrebe energie na stavenisku v kWh (a prípadne v litroch spotrebovaného paliva) v dôsledku používania stavebných strojov, zariadení (mobilných a pevných) a ubytovacích priestorov na stavenisku (podľa typu projektu).

13 Nahláste celkové emisie oxidu uhličitého (celkové kg CO_2/hodnota projektu) z procesu výstavby prostredníctvom nástroja na hodnotenie a podávanie správ BREEAM (na účely potenciálneho budúceho porovnávania výkonnosti BREEAM).

Spotreba vody

14 Kritérium 10 na predchádzajúcej strane je splnené.

15 Monitorovanie a zaznamenávanie údajov o spotrebe pitnej vody hlavným staviteľom a subdodávateľmi(m^3), ktorá vzniká pri používaní stavebných strojov, zariadení (mobilných a stacionárnych) a ubytovacích priestorov na stavenisku (podľa typu projektu, pozri Poznámky o súlade.

16 Na základe zhromaždených údajov nahláste celkovú čistú spotrebu vody (m^3), t. j. spotrebu zníženú o recyklovanú vodu z procesu výstavby prostredníctvom nástroja na hodnotenie a podávanie správ BREEAM (na účely potenciálneho budúceho porovnávania výkonnosti BREEAM).

Druhý monitorovací kredit - Preprava stavebných materiálov a odpadu

17 Kritérium 10 na predchádzajúcej strane je splnené.

18 Monitorovanie a zaznamenávanie údajov o pohybe a vplyvoch dopravy vyplývajúcich z dodávky väčšiny stavebných materiálov na stavenisko a stavebného odpadu zo staveniska. Musí zahŕňať minimálne nasledovné:

- 18.a Preprava materiálov od brány závodu na stavenisko vrátane akejkoľvek dopravy, medzisklad a distribúcia, pozri Relevantné definície na str. 63.
- 18.b Rozsah tohto monitorovania sa musí vzťahovať minimálne na nasledovné:
  - 18.b.i Materiály použité na hlavné stavebné prvky (t. j. tie, ktoré sú definované ako povinné v BREEAM International Mat 01 Nástroj kalkulačky) vrátane izolačných materiálov
  - 18.b.ii Ak je to v rámci daného rozsahu, materiály na zemné práce a na terénne úpravy.
- 18.c Preprava stavebného odpadu od brány stavby až po spracovanie odpadu alebo bránu centra zhodnocovania. Rozsah tohto monitorovania musí zahŕňať skupiny stavebného odpadu uvedené v pláne odpadového hospodárstva projektu.

19 Na základe zhromaždených údajov nahláste prostredníctvom nástroja na hodnotenie a podávanie správ BREEAM (na účely potenciálneho budúceho porovnávania výkonnosti BREEAM) oddelene pre materiály a odpad celkové emisie oxidu uhličitého súvisiace s dopravou ($kgCO_2eq$).

Vzorové kritéria úrovne

Nasleduje prehľad vzorových kritérií úrovne na získanie inovačného kreditu pre túto otázku BREEAM:

20 Ak hlavný dodávateľ dosiahol súlad s organizačným, miestnym alebo národným programom ohľaduplnej výstavby BREEAM a jeho výkonnosť v porovnaní s týmto programom bola potvrdená nezávislým hodnotením a overením.

Kontrolné zoznamy a tabuľky

Projektový tím vyplní tento kontrolný zoznam. Posudzovateľ a projektový tím musia zabezpečiť splnenie zámeru každej časti prostredníctvom činností vhodných pre dané miesto.

Tabuľka 9: Kontrolný zoznam opatrení na minimalizáciu znečistenia ovzdušia a vody počas stavebných prác

Časť	Úkon	Dokončené (Á/N)
Hluk a vibrácie	Zámer: Minimalizovať vplyv hluku a vibrácií na miestnu komunitu.	
A	Naplánujte najhlučnejšie činnosti na časy, ktoré budú čo najmenej rušiť miestnu komunitu.	
B	Používajte zariadenia na reguláciu hluku, napr. dočasný hluk.	

Úsek	Úkon	Dokončené (Á/N)
C	Pri nárazových a trhacích prácach používajte zábrany alebo deflektory.	
D	Vyhnite sa alebo minimalizujte dopravu cez oblasti obcí.	
Kvalita vzduchu	Zámer: Zabrániť prašnosti a inému znečisteniu ovzdušia na mieste a v miestnej komunite.	
A	Minimalizujte prašnosť materiálov používaním krytov, skladovacích a kontrolných zariadení a zvyšovaním vlhkosti.	
B	Minimalizujte prašnosť z pohybu vozidiel, prípadne použite vodný postrek.	
C	Zabráňte spaľovaniu materiálov na mieste.	
Riadenie odtoku vody	Zámer: Zabrániť znečisteniu vody z činností na mieste.	
A	Pripravte plán odvádzania vody a označte šachty alebo miesta vstupu vody, aby ste zvýraznili rizikové oblasti. Poznámka: tento plán sa môže v priebehu prác zmeniť.	
B	Ak je to možné alebo vhodné, naplánujte práce tak, aby ste sa vyhli obdobiam silných zrážok (t. j. počas obdobia sucha) a upravte činnosti počas extrémnych zrážok a silného vetra.	
C	Obrys a minimalizácia dĺžky a strmosti svahov.	
D	Mulčovanie na stabilizáciu exponovaných oblastí alebo na lemovanie strmých kanálov alebo svahov, napr. pomocou jutovej rohože.	
E	Plochy okamžite obnovte vegetáciou.	
F	Zníženie alebo zabránenie prenosu sedimentov mimo lokality pomocou usadzovacích rybníkov, bahenných zábran alebo úpravy vody.	
G	Oddeľte alebo odkloňte odtok čistej vody, aby sa zabránilo jej zmiešaniu s vodou s vysokým obsahom pevných častíc (čím sa minimalizuje množstvo vody, ktorá si vyžaduje úpravu).	
H	Zabezpečte vhodné odvodňovacie systémy na minimalizáciu a kontrolu infiltrácie.	
I	Všetky činnosti, ktoré by mohli spôsobiť znečistenie, vykonávajte vo vymedzených, ohradených oblastiach mimo riek, vrtov alebo iných vodných tokov.	
Nebezpečné materiály	Zámer: Zabrániť znečisťovaniu miestnych vodných tokov nebezpečnými materiálmi.	

Úsek	Úkon	Dokončené (Á/N)
A	Zabezpečte primeraný sekundárny ochranný kryt pre nádrže na palivo a pre dočasné skladovanie iných kvapalín, ako sú mazacie oleje a hydraulické kvapaliny.	
B	Zabezpečte školenie pracovníkov o správnom prenose a manipulácii s palivami a chemikáliami a o reakcii na únik.	
C	Na miestach tankovania a iných miestach prepravy kvapalín používajte nepriepustné povrchy.	
D	Zabezpečte na mieste prenosné zariadenia na zadržiavanie a čistenie rozliatych látok a školte zamestnancov o ich používaní.	
E	Zabezpečte vhodné hygienické zariadenia pre všetkých pracovníkov.	

Poznámky o súlade

Ref	Podmienky	Popis
Hrubá stavba a jadro (iba nebytové a rezidenčné inštitúcie)		
CN1	Príslušné hodnotiace kritériá	Obidve možnosti: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy Podrobnejší popis možností vyhodnotenia hrubej stavby a jadra nájdete v Prílohe D - Posúdenie projektu hrubej stavby a jadra na strane 409.
Obytné - čiastočne a úplne vybavené		
CN2	Príslušné hodnotiace kritériá - Obydlia pre jednu rodinu	Obidve možnosti: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy, pozri bod CN2.2, podrobnejšie informácie o úlohe majstra udržateľnosti. Pozri Prílohu E – Uplatniteľnosť BREEAM New Construction na obydlia pre jednu rodinu a obydlia pre viaceré rodiny, čiastočne a úplne vybavené na str. 412, kde nájdete podrobnejší popis možností hodnotenia bytových domov.
CN2.1	Príslušné hodnotiace kritériá - Obydlia pre viaceré rodiny	Obidve možnosti: Platia všetky kritériá týkajúce sa typu a funkcie budovy. Pozri Prílohu E – Uplatniteľnosť BREEAM New Construction na obydlia pre jednu rodinu a obydlia pre viaceré rodiny, čiastočne a úplne vybavené na str. 412, kde nájdete podrobnejší popis možností hodnotenia bytových domov.
CN2.2	Majster udržateľnosti pre obydlia pre jednu rodinu	V prípade obydlí pre jednu rodinu môže posudzovateľ BREEAM International New Construction konať ako majster na udržateľnosť. V takejto situácii bude stále potrebné riešiť všetky konflikty záujmov, ktoré by mohli vzniknúť.
Všeobecné		

Ref	Definície pojmov	Popis
CN3	Organizačné, miestne alebo národné schémy ohľaduplnej výstavby v súlade s BREEAM	Ak existuje schéma ohľaduplnej výstavby alebo schéma pre stavebníkov, ktorý nie je uvedený ako schéma v súlade s BREEAM, správca alebo prevádzkovateľ schémy môže požiadať spoločnosť BRE Global o uznanie ako schémy v súlade s BREEAM. Pred každou žiadosťou by mal prevádzkovateľ najprv preskúmať svoju schému na základe požiadaviek uvedených v Prílohe G - Požiadavky na schému ohľaduplného stavebníka na str. 415. Ak sa domnieva, že jeho schéma je rovnocenná s požiadavkami Prílohy G - Schéma ohľaduplného stavebníka na str. 415, mal by sa obrátiť na spoločnosť BRE Global. Spoločnosť BRE Global preskúma túto schému a v prípade potreby ju pridá do zoznamu vyhovujúcich schém a definuje vhodné referenčné hodnoty výkonnosti na dosiahnutie kreditov BREEAM pomocou tejto schémy.
CN3.1	Stavebné drevo a opakovane použiteľné debnenie. Pozri kritérium 1 na str. 56.	Samotné opakovane použiteľné drevené debnenie nie je automaticky v súlade. Všetko drevo použité pri výrobe debnenia musí byť buď najprv regenerované alebo „legálne vyťažené a obchodované“ (pozri Mat 03 Zodpovedné získavanie stavebných produktov - Relevantné definície na str. 292).
CN3.2	Systém environmentálneho riadenia (SEM)	Systém environmentálneho riadenia možno vypracovať podľa pokynov v publikácii WRAP „Váš sprievodca systémami environmentálneho riadenia“, ktorú si môžete prevziať z webovej stránky WRAP. Hoci je táto príručka založená na dokumente Spojeného kráľovstva, riadi sa požiadavkami noriem ISO 14001 a EMAS; na preukázanie súladu s kritériom 3 na str. 56 sa však vyžaduje certifikácia podľa noriem ISO 14001, EMAS alebo rovnocennej normy.
CN3.3	Frekvencia monitorovania miesta. Pozri kritérium 5 na str. 57.	V tejto súvislosti by sa návštevy mali uskutočňovať v kľúčových fázach procesu výstavby, v čase, keď: Práce možno pozorovať pred ich zakrytím alebo pred začatím nových prác alebo remesiel; ak by mohlo dôjsť k významným rizikám konfliktov alebo chýb Načasovanie je rozhodujúce pre preukázanie súladu Kľúčové dôkazy sa musia predložiť v určitom čase, okrem iného vrátane fotografií, dodacích listov a iných listinných dôkazov Rôzne odbory a systémy sa spájajú a jeden by mohol poškodiť integritu alebo súlad výkonu iného systému s požiadavkami BREEAM.
CN3.4	Nezávislé hodnotenie a overovanie	Posúdenie činností na mieste podľa Kontrolného zoznamu A1 na str. 418, ktoré vykonáva osoba, ktorá môže preukázať svoju nezávislosť od realizácie projektu, t. j. osoba, ktorá nie je zamestnaná v organizácii dodávateľa (ani pre ňu nepracuje na základe zmluvy). Takáto osoba musí mať najmenej päťročné skúsenosti z práce v stavebníctve, buď ako dodávateľ alebo ako súčasť projektového tímu. Ak posudzovateľ spĺňa vyššie uvedené kritériá, môže túto úlohu plniť.
CN3.5	Dodržiavanie kontrolného zoznamu ohľaduplného dodávateľa	V prípadoch, keď položky v Kontrolnom zozname A1 na str. 418 nie sú relevantné vzhľadom na rozsah prác na stavenisku, posudzovateľ by mal požiadať spoločnosť BRE Global o usmernenie, aký počet položiek sa vyžaduje.

Ref	Definície pojmov	Popis
CN3.6	Národné predpisy o bezpečnosti a ochrane zdravia a osvedčené postupy	Ak v hodnotenej krajine neexistujú žiadne národné predpisy v oblasti bezpečnosti a ochrany zdravia, je potrebné preukázať, že BUĎ: Hlavný dodávateľ má systém riadenia bezpečnosti a ochrany zdravia pri práci v súlade s normou OHSAS 18001:2007, ALEBO Práce sa budú vykonávať v súlade s Kódexom postupov bezpečnosti a ochrany zdravia pri práci v stavebníctve vydaný Združením práce.
CN3.7	Spotreba vody	Ak sa voda nepoužíva v súvislosti so stavebnými zariadeniami, vybavením (mobilným a pevným) a ubytovaním na stavenisku, nie je potrebné monitorovať spotrebu vody.

Metodológia

Žiadna.

Dôkazová dokumentácia

Kritériá	Predbežná fáza projektu	Záverečná fáza po výstavbe
Všetky	Príslušná časť alebo ustanovenia špecifikácie budovy alebo zmluvy. ALEBO Podpísaný a datovaný list, v ktorom sa zaviažete splniť príslušné kritériá.	Mená osôb zodpovedných za monitorovanie, zaznamenávanie a oznamovanie údajov vyplývajúcich zo všetkých stavebných procesov. Súhrnné údaje o mechanizme monitorovania a zberu údajov, protokoloch alebo systéme používanom na zhromažďovanie a spracovanie príslušných údajov. Zhromaždené údaje alebo informácie z fázy výstavby: • Celková spotreba energie na stavenisku podľa typu paliva alebo celkové emisie oxidu uhličitého • Celková čistá spotreba vody na stavenisku (m³) • V prípade materiálov aj odpadov celková spotreba paliva podľa typu alebo celkové emisie oxidu uhličitého plus celková prejdená vzdialenosť (km). V prípade certifikovaného a necertifikovaného dreva na stavenisku predložte dôkazy požadované pre BREEAM Mat 03 Zodpovedné získavanie stavebných produktov na str. 282. Kópia certifikátu EMS/EMAS od hlavných dodávateľov. Kópie zdokumentovaných postupov používaných na stavenisku na prácu podľa usmernení o najlepších postupoch riadenia znečistenia. List od hlavného dodávateľa, v ktorom sa potvrdzuje nasledovné: • Zaviedli sa postupy na riadenie a zmierňovanie znečistenia • Meno alebo pracovná pozícia príslušnej osoby, ktorá je zodpovedná za monitorovanie a riadenie vplyvov na stavenisko počas celého projektu.

Dodatočné informácie

Relevantné definície

Odborný poradca BREEAM (AP)

Pozri Man 01 Súhrn projektu a návrh na str. 44.

Stavebné procesy

Stavebný proces zahŕňa umožnenie prác, montáž, inštaláciu a demontáž, ktoré sú potrebné na obsluhu výstavby a dokončenie novej budovy.

Špecializovaná výroba mimo staveniska alebo výroba

Výroba komponentu alebo materiálu, ktorá sa uskutočňuje vo výrobnom alebo spracovateľskom zariadení mimo staveniska, ktoré je špeciálne zriadené pre stavebný projekt.

Brána závodu

Na účely tejto otázky sa brána závodu definuje ako brána výrobcu produktu (t. j. keď sa končí výroba a predbežná montáž a materiál je v koncovej podobe produktu). Príklady môžu zahŕňať nasledovné:

1. Výrobcovia ocele, betónu alebo skla na obklady, okná a nosníky atď.
2. Brána lomu na kamenivo a piesok
3. Betonáreň na betón
4. Píla a závod na spracovanie dreva.

Legálne vyťažené a obchodované drevo

Pozri Mat 03 Zodpovedné získavanie stavebných produktov na str. 282.

Hlavný dodávateľ

Spoločnosť, ktorá nesie celkovú zodpovednosť za dohľad nad stavebnou fázou projektu, či už je to dodávateľ alebo správca.

Majster udržateľnosti (stavba)

Členovia formálnych systémov schválených spoločnosťou BRE Global v súvislosti s poskytovaním poradenstva v oblasti projektovania. V súčasnosti sa predpokladá, že túto požiadavku spĺňajú tieto schémy:

- Systém členstva odborných poradcov BREEAM (AP)
- Schéma členstva manažéra pre udržateľnosť miesta BRE.

Majstri udržateľnosti sú vyškolení a kvalifikovaní na poskytovanie poradenstva projektovému tímu v súvislosti s BREEAM s cieľom uľahčiť včasné a úspešné stanovenie cieľov, plánovanie, stanovenie priorít a monitorovanie súladu s BREEAM v súvislosti s projektovaním budovy. Budú podliehať priebežnej odbornej príprave a požiadavkám na spôsobilosť, aby sa zabezpečilo udržiavanie ich znalostí. Poskytovatelia systémov alebo kvalifikácií, ktorí nie sú uvedení v zozname a ktorí sa domnievajú, že ich členovia spĺňajú túto definíciu, a ktorí by chceli byť uvedení v zozname schválených členských systémov, by mali kontaktovať spoločnosť BRE Global.

Poznámka: Cieľom kreditov pre majstrov udržateľnosti je podporiť integrované projektovanie a stavebný proces, ktorý využíva BREEAM ako rámec na stanovenie, odsúhlasenie a dosiahnutie požadovanej úrovne udržateľnosti projektu. Kredity pre majstra udržateľnosti v tomto vydaní BREEAM sa zameriavajú na dosiahnutie tohto cieľa prostredníctvom poskytnutia príslušných odborných znalostí počas výstavby, odovzdania a ukončenia projektu.

Manažér udržateľnosti staveniska BRE

Osoba s kvalifikáciou BRE, ktorá pomáha zabezpečiť kvalitu realizácie projektu a minimalizovať vplyv stavebného procesu na životné prostredie, ako aj dosiahnuť zámery projektantov budov. Pracuje priamo na stavenisku a zabezpečuje, aby sa stavenisko riadilo ekologicky efektívnym spôsobom a aby tímy na stavenisku s istotou dodržiavali náročné predpisy a požiadavky systémov environmentálnej certifikácie, napr. BREEAM. Požiadavky BREEAM spĺňajú len kvalifikované osoby, ktoré sú členmi pridruženej členskej schémy BRE a sú v nej zaregistrované počas celého obdobia výstavby. Toto členstvo zabezpečuje udržiavanie primeranej úrovne spôsobilosti prostredníctvom pravidelného ďalšieho odborného vzdelávania (CPD) v kľúčových relevantných oblastiach.

Iné informácie

Protokoly o vykazovaní CO_2

V čase uverejnenia publikácie sú pre protokoly merania CO_2 k dispozícii nasledujúce pokyny.

1. Encord (www.encord.org): Spustili protokol o vykazovaní CO_2.
2. GHG Protocol (www.ghgprotocol.org)

Nástroj na monitorovanie a zameranie vplyvov staveniska

SMART Waste je online nástroj na podávanie environmentálnych správ pre stavebníctvo. Umožňuje organizáciám efektívne zachytávať, monitorovať a vykazovať nasledovné:

- Odpad (vrátane plánov nakladania s odpadom a auditov pred demoláciou)
- Energia (vrátane prepočtu na emisie oxidu uhličitého)
- Voda
- Zodpovedne získané materiály (vrátane dreva) Doprava
- Schéma zodpovedných dodávateľov.

SMART Waste, ktorý sa používa na splnenie kritérií tejto otázky a ako zdroj dôkazov na preukázanie súladu, pomáha organizáciám znížiť ich vplyv na životné prostredie, čím sa výrazne šetrí čas a náklady.

Viac informácií o SMART Waste nájdete na webstránke: www.smartwaste.co.uk.

Webová stránka International Finance Corporation poskytuje informácie týkajúce sa tejto otázky, t. j. IFC World Bank Group - Environmental, Health and Safety (EHS) Guidelines.Usmernenia o ochrane životného prostredia, zdravia a bezpečnosti (BOZP).

Ohľaduplné stavebné postupy

Nižšie sú uvedené príklady ohľaduplných stavebných postupov, ktoré poskytujú možné spôsoby splnenia kritérií pre obydlia pre jednu rodinu. Ďalšie príklady nájdete na webovej stránke Schémy ohľaduplných stavebníkov v časti Príklady osvedčených postupov.

1. Udržiavanie čistoty a poriadku na stavenisku:
   a. Uistite sa, že okolo staveniska vrátane obvodu nie sú žiadne voľné materiály ani odpad
   b. Pravidelná kontrola čistoty vozidiel
   c. Zaviesť iniciatívu „Piatkové upratovanie“.
2. Znížiť vplyv na komunitu:
   a. Naplánovať časový harmonogram dodávok na stavenisko tak, aby sa predišlo rušeniu miestnych obyvateľov.
   b. Zabezpečiť, aby sa všetky hlučné práce vykonávali v čase dohodnutom so susedmi.
   c. Zaznamenávať evidenčné čísla vozidiel všetkých pracovníkov v prípade, že bude podaná sťažnosť týkajúca sa nepríjemností pri parkovaní.
3. Snaha o neustále zlepšovanie bezpečnosti:
   a. Rozhovory o bezpečnosti
   b. Nálepky do preukazu alebo na prilbu pre pracovníkov, ktorí úspešne absolvovali školenie o bezpečnosti a ochrane zdravia pri práci
   c. Postup hlásenia hroziacich incidentov.
4. Záväzok rešpektovať všetkých pracovníkov a zabezpečiť spravodlivé zaobchádzanie s nimi:
   a. Zavesiť na stenu tabuľu „Úcta k ľuďom“, v ktorej sa zaznamenáva úroveň spokojnosti so sociálnymi a inými relevantnými témami
   b. Dotazníky distribuované všetkým zamestnancom s cieľom zistiť, čo možno urobiť pre zlepšenie pracovných podmienok
   c. Informácie o zneužívaní.
5. Zabezpečte vhodné vybavenie na stavenisku:
   a. Vhodné toalety pre mužov a ženy
   b. Odpočinkové zóny pre pracovníkov na prestávky mimo pracovných priestorov
   c. Vhodné zariadenia prvej pomoci.

Man 04 Uvedenie do prevádzky a odovzdanie (všetky budovy)

Počet dostupných kreditov	Minimálne normy
4	Áno

Cieľ

Podporiť riadne naplánovaný proces odovzdania a uvedenia do prevádzky, ktorý odzrkadľuje potreby používateľov budovy.

Posudzovacie kritériá

Táto problematika je rozdelená do štyroch častí:

- Harmonogram a povinnosti pri uvádzaní do prevádzky a testovaní (1
- kredit) Uvádzanie služieb budovy do prevádzky (1 kredit)
- Testovanie a kontrola stavebných materiálov (1 kredit)
- Odovzdanie (1 kredit)

Na preukázanie súladu sa vyžaduje nasledovné:

Jeden kredit - Harmonogram uvedenia do prevádzky a testovania a zodpovednosť

1 Existuje harmonogram uvedenia do prevádzky a testovania, ktorý určuje uvedenie požadovaných prác do prevádzky . Tento harmonogram obsahuje časový plán uvedenia do prevádzky služieb budov a kontrolných systémov a ich opätovného uvedenia do prevádzky ako aj testovanie a kontrolu stavebných materiálov.

2 V harmonograme sa určia príslušné normy, podľa ktorých sa budú vykonávať všetky činnosti spojené s uvedením do prevádzky. Ak to bude potrebné, bude obsahovať národné kódexy osvedčených postupov uvádzania do prevádzky alebo iné príslušné normy . V prípade, že je špecifikovaný systém stavebnej správy (BMS), pozri poznámku o zhode CN3.2 na strane 69 o postupoch uvádzania do prevádzky BMS.

3 Vymenuje sa príslušný člen projektového tímu, ktorý bude monitorovať a programovať predbežné uvedenie do prevádzky, uvedenie do prevádzky a testovanie. V prípade potreby bude zahŕňať aj opätovné uvedenie do prevádzky v mene klienta.

4 Hlavný dodávateľ zodpovedá za program uvedenia do prevádzky a za testovanie, zodpovednosť a kritériá v rámci svojho rozpočtu a hlavného programu prác. V programe sa počíta s potrebným časom na dokončenie všetkých činností spojených s uvedením do prevádzky a testovaním pred odovzdaním.

Jeden kredit - Uvedenie stavebných služieb do prevádzky

5 Kredit za harmonogram uvedenia do prevádzky a testovania a zodpovednosť je splnený.

6 V prípade komplexných služieb a systémov v budovách sa vo fáze projektovania vymenuje špecializovaný manažér uvádzania do prevádzky (buď objednávateľom alebo dodávateľom), ktorý bude zodpovedný za nasledovné:

6.a Preskúmanie návrhu a poskytovanie poradenstva o vhodnosti pre jednoduché uvedenie do prevádzky
6.b Poskytnutie asistencie pri riadení uvádzania do prevádzky pri programovaní stavby a počas etáp inštalácie
6.c Riadenie fáz uvádzania do prevádzky, testovania výkonnosti a fáz odovzdania alebo po odovzdaní.

6.d V prípade jednoduchých systémov technického vybavenia budov môže túto úlohu vykonávať príslušný člen projektového tímu (pozri kritérium 3 na predchádzajúcej strane) za predpokladu, že sa nepodieľa na všeobecných montážnych prácach systémov technického vybavenia budov.

Jeden kredit - Testovanie a kontrola stavebného materiálu

7 Kredit za harmonogram uvedenia do prevádzky a testovania a zodpovednosť je splnený.

8 Celistvosť stavebnej konštrukcie vrátane kontinuity izolácie, zamedzenia tepelných mostov a únikov vzduchu sa zabezpečuje prostredníctvom testovania a kontroly po ukončení stavby. V závislosti od typu budovy alebo konštrukcie to možno preukázať vykonaním termografického prieskumu, ako aj skúškou a kontrolou vzduchotesnosti (pozri poznámky o súlade CN3 .3 a CN3.4 na strane 70. Prieskum a testovanie vykonáva odborník s príslušnou kvalifikáciou (pozri Príslušné definície na strane 71) v súlade s príslušnou normou.

9 Všetky nedostatky zistené pri kontrole na mieste, termografickom prieskume a v správach o skúškach vzduchotesnosti sa pred odovzdaním a ukončením stavby odstránia na. Všetky nápravné práce musia spĺňať požadované výkonnostné charakteristiky budovy alebo prvku, ako boli definované vo fáze návrhu .

Jeden kredit - Odovzdanie

10 Pred odovzdaním sa vypracuje príručka pre užívateľov budovy alebo domu, ktorá sa distribuuje užívateľom budovy a správcom priestorov (pozri Príslušné definície na strane 71). Najskôr sa vypracuje návrh kópie a prediskutuje sa s používateľmi (ak sú používatelia budovy známi), aby sa zabezpečilo, že príručka bude pre potenciálnych používateľov čo najvhodnejšia a najužitočnejšia .

11 Pre užívateľov budov alebo správcov priestorov sa pripraví harmonogram školení, ktorý sa vhodne načasuje podľa plánov odovzdania a navrhovaného obsadenia a ktorý obsahuje minimálne tento obsah:

- 11.a Projektový zámer budovy
- 11.b Dostupná ponuka následnej starostlivosti a hlavné kontakty tímu následnej starostlivosti vrátane plánovaného sezónneho uvedenia do prevádzky a hodnotenia po obsadení
- 11.c Predstavenie a demonštrácia nainštalovaných systémov a kľúčových funkcií, najmä BMS, ovládacích prvkov a ich rozhrania, aby boli úplne oboznámení s podrobnou prevádzkou budovy
- 11.d Zoznámenie sa s príručkou užívateľa budovy a s ďalšou príslušnou dokumentáciou budovy, napr. s konštrukčnými údajmi, technickými príručkami, stratégiou údržby, príručkou prevádzky a údržby (O&M), záznamami o uvedení do prevádzky, denníkom atď.
- 11.e Požiadavky na údržbu vrátane všetkých platných zmlúv a režimov údržby.

Kontrolné zoznamy a tabuľky

Žiadne.

Poznámky o súlade

Ref	Podmienky	Popis
Hrubá stavba a jadro (iba nebytové a rezidenčné inštitúcie)		
CN1	Príslušné hodnotiace kritériá	**Harmonogram a zodpovednosť pri uvádzaní do prevádzky a testovaní, uvádzanie stavebných služieb do prevádzky, kritériá 1 na 6 na strana 66** Len plášť: Tieto kritériá sa neuplatňujú. Plášť a jadro: Pokiaľ ide o rozsah špecifikovaných alebo inštalovaných služieb, uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy **Testovanie a kontrola štruktúry budovy, kritériá 7 na 9 na predchádzajúcej strane** Iba plášť: kritériá **8** a **9 na predchádzajúcej strane** Plášť a jadro: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy **Odovzdanie, kritériá 10 a 11 na predchádzajúcej strane** Len plášť: Tieto kritériá sa neuplatňujú. Plášť a jadro: Uplatňuje sa len kritérium 10 na predchádzajúcej strane. Príručka obsahuje pokiaľ možno všetky relevantné časti týkajúce sa inštalovaných služieb a tkanín. Po dokončení prác odovzdá vlastník, zástupca alebo používateľ budovu dodávateľovi, ktorý môže dokončiť príslušné časti na základe stratégie vybavenia. Pozri Prílohu D - Hodnotenie plášťa a jadra projektu na str. 409, kde nájdete podrobnejší popis možností posúdenia plášťa a jadra.
Bytové - čiastočne a úplne vybavené		
CN2	Príslušné hodnotiace kritériá - Obydlia pre jednu rodinu	**Harmonogram a zodpovednosť pri uvádzaní do prevádzky a testovaní, uvádzanie stavebných služieb do prevádzky, kritériá 1 na 6 na strana 66** Obidve možnosti: Tieto kritériá sa neuplatňujú. **Testovanie a kontrola štruktúry budovy, kritériá 7 na 9 na predchádzajúcej e** Obidve možnosti: Tieto kritériá sa neuplatňujú. **Odovzdanie, kritériá 10 a 11 na predchádzajúcej strane** Obidve možnosti: Uplatňuje sa len kritérium 10 na predchádzajúcej strane. Pozri Prílohu E – Uplatniteľnosť BREEAM New Construction na obydlia pre jednu rodinu a obydlia pre viaceré rodiny, čiastočne a úplne vybavené na str. 412, kde nájdete podrobnejší popis možností hodnotenia bytových domov.

Ref	Definície pojmov	Popis
CN2.1	Príslušné hodnotiace kritériá - Viacbytov é domy	**Harmonogram a zodpovednosť pri uvádzaní do prevádzky a testovaní, uvádzanie stavebných služieb do prevádzky, kritériá 1 na 6 na strana 66** Čiastočne vybavené: Pokiaľ ide o rozsah služieb, ktoré sú špecifikované alebo nainštalované, platia všetky kritériá relevantné pre typ a funkciu budovy. Úplne vybavené: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy **Testovanie a kontrola štruktúry budovy, kritériá** 7 na str. 67 **až** 9 na str. 67 Obidve možnosti: Platia všetky kritériá týkajúce sa typu a funkcie budovy. **Odovzdanie, kritériá 10 a 11 na str. 67** Čiastočne vybavené: Príručka pre používateľa domu obsahuje v čo najväčšej možnej miere všetky relevantné časti týkajúce sa inštalovaných služieb a budovy. Úplne vybavené: Platia všetky kritériá týkajúce sa typu a funkcie budovy. Pozri Prílohu E – Uplatniteľnosť BREEAM New Construction na obydlia pre jednu rodinu a obydlia pre viaceré rodiny, čiastočne a úplne vybavené na str. 412, kde nájdete podrobnejší popis možností hodnotenia bytových domov.
Všeobecné		
CN3	Národné kódexy osvedčených postupov pri zadávaní zákaziek	V zozname schválených noriem a váhových koeficientov (ASWL) nájdete príslušné národné stavebné predpisy a predpisy o osvedčených postupoch uvádzania do prevádzky v hodnotenom okrese. Prípadne preukážte , že navrhované dokumenty pokrývajú minimálne požiadavky stanovené v zozname schválených noriem a váh. Ak pre danú krajinu neexistujú príslušné kódy pre uvedenie do prevádzky , projektový tím by mal preukázať súlad s britskými alebo európskymi normami uvedenými v referenčnom liste každej príslušnej krajiny.
CN3.1	Zariadenia súvisiace s procesom. Pozri kritérium 2 na str. 66.	Z hodnotenia kreditov za uvedenie do prevádzky môžu byť vylúčené všetky zariadenia súvisiace s procesom alebo výrobou, ktoré sú špecifikované ako súčasť projektu, s výnimkou prípadov, keď tvoria neoddeliteľnú súčasť služieb HVAC budovy, ako sú niektoré systémy rekuperácie tepla.
CN3.2	BMS postupy uvedenia do prevádzky. Pozri kritérium 2 na str. 66.	Ak je špecifikované BMS, musia sa vykonať nasledujúce postupy uvedenia do prevádzky: 1. Uvedenie vzduchových a vodných systémov do prevádzky sa vykonáva, keď sú všetky riadiace zariadenia nainštalované, zapojené a funkčné 2. Okrem výsledkov prietoku vzduchu a vody zahŕňajú výsledky uvedenia do prevádzky aj fyzikálne merania teploty v miestnosti, teploty mimo cievky a prípadne ďalších kľúčových parametrov. 3. BMS alebo riadiaca inštalácia by mala byť spustená v automatickom režime s uspokojivými vnútornými podmienkami pred odovzdaním 4. Všetky schémy BMS a grafika (ak je BMS prítomná) sú pred odovzdaním plne nainštalované a funkčné pre používateľské rozhranie 5. Užívateľ alebo tím zamestnancov je plne vyškolený v prevádzke systému.
CN3.3	Rozsah termografického prieskumu	Termografický prieskum musí pokrývať 100% príslušných priestorov, pokiaľ nejde o veľkú komplexnú budovu (pozri CN3.4 nižšie) a musí zabezpečiť otestovanie všetkých prvkov stavebného materiálu, ktorý obklopuje vnútornú vyhrievanú alebo upravenú (ošetrenú) zónu budovy. Toto zahŕňa vnútorné steny oddeľujúce upravené a neupravené zóny.

Ref	Definície pojmov	Popis
CN3.4	Termografický prieskum veľkých komplexných budov	V prípade veľkých a komplexných budov, napr. letísk, veľkých nemocníc a výškových budov, môže byť nepraktické, aby termografický prieskum a testovanie vzduchotesnosti pokrývali 100 % budovy. Ak termografický inšpektor triedy/kategórie II považuje kompletný termografický prieskum za nepraktický, mali by sa dodržiavať pokyny uvedené v norme ISO 9972:20155 o rozsahu prieskumu a testovania vzduchotesnosti.
CN3.5	Príslušné normy pre termovíziu a testovanie úniku vzduchu (ak je to vhodné)	ISO 6781-3:2015 Prevádzkové vlastnosti budov - Zisťovanie tepelných, vzduchových a vlhkostných nerovností v budovách infračervenými metódami - Časť 3: Kvalifikácia prevádzkovateľov zariadení, analytikov údajov a autorov správ. Ostatné časti tejto normy sa stále vyvíjajú; kým nebudú zverejnené, bude sa uplatňovať predchádzajúca verzia. ISO 6781:1983 Tepelnotechnické vlastnosti budov - Kvalitatívne určenie tepelných nepravidelností v plášti budov - Infračervená metóda. ISO 9972:2015 Tepelnotechnické vlastnosti budov - Stanovenie prievzdušnosti budov - Metóda tlakového ventilátora
CN3.6	Požiadavka na termografický prieskum A testovanie vzduchotesnosti	Požiadavkou tohto kreditu je zabezpečiť kontinuitu izolácie a zabrániť tepelným mostom a únikom vzduchu. Spôsob, akým sa to dosiahne, závisí od posúdenia príslušne kvalifikovaného odborníka. Preto sa nevyžaduje, aby sa vykonali obidve, pokiaľ to nepovažuje za potrebné odborník s príslušnou kvalifikáciou.
CN3.7	Sanačné práce	Všetky vykonané sanačné práce, ktoré sú výsledkom termografického prieskumu a testu vzduchotesnosti budovy, by mali byť spoľahlivé a trvanlivé, t. j. sanačné práce musia mať rovnaké výkonnostné charakteristiky a životnosť ako okolité prvky. Ak sa zistia nedostatky, ktoré sa týkajú aspektov mimo rozsahu renovačných prác, nie je potrebné ich odstraňovať, napr. ak sa pri testovaní zistí, že zasklenie má nedostatky, ale nebolo zahrnuté do rozsahu renovačných prác.
CN3.8	Kvalifikácia termografa	Termografický prieskum zvyčajne vykonáva odborník s príslušnou kvalifikáciou, ktorý je klasifikovaný a kvalifikovaný ako odborník triedy/kategórie II v oblasti termografie (pozri Relevantné definície na nasledujúcej strane). Ak na stavenisku nie je k dispozícii termograf II. triedy/kategórie, prieskum môže vykonať termograf I. triedy/kategórie a snímky potom interpretuje termograf II. triedy/kategórie.
CN3.9	Distribúcia príručky pre používateľa domu pre bytové domy	Príručka pre používateľa domu musí byť dodaná do všetkých domov vo výstavbe. Ak je stavba rozdelená na viacero obydlí a vždy, keď sú v nej zavedené spoločné systémy a prvky, mala by sa poskytnúť jedna centrálna príručka pre používateľov budovy, ktorá by pokrývala rozsah kontrolovaných oblastí a povinností vlastníka alebo správcu budovy. Pre každé jednotlivé obydlie by sa mala vypracovať samostatná príručka pre užívateľa budovy s obsahom vhodným pre obyvateľov a ich interakciu s budovou a jej systémami.

Metodológia

Žiadna.

Dôkazová dokumentácia

Kritériá	Predbežná fáza projektu	Záverečná fáza po výstavbe
Harmonogram a zodpovednosť pri uvádzaní do prevádzky a testovaní, uvádzanie stavebných služieb do prevádzky		
1–6 na str. 66	Rozpočet projektu. Program prác. Menovací dekrét alebo rozpis povinností pri uvedení do prevádzky. Príslušná časť alebo ustanovenia špecifikácie budovy alebo zmluvy. Program hlavného dodávateľa. Harmonogram uvedenia do prevádzky.	Záznamy alebo správy o uvedení do prevádzky. Program hlavného dodávateľa. Harmonogram uvedenia do prevádzky.
Testovanie a kontrola stavebných materiálov		
7–9 na str. 67	Výkresy s jasne vyznačenou líniou tepelnoizolačnej bariéry A Potvrdenie, že tieto údaje boli skontrolované s cieľom overiť kontinuitu tepelnej bariéry.	Termografický prieskum alebo správa o úniku vzduchu. Termografická kvalifikácia (ak sa uplatňuje) ALEBO Dôkaz o kontrole, ktorá potvrdzuje kontinuitu tepelnej bariéry počas stavebného procesu. Potvrdenie odstránených nedostatkov identifikované buď termografickým prieskumom alebo testovaním vzduchotesnosti.
Odovzdanie		
10–11 na str. 67	Príslušná časť alebo ustanovenia špecifikácie budovy alebo zmluvy. ALEBO Záväzný list od klienta alebo stavebníka.	Kópia Príručky pre používateľa budovy alebo domu. Písomné potvrdenie od projektového tímu alebo klienta, že príručka bola alebo bude podľa potreby distribuovaná vlastníkovi budovy, nájomcom alebo dodávateľovi vybavenia (na dokončenie). Kópia harmonogramu školenia s potvrdením, že bolo (alebo bude) vydané príslušným osobám v požadovanom čase.

Dodatočné informácie

Relevantné definície

Príručka používateľa budovy

Špecializované usmernenie pre budovy alebo špecifické lokality pre netechnických používateľov budov. Účelom príručky je pomôcť používateľom budovy pri prístupe k budove, jej pochopení a efektívnej prevádzke v súlade s pôvodným zámerom projektu. Príručka pre používateľa budovy by mala byť napísaná tak, aby poskytovala ľahko dostupné a zrozumiteľné informácie relevantné pre tieto zainteresované strany:

- Zamestnanci budovy (prípadne obyvatelia)
- Netechnický tím správy zariadení alebo správca budovy
- Ostatní používatelia budovy, napr. návštevníci, používatelia z komunity.

Obsah príručky bude špecifický pre daný typ budovy a koncových používateľov, ale vo všeobecnosti by mal obsahovať informácie o nasledovnom:

- Prehľad o budove a jej environmentálnej stratégii, napr. energetická alebo vodohospodárska efektívnosť alebo efektívnosť nakladania s odpadom
- Pravidlá alebo stratégia a spôsob, akým by používatelia mali chápať tieto pravidlá alebo stratégiu a ako ju realizovať
- Prehľad služieb v budove a prístup k riadiacim prvkom, napr. kde ich nájsť, čo riadia, ako ich efektívne a účinne ovládať atď.
- Informácie pre návštevníkov pred príchodom, napr. prístupové a bezpečnostné postupy a ustanovenia
- Zabezpečenie spoločných zariadení a prístup k nim
- Bezpečnostné a núdzové informácie a pokyny
- Prevádzkové postupy súvisiace s budovou špecifické pre typ budovy alebo prevádzku, napr. laboratóriá
- Opatrenia týkajúce sa hlásenia incidentov a spätnej väzby v budove
- Poskytovanie dopravných zariadení a prístup k nim, napr. verejná doprava, zariadenia pre cyklistov, pešie trasy atď.
- Zabezpečenie miestnej občianskej vybavenosti a prístup k nej
- Opatrenia a úvahy týkajúce sa opätovnej montáže, renovácie a údržby
- Odkazy, referencie a príslušné kontaktné údaje.

Neexistuje žiadna požiadavka na formát, ktorý by mala mať príručka používateľa budovy.

Komplexné systémy

Patrí sem okrem iného klimatizácia, komfortné chladenie, mechanické vetranie, výtlačné vetranie, komplexné pasívne vetranie, BMS, obnoviteľné zdroje energie, mikrobiologické bezpečnostné skrine a digestory, chladiace boxy a chladiace zariadenia.

Príručka používateľa domu

Cieľom príručky pre používateľa domu je zabezpečiť vhodné usmernenie pre netechnických používateľov budovy, aby mali prístup k budove, aby jej rozumeli a prevádzkovali ju efektívne a v súlade s pôvodným zámerom projektu.

Príručka by mala poskytovať informácie relevantné pre tieto zainteresované strany:

1. Obyvatelia budovy
2. Netechnický tím správy zariadení alebo správca budovy
3. Ostatní používatelia budovy, napr. návštevníci alebo používatelia komunity.

Názvy častí používateľskej príručky používateľa domu sú uvedené nižšie. Ďalšie podrobnosti o rozsahu alebo obsahu príručky nájdete v Kontrolnom zozname A2 na str. 425.

Časť 1 - Prevádzkové otázky

1. Environmentálna stratégia, projekt a vlastnosti
2. Energia
3. Využívanie vody
4. Recyklácia a odpad
5. Odkazy, referencie a ďalšie informácie
6. Poskytovanie informácií v alternatívnych formátoch.

Časť 2 - Stavenisko a okolie

1. Recyklácia a odpad
2. Udržateľné (mestské) odvodňovacie systémy (SuDS)
3. Verejná doprava.
4. Občianska vybavenosť
5. Zodpovedný nákup
6. Núdzové informácie
7. Odkazy, referencie a ďalšie informácie.

Vhodne kvalifikovaní odborníci - termografický prieskum a testovanie vzduchotesnosti

Testovanie vzduchotesnosti: odborníci s členstvom v organizácii, ktorá má akreditáciu od príslušného akreditačného orgánu (na splnenie požiadaviek normy ISO 17024), alebo v národne uznávanom systéme kompetentných osôb, napr. ATTMA.

Termografický prieskum: odborníci, ktorí sú držiteľmi platnej kategórie II v termografii, ako je definované v norme ISO 18436- 7:2014 alebo Triede II v infračervenej termografii podľa definície ISO 6781-3:2015.

Iné informácie

Hodnotenie tepelných mostov

Vhodným postupom je vykonať hodnotenie tepelných mostov už vo fáze návrhu. Toto sa podporuje prostredníctvom stavebných predpisov pre úsporu energie tým, že sa umožňuje používať skutočné hodnoty pri výpočte energie, čo by mohlo priniesť výrazné zlepšenie oproti používaniu predvolených hodnôt v národnej metodológii výpočtu. Je to vyjadrené v Ene 01 Zníženie spotreby energií a emisií uhlíka na strane 150, takže v rámci tejto otázky sa za hodnotenie tepelných mostov neponúka žiadny ďalší kredit. Dobrý návrh a posúdenie tepelných mostov však prispeje k úspešným výsledkom testovania stavebných konštrukcií a k získaniu súvisiacich kreditov.

Man 05 Následná starostlivosť

(všetky budovy)

Počet dostupných kreditov	Minimálne normy
3	Áno

Cieľ

Poskytovanie následnej starostlivosti po odovzdaní budovy vlastníkovi alebo užívateľom počas prvého roka užívania s cieľom zabezpečiť, aby budova fungovala a prípadne sa prispôsobila v súlade s projektovým zámerom a prevádzkovými požiadavkami.

Kritériá hodnotenia

Táto otázka je rozdelená do troch častí:

- Podpora následnej starostlivosti (1 kredit)
- Sezónne uvedenie do prevádzky (1 kredit)
- Hodnotenie po začatí používania (1 kredit)

Na preukázanie súladu sa vyžaduje nasledovné:

Jeden kredit - Podpora následnej starostlivosti

1 Existuje (alebo bude existovať) prevádzková infraštruktúra a zdroje na poskytovanie podpory po ukončení užívania budovy, ktoré zahŕňajú minimálne tieto činnosti:

1.a Stretnutie tímu následnej starostlivosti alebo jednotlivcom a používateľom budovy alebo manažmentu (pred začatím používania alebo čo najskôr po ňom):

1.a.i Zapojte tím následnej starostlivosti alebo jednotlivca do dostupnej podpory následnej starostlivosti vrátane príručky užívateľov budovy (ak existuje) a harmonogramu a obsahu školení

1.a.ii Prezentovať kľúčové informácie o budove vrátane zámeru návrhu a spôsobu používania budovy, aby sa zabezpečilo jej čo najefektívnejšie a najúčinnejšie fungovanie.

1.b Školenie o správe budov na mieste , ktoré zahŕňa prehliadku budovy a oboznámenie sa so systémami budovy , ich ovládacími prvkami a spôsobom ich prevádzky v súlade s projektovým zámerom a prevádzkovými požiadavkami.

1.c Poskytnutie počiatočnej podpory po ukončení užívania budovy aspoň počas prvého mesiaca užívania budovy , napr. na mieste.
týždenná návšteva na podporu používateľov a manažmentu budovy (môže byť viac alebo menej častá v závislosti od komplexnosti budovy a jej prevádzky)

1.d Dlhodobejšia podpora následnej starostlivosti pre používateľov najmenej počas prvých 12 mesiacov od začatia používania,
napr. linka pomoci, poverená osoba alebo iný vhodný systém na podporu používateľov a manažmentu budovy.

2 Existuje (alebo bude existovať) prevádzková infraštruktúra a zdroje na koordináciu zberu a monitorovania údajov o spotrebe energie a vody počas minimálne 12 mesiacov po obsadení budovy. Uľahčí sa tým analýza rozdielov medzi skutočným a predpokladaným výkonom s cieľom upraviť systémy alebo správanie užívateľov zodpovedajúcim spôsobom.

Jeden kredit - Sezónne uvedenie do prevádzky

3 Nasledujúce sezónne činnosti uvádzania do prevádzky sa dokončia v priebehu minimálne 12 mesiacov, keď sa budova začne v podstate využívať:

3.a Komplexné systémy - špecializovaný manažér pre uvedenie do prevádzky:
- 3.a.i Testovanie všetkých služieb budovy pri plnom zaťažení, t. j. vykurovacích zariadení v polovici zimy, chladiacich a ventilačných zariadení v polovici leta a pri čiastočnom zaťažení (na jar a na jeseň).
- 3.a.ii V prípade potreby by sa testovanie malo vykonávať aj počas extrémnej (vysokej alebo nízkej) obsadenosti
- 3.a.iii Rozhovory s užívateľmi budovy (ak sa ich komplexné služby týkajú) s cieľom identifikovať problémy alebo obavy týkajúce sa účinnosti systémov
- 3.a.iv Opätovné uvedenie systémov do prevádzky (po všetkých prácach potrebných na obsluhu zmenených zaťažení) a zapracovanie všetkých zmien prevádzkových postupov do príručiek pre prevádzku a údržbu (O&M).

3.b Jednoduché systémy (prirodzene vetrané) - externý konzultant alebo tím následnej starostlivosti alebo správca zariadení:
- 3.b.i Kontrola tepelného komfortu, vetrania a osvetlenia v trojmesačných, šesťmesačných a deväťmesačných intervaloch po počiatočnom obsadení buď meraním alebo spätnou väzbou obyvateľov
- 3.b.ii Prijmite všetky primerané opatrenia na opätovné uvedenie systémov do prevádzky po preskúmaní s cieľom zohľadniť zistené nedostatky a zapracovať všetky príslušné revízie prevádzkových postupov do príručiek O&M.

Jeden kredit - hodnotenie po začatí používania (POE)

4 Klient alebo užívateľ budovy sa zaviaže, že vykoná POE jeden rok po prvom užívaní budovy. Týmto spôsobom sa získava spätná väzba od používateľov budovy o výkonnosti v prevádzke, ktorá slúži na informovanie prevádzkových procesov. Patria sem činnosti spojené s opätovným uvedením do prevádzky a udržaním alebo zlepšením produktivity, zdravia, bezpečnosti a pohodlia. Hodnotenie po začatí používania vykonáva nezávislá strana (pozri časť Nezávislá strana na str. 78) a musí zahŕňať nasledovné:
- 4.a Preskúmanie projektového zámeru a procesu výstavby (preskúmanie návrhu, obstarávania, výstavby a procesy odovzdávania)
- 4.b Spätná väzba od širokého okruhu používateľov budovy vrátane správy budov na dizajn a environmentálne podmienky krytia budovy :
  - 4.b.i Podmienky vnútorného prostredia (svetlo, hluk, teplota, kvalita vzduchu)
  - 4.b.ii Riadenie, prevádzka a údržba
  - 4.b.iii Zariadenia a vybavenie
  - 4.b.iv Prístup a usporiadanie
  - 4.b.v Ďalšie relevantné otázky.
- 4.c Výkonnosť v oblasti udržateľnosti (spotreba energie , spotreba vody, výkonnosť akýchkoľvek udržateľných prvkov alebo technológií , napr. materiálov, obnoviteľných zdrojov energie, zberu dažďovej vody atď.).

5 Klient alebo užívateľ budovy sa zaväzuje primeraným spôsobom šíriť informácie o výkone budovy po obsadení budovy. Cieľom je zdieľať osvedčené postupy a získané skúsenosti, informovať o zmenách v správaní používateľov, budovať prevádzkové procesy a postupy a systémové kontroly. Pozri CN3.1 a CN3.2 na str. 77, kde nájdete definíciu vhodného šírenia. Poskytuje tiež rady o vhodnom šírení informácií, ak sú informácie o budove alebo budove citlivé z obchodného alebo bezpečnostného hľadiska.

Vzorové kritéria úrovne

Nasleduje prehľad vzorových kritérií úrovne na získanie inovačných kreditov pre túto otázku BREEAM:

6 Existuje alebo bude existovať prevádzková infraštruktúra a zdroje na koordináciu nasledujúcich činností v štvrťročných intervaloch počas prvých troch rokov užívania budovy:
- 6.a Zber údajov o spokojnosti obyvateľov, spotrebe energie a (ak sú k dispozícii) spotrebe vody
- 6.b Analýza údajov s cieľom skontrolovať, či budova funguje podľa očakávaní, vykonať potrebné úpravy ovládacích prvkov systémov alebo informovať o správaní používateľov budovy .
- 6.c Stanovenie cieľov alebo vhodných opatrení na zníženie spotreby vody a energie a monitorovanie pokroku pri ich dosahovaní
- 6.d Poskytnutie spätnej väzby o získaných skúsenostiach projektovému tímu a vývojárovi na použitie v budúcich projektoch.
- 6.e Poskytnutie údajov o skutočnej ročnej spotrebe energie, vody a spokojnosti obyvateľov spoločnosti BRE.

Kontrolné zoznamy a tabuľky

Žiadne.

Poznámky o súlade

Ref	Podmienky	Popis
Hrubá stavba a jadro (iba nebytové a rezidenčné inštitúcie)		
CN1	Príslušné hodnotiace kritériá	Obidve možnosti: Táto otázka sa neuplatňuje. Podrobnejší popis možností vyhodnotenia hrubej stavby a jadra nájdete v Prílohe D - Posúdenie projektu hrubej stavby a jadra na strane 409.
Obytné - čiastočne a úplne vybavené		
CN2	Príslušné hodnotiace kritériá - Obydlia pre jednu rodinu	**Podpora následnej starostlivosti a sezónne uvedenie do prevádzky: kritériá 1na 3.b na predchádzajúcej strane.** Obidve možnosti: Platia všetky kritériá týkajúce sa typu a funkcie budovy. **Hodnotenie po začatí používania a vzorová úroveň: kritériá 4 na 6 na predchádzajúcej strane** Obidve možnosti: Tieto kritériá sa neuplatňujú Pozri Prílohu E – Uplatniteľnosť BREEAM New Construction na obydlia pre jednu rodinu a obydlia pre viaceré rodiny, čiastočne a úplne vybavené na str. 412, kde nájdete podrobnejší popis možností hodnotenia bytových domov.
CN2.1	Príslušné hodnotiace kritériá - Obydlia pre viaceré rodiny	Obidve možnosti: Platia všetky kritériá týkajúce sa typu a funkcie budovy. Pozri Prílohu E – Uplatniteľnosť BREEAM New Construction na obydlia pre jednu rodinu a obydlia pre viaceré rodiny, čiastočne a úplne vybavené na str. 412, kde nájdete podrobnejší popis možností hodnotenia bytových domov.
Všeobecné		
CN3	Zber a monitorovanie údajov o spotrebe energie a vody. Pozri kritériá 2 a 4 na predchádzajúcej strane.	Túto funkciu môže koordinovať alebo vykonávať špecializovaný tím následnej starostlivosti alebo, ak je známy používateľ budovy a je schopný potvrdiť súlad na základe svojich existujúcich alebo navrhovaných činností v budove, tím vlastníka alebo používateľa budovy pre správu nehnuteľností alebo zariadení.

Ref	Definície pojmov	Popis
CN3.1	Vhodné šírenie informácií o hodnotení po začatí používania Pozri kritérium 5 na strane 75.	1. Vhodné šírenie informácií zahŕňa komunikáciu s bezprostrednými zainteresovanými stranami, ako sú užívatelia, správcovia a vlastníci budov . Okrem toho by sa informácie mali oznamovať externým stranám. 2. Vhodným šírením bude vo väčšine prípadov príprava a zverejnenie prípadovej štúdie budovy jedným z týchto spôsobov: a. Vlastná webová stránka klienta alebo vlastníka budovy, ktorá je verejne dostupná literatúra alebo tlačová správa b. Webové stránky alebo informačné portály sponzorované priemyslom, odvetvím, vládou alebo miestnymi orgánmi. Ak existuje preukázateľne oprávnený dôvod, prečo verejné šírenie Ak existuje preukázateľne opodstatnený dôvod, prečo nie je verejné šírenie možné, napríklad informácie sú citlivé z komerčného alebo bezpečnostného hľadiska, súlad sa môže preukázať záväzkom pripravovať a šíriť príslušné informácie na organizačnej úrovni alebo príslušným interným alebo externým zainteresovaným stranám. Citlivé časti príslušných informácií na šírenie sa môžu prípadne z publikácie vynechať.
CN3.2	Relevantné informácie na šírenie. Pozri kritérium 5 na str. 75.	Zahŕňa nasledujúce informácie o budove a jej výkone: 1. Základný opis projektu a budovy 2. Hodnotenie a skóre podľa BREEAM 3. Kľúčové inovatívne a nízko prínosové konštrukčné prvky budovy 4. Náklady na projekt 5. Veľkosť projektu: podlahová plocha, plocha pozemku 6. Zariadenia dostupné pre komunitné použitie (ak je to relevantné) 7. Všetky kroky prijaté počas výstavby na zníženie vplyvov na životné prostredie, t. j. inovatívne techniky riadenia výstavby 8. Predpokladané a skutočné emisie oxidu uhličitého alebo Energetická hospodárnosť Hodnotenie certifikátu 9. Výstupy štúdie hodnotenie po začatí používania s cieľom podeliť sa o skúsenosti získané z projektu vrátane nasledovného: a. Spätná väzba od používateľov b. Spotreba energie a vody vrátane výroby energie z obnoviteľných zdrojov, úroveň zásobovania dažďovou vodou alebo úžitkovou vodou

Metodológia

Žiadna.

Dôkazová dokumentácia

Kritériá	Predbežná fáza projektu	Záverečná fáza po výstavbe
Podpora následnej starostlivosti		
1-2 na str. 74	Dôkaz o záväzku alebo zmluve o poskytovaní podpory následnej starostlivosti a odbornej prípravy.	Dôkaz o zmluve o poskytovaní podpory následnej starostlivosti a odbornej prípravy v súlade s predpismi.
Sezónne uvedenie do prevádzky		
3	Menovací dekrét alebo rozpis povinností pri uvedení do prevádzky. Dôkazy o existujúcich postupoch alebo záväzok alebo zmluva na zavedenie mechanizmu na nasledovné činnosti: 1. Zhromažďovať, porovnávať a analyzovať relevantné údaje 2. V prípade potreby vykonajte vhodné úpravy.	Záznamy o sezónnom uvedení do prevádzky, správy alebo menovací dekrét a harmonogram povinností pri uvedení do prevádzky. Záznamy z rozhovorov s používateľmi.
Hodnotenie po začatí používania (POE)		
4–5	Podpísaný a datovaný záväzok klienta alebo stavebníka alebo budúceho používateľa budovy.	Podľa fázy projektovania.
Požiadavky na vzorovú úroveň		
6	Dôkazy ako vyššie (pre kredit na zber údajov a podporu následnej starostlivosti), ale od koncového používateľa.	Dôkazy ako vyššie (pre kredit na zber údajov a podporu následnej starostlivosti), ale od koncového používateľa.

Dodatočné informácie

Relevantné definície

Komplexné systémy

Patrí sem okrem iného klimatizácia, mechanické vetranie, výtlačné vetranie, komplexné pasívne vetranie, systémy riadenia budov (BMS), obnoviteľné zdroje energie, mikrobiologické bezpečnostné skrine a digestory, chladiace skrinky a chladiace zariadenia.

Manažér pre uvedenie do prevádzky

Manažér pre uvedenie do prevádzky je skôr špecializovaným subdodávateľom ako všeobecným subdodávateľom.

Nezávislá strana

Na splnenie kritéria 4 na str. 75 týkajúceho sa použitia nezávislej strany musí klient alebo projektový tím preukázať jednu z týchto možností:

1. Využili stranu nezávislú od procesu projektovania na vykonanie potrebného hodnotenia po začatí používania s použitím vyhovujúcej metódy ALEBO
2. Ak má hodnotenie po začatí používania vykonať organizácia zapojená do projektovania budovy, napr. architekt, musia posudzovateľovi predložiť dôkazy, ktoré preukazujú nezávislosť procesu hodnotenia po začatí používania od procesu projektovania. BREEAM nedefinoval, akú formu musí mať táto úloha; je na projektovom tíme alebo príslušnej osobe, aby posudzovateľovi BREEAM jasne preukázali dôveryhodnú úroveň nezávislosti.

Skutočný a predpokladaný výkon

Vo väčšine prípadov nie je možné presne porovnať predpokladanú a skutočnú výkonnosť z dôvodu rozdielov v predpokladoch použitých v modeloch. Údaje uvedené na webovej stránke Carbon Buzz v Spojenom kráľovstve ukazujú, že budovy spotrebujú v priemere 1,5- až 2,5-násobok predpokladaných hodnôt. Pri porovnávaní predpokladaných a skutočných hodnôt by sa mala vykonať analýza, aby sa pochopilo, prečo môže dôjsť k rozdielom vo výkonnosti.

Tieto nezrovnalosti môžu mať viacero príčin, vrátane nasledovného:

- Predpokladaná spotreba energie zvyčajne vychádza z modelov dodržiavania stavebných predpisov, ktoré sa zameriavajú len na „regulovanú“ spotrebu energie. Ďalšie nesúvisiace využívanie energie nemuselo byť modelované v predpovedanom modeli projektu.
- Môže ísť o predĺžené používanie z dôvodu mimoriadneho obsadenia a prevádzkových hodín, ktoré nie sú zohľadnené v predpokladaných modeloch.
- Neefektívnosť spôsobená nedostatočnou kontrolou, zlým uvedením do prevádzky alebo nedostatočnou údržbou.
- Ďalšie špeciálne funkcie, ako je kaviareň, serverové miestnosti atď., ktoré nie sú zohľadnené v predpokladanom modeli.
- Odchýlky v skutočnom správaní používateľov, ktoré sa líšia od predpokladov, ako sú používanie malého množstva energie a
  osvetlenia.

CIBSE TM54, Evaluating Operational Energy Performance of Buildings at the Design Stage (Hodnotenie prevádzkovej energetickej hospodárnosti budov vo fáze projektovania), CIBSE, 2013, poskytuje návod, ako zlepšiť presnosť modelu prevádzkovej spotreby energie budov vo fáze projektovania. Usmernenie spoločnosti Carbon Trust s názvom „Preklenutie rozdielov: Poznatky z využívania potenciálu budov s nízkymi emisiami uhlíka“, ktoré obsahuje aj ďalšie usmernenia k tejto otázke.

Chýbajúce údaje o predpokladanom výkone

V prípade, že užívatelia budov nemajú k dispozícii modely predikovanej výkonnosti, môže byť vhodnejšie porovnať skutočné údaje o výkonnosti budov s inými zdrojmi údajov o hodnotení výkonnosti budov a referenčnými hodnotami. Nasledujúce zdroje referenčných informácií pochádzajú zo Spojeného kráľovstva a sú medzinárodne uznávané. Referenčné hodnoty výkonnosti budov sa nachádzajú v usmerneniach CIBSE vrátane:

- Usmernenie F: Energetická efektívnosť budov
- CIBSE TM46: Energetické referenčné hodnoty
- CIBSE TM47: Prevádzkové hodnotenia a energetické certifikáty na displeji.

Ďalšie informácie o výkonnosti budov a porovnávaní nájdete na stránkach Buildings Performance Institute Europe (BPIE)(www.bpie.eu) a ASHRAE(www.ashrae.org).

Metodológie hodnotenia po začatí užívania

Mala by sa použiť najvhodnejšia metodológia hodnotenia po začatí užívania, ktorá spĺňa kritériá. Napríklad v Spojenom kráľovstve bola v roku 1995 na základe série vládou financovaných štúdií hodnotenia výkonnosti budov „PROBE“ vypracovaná metodológia štúdií využívania budov (BUS). Metodológiu BUS používajú nezávislí licencovaní partneri podľa štvordielneho procesu. Ďalšie informácie nájdete na adrese: www.busmethodology.org.uk. Metóda kvality návrhu (DQM) spoločnosti BRE je osvedčená a testovaná, nezávislá metóda hodnotenia po začatí užívania, ktorú používajú všetky britské kontrolné orgány a mnohé financujúce orgány. Ďalšie informácie nájdete na adrese: www.bre.co.uk/dqm. Ďalšie usmernenie k hodnoteniu po začatí užívania:

- Príručka BCO k hodnoteniu po začatí užívania (POE), British Council for Offices, 2007
- BRE Digest 478, Spätná väzba k výkonu budov: ako začať, Building Research Establishment, 2003
- Príručka k hodnotiacej správe a súboru nástrojov po začatí používania, HEFCE, AUDE a University of Westminster, 2006.

Iné informácie

Rámec Soft Landings[6]

Rámec, ktorý napísali a pripravili organizácie Usable Buildings Trust (UBT) a Building Services Research and Information Association (BSRIA) a ktorého cieľom je podporiť zlepšenie informovania, projektovania, odovzdávania a výkonu budov počas ich používania. Zakomponovanie zásad tohto rámca do projektu by malo zabezpečiť, aby boli k dispozícii dôkazy na preukázanie súladu s konkrétnymi aspektmi kritérií v rámci tejto problematiky BREEAM. Upozorňujeme tiež, že BSRIA vypracovala pre klientov a projekčné tímy výkladovú poznámku k BREEAM New Construction Soft landings7 .

Government Soft Landings (GSL) je verzia konceptu Soft Landings prispôsobená na použitie v projektoch verejného sektora, aby sa prepojila s prácou vládnej pracovnej skupiny pre informačné modelovanie budov. Má byť zavedená v roku 2016 spolu s informačným modelovaním budov (BIM) úrovne 2 a majú ho zaviesť ústredné vládne úrady. Je potrebné poznamenať, že program GSL sa stane povinným pre rozvoj miestnej samosprávy po roku 2016. Ďalšie informácie sú k dispozícii na adrese: www.bimtaskgroup.org/Government Soft Landings.

Zdravie a pohoda

Zhrnutie

Táto kategória podporuje zvýšenie komfortu, zdravia a bezpečnosti obyvateľov budovy, návštevníkov a ostatných osôb v okolí. Cieľom tejto časti je zlepšiť kvalitu života v budovách identifikovaním toho, čo podporuje zdravé a bezpečné vnútorné a vonkajšie prostredie pre používateľov.

Súhrnná tabuľka kategórií

Vydanie	Kredity	Zhrnutie kreditov
Hea 01 Vizuálny komfort	Až 6 kredito v	Potenciál pre zablokovanie oslnenia bol navrhnutý zo všetkých príslušných stavebných plôch. Osvedčené postupy denného osvetlenia boli splnené. Podlahová plocha v príslušných častiach budovy má primeraný výhľad von, aby sa znížilo namáhanie očí a zabezpečilo prepojenie s vonkajším prostredím. Systémy vnútorného a vonkajšieho osvetlenia sú navrhnuté tak, aby sa zabránilo blikaniu a aby sa zabezpečili vhodné úrovne osvetlenia (lux). Vnútorné osvetlenie je rozdelené na zóny, aby umožňovalo kontrolu zo strany používateľov.
Hea 02 Kvalita vnútorného vzduchu	5	Minimalizácia zdrojov znečistenia ovzdušia prostredníctvom starostlivého projektovania, špecifikácie a plánovania. Stratégia vetrania budov je navrhnutá tak, aby bola flexibilná a prispôsobiteľná potenciálnym budúcim potrebám používateľom budovy a klimatickým scenárom.
Hea 03 Bezpečné zadržiavanie v laboratóriách	2	Vypracovanie objektívneho posúdenia rizika navrhovaných laboratórnych zariadení. Zadržiavacie zariadenia, ako sú digestory, spĺňajú požiadavky a ciele týkajúce sa bezpečnosti a výkonu podľa osvedčených postupov. Laboratórne zariadenia s úrovňou zachytávania 2 a 3, ktoré spĺňajú osvedčené postupy v oblasti bezpečnosti a výkonnosti, ak sú stanovené.
Hea 04 Tepelný komfort	3	Tepelné modelovanie sa vykonávalo podľa príslušných noriem. Predpokladané scenáre zmeny klímy sú zarátané ako súčasť tepelného modelu. Analýza tepelného modelovania informovala o stratégii regulácie teploty budovy a jej používateľov.
Hea 05 Akustické vlastnosti	Až 4 kredity	Budova spĺňa príslušné normy akustických vlastností a požiadavky na testovanie, pokiaľ ide o nasledovné: Zvuková izolácia Hladiny hluku v interiéri Doby dozvuku.

Otázka	Kredity	Zhrnutie kreditov
Hea 06 Prístupnosť	2	Zabezpečenie účinných opatrení na podporu bezpečného prístupu do budovy a z budovy. Bezpečnostné potreby sú pochopené a zohľadnené v v projekte a špecifikáciách.
Hea 07 Riziká	1	Posúdenie rizík vyplývajúcich z prírodných rizík, ktoré môžu mať vplyv na budovu a vykonávanie opatrení na zmiernenie akýchkoľvek rizík.
Hea 08 Súkromný priestor	1	Zabezpečenie vonkajšieho priestoru, ktorý poskytuje súkromie a pocit pohody.
Hea 09 Kvalita vody	1	Zníženie rizika kontaminácie vody a zabezpečenie čistých čerstvých zdrojov vody.

Hea 01 Vizuálny komfort (všetky budovy)

Počet dostupných kreditov	Minimálne normy
Závisí od typu budovy	Áno (len kritérium 1)

Cieľ

Pre zabezpečenie denného osvetlenia sa vo fáze návrhu zvažuje umelé osvetlenie a ovládanie používateľmi, aby sa zabezpečili osvedčené postupy v oblasti vizuálnych vlastností a pohodlia pre používateľov v rámci budovy.

Posudzovacie kritériá

Táto problematika je rozdelená do štyroch častí:

- Predpoklad
- Kontrola oslnenia (1 kredit)
- Denné svetlo (až 4 kredity - závisí od typu budovy)
- Výhľad (1 kredit)
- Vnútorné a vonkajšie osvetlenie (1 kredit)

Na preukázanie súladu sa vyžaduje nasledovné:

Predpoklad

1 Všetky žiarivky a kompaktné žiarivky sú vybavené vysokofrekvenčnými predradníkmi.

Jeden kredit - Kontrola oslnenia

2 Potenciál oslnenia bol navrhnutý zo všetkých relevantných budov pomocou stratégie kontroly oslnenia, a to buď formou a usporiadaním budovy, alebo opatreniami na projektovanie budovy (pozri poznámku k súladu CN3.1 na str. 91).

3 Stratégia regulácie oslnenia zabraňuje zvyšovaniu spotreby energie na osvetlenie tým, že zabezpečuje:

3.a Systém na kontrolu oslnenia je navrhnutý tak, aby sa maximalizoval hladiny denného svetla za všetkých podmienok a zároveň aby sa zamedzilo oslneniu na pracovisku alebo v iných citlivých oblastiach. Systém by nemal brániť prenikaniu denného svetla do priestoru pri zamračenom počasí alebo keď na fasádu nedopadá slnečné svetlo.

A

3.b Použitie alebo umiestnenie tienenia nie je v rozpore s fungovaním systémov riadenia osvetlenia .

Až štyri kredity - denné osvetlenie (závisí od typu budovy)

4 Kritériá denného osvetlenia boli splnené pomocou jednej z týchto možností:

4.a Príslušné plochy budovy spĺňajú faktory denného svetla podľa osvedčenej praxe a ďalšie kritériá uvedené v tabuľke 10 na nasledujúcej strane a tabuľke 11 na strane 86

ALEBO

4.b Príslušné priestory budovy spĺňajú kritériá dobrej praxe pre priemernú a minimálnu bodovú dennú osvetlenosť, ako sa uvádza v Tabuľka 12 na strane 86.

Tabuľka 10: Minimálne požadované hodnoty priemerného faktora denného svetla

Typ budovy alebo priestoru	Priemerný činiteľ denného osvetlenia potrebný podľa zemepisnej šírky (v stupňoch)						Minimálna plocha (m²) na dosiahnutie súladu		Iné požiadavky
	≤ 40	40-45	45-50	50-55	55-60	≥ 60	1 kredit	2 kredity	
Školské budovy (k dispozícii sú až 2 kredity)									
Predškolské zariadenia, školy - obsadené priestory	1,5 %	1,7 %	1,8 %	2,0 %	2,1 %	2,2 %	-	80 %	BUĎ (a) ALEBO {(b) a c)} v Tabuľke 11 na str. 86
Univerzity, vysoké školy a vyššie vzdelávanie - obsadené priestory	1,5 %	1,7 %	1,8 %	2,0 %	2,1 %	2,2 %	60 %	80 %	
Bytové zariadenia (1 kredit k dispozícii*)									
Kuchyňa	1,5 %	1,7 %	1,8 %	2,0 %	2,1 %	2,2 %	80 %	-	BUĎ (a) ALEBO (c) v Tabuľke 11 na str. 86
Obývacie izby, jedálne, študovne (vrátane pracovných priestorov v hotelových izbách alebo apartmánoch)	1,2 %	1,3 %	1,4 %	1,5 %	1,6 %	1,6 %		-	
Nebytové alebo spoločné obsadené priestory	1,5 %	1,7 %	1,8 %	2,0 %	2,1 %	2,2 %		-	
Bytové domy (k dispozícii 4 kredity)**									
Kuchyňa	1,5 %	1,7 %	1,8 %	2,0 %	2,1 %	2,2 %	-	80 %	(b) v Tabuľke 11 na str. 86
Obývacie izby, jedálne, študovne (vrátane domácich kancelárií)	1,2 %	1,3 %	1,4 %	1,5 %	1,6 %	1,6 %	-	80 %	
Maloobchodné budovy (k dispozícii sú 2 kredity)**									

Budova alebo plocha Druh plochy požiadavkami	Priemerný činiteľ denného osvetlenia potrebný podľa zemepisnej šírky (stupne)						Minimálna plocha (m²) na dosiahnutie súladu s Iné		
	≤ 40	40-45	45-50	50-55	55-60	≥ 60	1 kredit	2 kredity	
Predajné priestory	1,5 %	1,7 %	1,8 %	2,0 %	2,1 %	2,2 %	35 %	-	-
Iné obsadené priestory	1,5 %	1,7 %	1,8 %	2,0 %	2,1 %	2,2 %	80 %	-	BUĎ (a) ALEBO {(b) a (c)} v Tabuľke 11 na nasledujúcej strane
Priemyselné, kancelárske a všetky ostatné typy budov (k dispozícii je 1 kredit*)									
Interná spoločnosť alebo átrium	2,3 %	2,5 %	2,8 %	3,0 %	3,1 %	3,2 %	80 %	-	BUĎ (a) ALEBO {(b) a (c)} v Tabuľke 11 na nasledujúcej strane
Školiace, prednáškové a seminárne priestory	1,5 %	1,7 %	1,8 %	2,0 %	2,1 %	2,2 %		-	
Všetky obsadené priestory, pokiaľ to nie je uvedené v časti Relevantné definície na strane 95	1,5 %	1,7 %	1,8 %	2,0 %	2,1 %	2,2 %		-	

Poznámky:
* Všetky priestory musia spĺňať kritériá pre získanie 1 kreditu.
** Každému priestoru môžu byť kredity pridelené samostatne.

Tabuľka 11: Kritériá rovnomernosti denného osvetlenia

Ref.	Kritériá
(a)	Pomer rovnomernosti najmenej 0,3 alebo minimálny bodový faktor denného svetla aspoň 0,3-násobok príslušnej priemernej hodnoty faktora denného svetla v Tabuľke 10 na str. 84. Priestory so zasklenými strechami, ako sú átriá, musia dosiahnuť mieru rovnomernosti najmenej 0,7 alebo minimálny bodový faktor denného svetla aspoň 0,7-násobok príslušnej priemernej hodnoty faktora denného svetla v Tabuľke 10 na str. 84.
(b)	Najmenej 80 % miestnosti má výhľad na oblohu z výšky stola alebo stola (0,85 m bytových domoch a bytových zariadeniach, 0,7 m v ostatných budovách).
(c)	Kritérium hĺbky miestnosti h/š +h/VO < 2/(1-RB) je splnené. Kde: h = hĺbka miestnosti. š = šírka miestnosti. VO = výška okna od úrovne podlahy. RB = priemerná odrazivosť povrchov v zadnej polovici miestnosti. Poznámka: Tabuľka č. 16 na str. 90 uvádza maximálnu hĺbku miestnosti v metroch pre rôzne šírky miestnosti a svetlé výšky okien v miestnosti s bočným osvetlením.

Tabuľka 12: Požiadavky na typ priestoru a osvetlenie - mali by byť splnené obidve kritériá (priemerné osvetlenie a minimálne bodové osvetlenie)

Druh plochy	Minimálna plocha (m²) na dosiahnutie súladu		Priemerné denné svetlo (priemer na celý priestor)	Minimálna intenzita denného svetla v najhoršie osvetlenom bode
	1 kredit	2 kredity		
Školské budovy (k dispozícii sú až 2 kredity)				
Predškolské zariadenia, školy - obsadené priestory	-	80 %	Minimálne 300 lux po dobu 2000 hodín za jeden rok alebo viac	Najmenej 90 luxov počas 2000 hodín ročne alebo viac
Univerzity, vysoké školy a vyššie vzdelávanie - obsadené priestory	60 %			
Bytové zariadenia (1 kredit k dispozícii*)				
Kuchyne	100 %	-	Minimálne 100 lux po dobu 3450 hodín za jeden rok alebo viac	Minimálne 30 lux po dobu 3450 hodín za jeden rok alebo viac
Obývacie izby, jedálne, študovne (vrátane domácich kancelárií)		-	Minimálne 100 lux po dobu 3450 hodín za jeden rok alebo viac	Minimálne 30 lux po dobu 3450 hodín za jeden rok alebo viac

Druh plochy (priemer na celý priestor)	Minimálna plocha (m²) na dosiahnutie súladu Minimálna intenzita denného svetla v najhoršie osvetlenom bode		Priemerné denné svetlo	
	1 kredit	2 kredity		
Nebytové alebo spoločné obsadené priestory	80 %	-	Minimálne 200 lux po dobu 2650 hodín za jeden rok alebo viac	Minimálne 60 lux po dobu 2650 hodín za jeden rok alebo viac
Bytové domy (k dispozícii 4 kredity)**				
Kuchyne	-	100 %	Minimálne 100 lux po dobu 3450 hodín za jeden rok alebo viac	Minimálne 30 lux po dobu 3450 hodín za jeden rok alebo viac
Obývacie izby, jedálne, študovne (vrátane domácich kancelárií)	-	100 %	Minimálne 100 lux po dobu 3450 hodín za jeden rok alebo viac	Minimálne 30 lux po dobu 3450 hodín za jeden rok alebo viac
Maloobchodné budovy (k dispozícii sú 2 kredity)**				
Predajné priestory	35 %	-	Minimálne 200 lux bodov denného svetla počas 2650 hodín ročne alebo viac	
Iné obsadené priestory	80 %	-	Minimálne 200 lux po dobu 2650 hodín za jeden rok alebo viac	Minimálne 60 lux po dobu 2650 hodín za jeden rok alebo viac
Priemyselné, kancelárske a všetky ostatné typy budov (k dispozícii je 1 kredit*)				
Vnútorné spojenie alebo átrium	80 %	-	Minimálne 300 lux po dobu 2650 hodín za jeden rok alebo viac	Minimálne 210 lux po dobu 2650 hodín za jeden rok alebo viac
Školiace, prednáškové a seminárne priestory		-	Minimálne 300 lux po dobu 2000 hodín za jeden rok alebo viac	Najmenej 90 luxov počas 2000 hodín ročne alebo viac
Všetky obsadené priestory, pokiaľ to nie je uvedené v časti Relevantné definície na str. 95		-	Minimálne 300 lux po dobu 2000 hodín za jeden rok alebo viac	Najmenej 90 luxov počas 2000 hodín ročne alebo viac
Poznámky: * Všetky priestory musia spĺňať kritériá pre získanie 1 kreditu. ** Každému priestoru môžu byť kredity pridelené samostatne.				

Jeden kredit - Výhľad

5 Kde je 95% priestoru podlahovej plochy v rámci príslušných budov v okruhu X metrov od okna alebo trvalého otvoru, ktorý poskytuje primeraný výhľad von, ako je uvedené v Tabuľke 13 nižšie

6 Pre kritériá výhľadu sú navyše použiteľné kritériá typu budovy v Tabuľke 14 nižšie.

Tabuľka 13: Požadovaná veľkosť okna alebo otvoru ako percento okolitej plochy steny v závislosti od vzdialenosti stola alebo pracovného priestoru od okna alebo otvoru

Vzdialenosť (v m) od okna k pracovnému priestoru alebo stolu (X)	Veľkosť okna alebo otvoru (ako % okolitej plochy steny)
7 m alebo menej	20 %
8 m – 11 m	25 %
11 m – 14 m	30 %
14 m alebo viac	35 %

Tabuľka 14: Špecifické požiadavky na výhľad z budovy

Typ budovy	Požiadavky na výhľad
Bytové domy a bytové inštitúcie	**Samostatné byty - obývacie izby** **Chránené bývanie - spoločné obývačky, individuálne spálne a lôžkové byty** Všetky pozície v príslušných priestoroch musia byť vo vzdialenosti do 5 m od steny s oknom alebo trvalým otvorom, ktorý poskytuje dostatočný výhľad von. Okno alebo otvor musí tvoriť ≥ 20 % plochy okolitej steny.

Jeden kredit - Úrovne vnútorného a vonkajšieho osvetlenia, priestorové plánovanie a kontrola

Vnútorné osvetlenie

7 Vnútorné osvetlenie vo všetkých príslušných priestoroch budovy je navrhnuté tak, aby poskytovalo úroveň osvetlenia (lux) primeranú vykonávaným úlohám, pričom sa zohľadňuje koncentrácia používateľov budovy a úroveň pohodlia. To možno preukázať prostredníctvom stratégie návrhu osvetlenia , ktorá zabezpečí úrovne osvetlenia v súlade s národnými príručkami osvedčených postupov v oblasti osvetlenia (pozri CN3.10 na strane 93).

8 Rovnomernosť osvetlenia spôsobená elektrickým osvetlením je v súlade s odporúčaním schválenej miestnej normy .

9 V prípade priestorov, kde sa pravidelne používajú počítačové obrazovky, sa vyžaduje potvrdenie, že osvetlenie bolo navrhnuté tak, aby obmedzovalo možnosť oslnenia v súlade s číselným limitom oslnenia stanoveným v národných príručkách osvedčených postupov v oblasti osvetlenia. Mali by zahŕňať:

- 9.a Limity osvetlenia svietidiel, aby sa zabránilo odrazom obrazovky. Údaje výrobcov o svietidlách, ktoré by to potvrdili.
- 9.b Pre horné osvetlenie sa odporúčania vzťahujú skôr na svietivosť osvetleného stropu ako na svietidlo; na preukázanie tohto sa zvyčajne vyžaduje výpočet projektového tímu
- 9.c Odporúčania pre priame osvetlenie, osvetlenie stropu a priemernú osvetlenosť stien.

Vonkajšie osvetlenie

10 Všetko vonkajšie osvetlenie nachádzajúce sa v zóne výstavby je navrhnuté tak, aby poskytovalo také úrovne osvetlenia , ktoré používateľom umožnia efektívne a presne vykonávať vonkajšie vizuálne úlohy, najmä počas noci. Na preukázanie tejto skutočnosti je vonkajšie osvetlenie špecifikované v súlade so sériou noriem EN 13201 Cestné osvetlenie a EN 12464-2: 2014 Svetlo a osvetlenie - Osvetlenie pracovných miest - Časť 2: Vonkajšie pracovné priestory

Priestorové plánovanie a kontrola používateľmi

11 Vnútorné osvetlenie je rozdelené do zón, aby sa dalo ovládať používateľmi (pozri Príslušné definície na strane 95) v súlade s nižšie uvedenými kritériami pre príslušné oblasti v budove:
- 11.a V kancelárskych priestoroch zóny s maximálne štyrmi pracovnými miestami
- 11.b Pracovné miesta pri oknách alebo átriách a iných priestoroch budovy, ktoré sú samostatne zónované a kontrolované
- 11.c Seminárne a prednáškové miestnosti: určené pre prezentácie a poslucháčov
- 11.d Priestory knižnice: oddelené zóny pre regály, pre čítanie a pulty
- 11.e Vyučovací priestor alebo demonštračná oblasť
- 11.f Tabuľa alebo obrazovka displeja
- 11.g Auditóriá: zónovanie priestorov na sedenie, priestoru na pohyb a priestoru pre rečníkov
- 11.h Jedáleň, reštaurácia, kaviareň: oddelené zónovanie obslužných priestorov a priestorov na sedenie alebo stolovanie
- 11.i Maloobchod: oddelené zónovanie výstavných a predajných plôch
- 11.j Barové priestory: oddelené zónovanie barových priestorov a priestorov na sedenie
- 11.k Denné miestnosti, čakárne: zónovanie priestorov na sedenie a aktivity a priestoru na pohyb s ovládacími prvkami prístupné pre personál
- 11.l Hotelové izby: oddelené zónovanie chodby, kúpeľne, pracovného stola a spacieho priestoru (ak je v hoteli v miestnosti).

12 Priestory používané na účely výučby, seminárov alebo prednášok majú ovládanie osvetlenia špecifikované v súlade s veľkosťou a využitím priestoru, ale v typickej posluchárni alebo prednáškovej sále so stupňovitým sedením a formálnym prednáškovým pultom alebo v priestore na predvádzanie alebo vystúpenie sa zvyčajne očakáva, že osvetlenie sa bude ovládať takto:
- 12.a Úplné normálne osvetlenie (na umožnenie vstupu a výstupu, čistenie atď.)
- 12.b Vypnuté osvetlenie demonštračného priestoru a osvetlenie priestoru pre divákov znížené na nízku úroveň (na účely premietania diapozitívov , ale s dostatočným osvetlením pre divákov, aby si mohli robiť poznámky)
- 12.c Všetky svetlá vypnuté (na premietanie tónových diapozitívov, farebných diapozitívov a na účely vizuálnych demonštrácií alebo predstavení)
- 12.d Samostatné lokalizované osvetlenie rečníckeho pultu.

13 Okrem toho kritériá typu budovy uvedené v Tabuľke 15 nižšie (ak je to relevantné).

Tabuľka 15: Špecifické požiadavky na vnútorné a vonkajšie osvetlenie budovy

Typ budovy	Požiadavky vnútorného a vonkajšieho osvetlenia
Školské budovy	Manuálne ovládanie osvetlenia je pre učiteľa ľahko prístupné počas vyučovania a pri vstupe alebo odchode z vyučovacieho priestoru.

Kontrolné zoznamy a tabuľky

Odrazivosť pre maximálnu hĺbku miestnosti a svetlú výšku okna

Tabuľka č. 16 na nasledujúcej strane uvádza maximálnu hĺbku miestnosti v metroch pre rôzne šírky miestnosti a svetlé výšky okien v miestnosti s bočným osvetlením.

Tabuľka 16: Odrazivosť pre maximálnu hĺbku miestnosti (m) a svetlú výšku okna

Odrazivosť (RB)	0,4		0,5		0,6	
Šírka miestnosti (m)	**3**	**10**	**3**	**10**	**3**	**10**
Svetlá výška okna (m)						
2,5	4,5	6,7	5,4	8,0	6,8	10,0
3,0	5,0	7,7	6,0	9,2	7,5	11,5
3,5	5,4	8,6	6,5	10,4	8,1	13,0

Poznámky o súlade

Ref	Podmienky	Popis
Hrubá stavba a jadro (iba nebytové a rezidenčné inštitúcie)		
CN1	Príslušné kritériá hodnotenia	**Predpoklad: kritérium 1 na str. 83** Obidve možnosti: Toto kritérium sa neuplatňuje. **Kontrola oslnenia: kritériá 2 a 3 na str. 83** Obidve možnosti: Tieto kritériá sa neuplatňujú. **Denné svetlo: kritérium 4 na str. 83** Obidve možnosti: Platia všetky kritériá týkajúce sa typu a funkcie budovy. **Výhľad: kritériá 5 a 6 na str. 88** Obidve možnosti: Platia všetky kritériá týkajúce sa typu a funkcie budovy. **Vnútorné osvetlenie, priestorové plánovanie a kontrola používateľmi: 7 až 9 na str. 88, 11 až 13 na predchádzajúcej strane** Obidve možnosti: Tieto kritériá sa neuplatňujú. **Vonkajšie osvetlenie: kritérium 10 na str. 88** Obidve možnosti: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy Podrobnejší popis možností vyhodnotenia hrubej stavby a jadra nájdete v Prílohe D - Posúdenie projektu hrubej stavby a jadra na strane 409.
CN1.1	Výhľad	Obidve možnosti Ak nie je možné potvrdiť, v ktorých častiach budovy sa budú nachádzať pracovné miesta, lavice alebo stoly , potom všetky časti budovy určené na pracovné miesta, lavice alebo stoly alebo tie, v ktorých sa budú pravdepodobne nachádzať, musia spĺňať príslušné kritériá.
Obytné - čiastočne a úplne vybavené		

Ref	Definície pojmov	Popis
CN2	Príslušné hodnotiace kritériá - Obydlia pre jednu rodinu a obydlia pre viaceré rodiny	**Predpoklad: kritérium 1 na str. 83** Obidve možnosti: Toto kritérium sa neuplatňuje. **Kontrola oslnenia: kritériá** 2 **a** 3 na str. 83 Obidve možnosti: Tieto kritériá sa neuplatňujú **Denné svetlo: kritérium 4 na str. 83** Obidve možnosti: Platia všetky kritériá týkajúce sa typu a funkcie budovy. **Výhľad: kritériá 5 a 6 na str. 88** Obidve možnosti: Tieto kritériá sa neuplatňujú. **Vnútorné osvetlenie, priestorové plánovanie a kontrola používateľmi: kritériá 7 až 9 na str. 88, 11 až 13** Čiastočne vybavené: Tieto kritériá sa neuplatňujú. Úplne vybavené: Platia všetky kritériá týkajúce sa typu a funkcie budovy. **Vonkajšie osvetlenie: kritérium 10 na str. 88** Čiastočne vybavené: Tieto kritériá sa neuplatňujú. Úplne vybavené: Platia všetky kritériá týkajúce sa typu a funkcie budovy. Pozri Prílohu E – Uplatniteľnosť BREEAM New Construction na obydlia pre jednu rodinu a obydlia pre viaceré rodiny, čiastočne a úplne vybavené na str. 412, kde nájdete podrobnejší popis možností hodnotenia bytových domov.
Všeobecné		
CN3	Umiestnenie budovy (výber najvhodnejších faktorov denného svetla)	Kritériá faktora priemerného denného svetla a rovnomernosti Tabuľka 10 na str. 84 a Tabuľka 11 na str. 86. Pre horúce alebo slnečné miesta s prevažne jasnou oblohou, najmä tie, ktoré sú v zemepisnej šírke nižšej než 40 stupňov, je lepšie použiť kritérium osvetlenia denným svetlom v Tabuľke 12 na str. 86. Výpočet osvetlenia denného svetla by mal zahŕňať ďalšie svetlo dostupné z jasnej a čiastočne zamračenej oblohy a odrazeného slnečného svetla. Na týchto miestach môže mať použitie kritérií v Tabuľke 10 na str. 84 a Tabuľke 11 na str. 86 za následok nadmerný zisk slnečného tepla.
Kontrola oslnenia		
CN3.1	Vyhovujúce formy kontroly oslnenia - záclony ako kontrola oslnenia	Medzi vyhovujúce tieniace opatrenia na splnenie kritérií kontroly oslnenia patria: Opatrenia integrované do budovy (napr. nízke odkvapy) Zariadenia ovládané používateľmi, ako sú žalúzie (ak je hodnota priepustnosti menšie ako 0,1 (10 %) Bioklimatický dizajn Vonkajšie tienenie alebo brise soleil. Regulácia oslnenia musí zabezpečiť tienenie pred letným slnkom s vysokou hladinou a zimným slnkom s nízkou hladinou, ak je to relevantné pre krajinu posudzovania (napríklad zemepisná šírka 40 stupňov alebo viac). V prípade použitia pevných systémov sa môžu použiť projektové štúdie na preukázanie toho, že slnečnému žiareniu sa zabráni, aby sa dostalo k obyvateľom budovy počas hodín, keď sú v nej zamestnaní. Záclony (ak sa používajú bez iných foriem tieňovania) nespĺňajú kritériá pre kontrolu oslnenia, pretože neposkytujú dostatočnú kontrolu na optimalizáciu denného svetla v priestore. Okrem toho je pravdepodobné, že použitie záclon na kontrolu oslnenia spôsobí, že sa používatelia budú viac spoliehať na umelé osvetlenie.

Ref	Definície pojmov	Popis
Denné svetlo		
CN3.2	Percento hodnotenej plochy. Pozri kritérium 4 na str. 83.	Ak sa v kritériách uvádza, že percento podlahovej plochy musí byť primerane osvetlené denným svetlom, vzťahuje sa to na percento celkovej podlahovej plochy všetkých miestností, ktoré sa musí posúdiť, t. j. na vyhovujúcu plochu. Ak má napríklad stavba šesť miestností, ktoré sa musia posúdiť , pričom každá z nich má 150 m² (celková plocha 900 m²) a 80 % tejto podlahovej plochy musí spĺňať kritérium, potom 720 m² musí spĺňať kritérium; to sa rovná 4,8 miestnostiam. Počet miestností, ktoré musia spĺňať požiadavky, sa musí vždy zaokrúhľovať nahor , preto v tomto príklade musí mať päť miestností priemerný činiteľ dennej osvetlenosti 2 % alebo viac (a navyše musia spĺňať ostatné kritériá), aby sa dosiahol kredit.
CN3.3	Vonkajšie prekážky	Pri výpočte minimálnych a priemerných činiteľov denného svetla a osvetlenia denným svetlom by sa mali zohľadniť vonkajšie prekážky. Pri výpočtoch osvetlenia by sa odrazivosť vonkajších prekážok mala považovať za 0,2, pokiaľ sa na mieste nevykonali merania vonkajšej odrazivosti.
CN3.4	Faktory znečistenia pri výpočte denného svetla	Výpočty denného svetla by mali obsahovať faktor údržby znečistenia okien. Príklad je uvedený v Britskom štandardnom kódexe pre denné osvetlenie, BS1 8206 Časť 2, Príloha A1.3.
CN3.5	Odrazené svetlo	Pre oblasti, kde sa na preukázanie súladu s kritériami denného osvetlenia používa odrazené svetlo, musia sa poskytnúť výpočty alebo výsledky z vhodného softvéru na projektovanie osvetlenia, aby sa preukázalo, že tieto oblasti spĺňajú kritériá BREEAM (ak sa vyžaduje svetlo z týchto zdrojov, aby miestnosť splnila požiadavky). Príkladmi vypožičaného svetla sú :svetelné police, zasklenie svetlíkov, svetlovody alebo vnútorné priesvitné alebo priehľadné priečky (napríklad z matného skla).
CN3.6	Kritérium hĺbky miestnosti - miestnosti osvetlené z dvoch protiľahlých strán	V prípade miestností osvetlených oknami na dvoch protiľahlých stranách je maximálna hĺbka miestnosti, ktorá môže byť uspokojivo osvetlená denným svetlom, dvojnásobok hraničnej hĺbky miestnosti (d) (merané od okennej steny k okennej stene; CIBSE Lighting Guide LG108. Odrazivosť imaginárnej vnútornej steny by sa mala považovať za 1.
CN3.7	Rovnomernosť so strešnými svetlíkmi	Kritérium hĺbky miestnosti sa nemôže použiť, ak sa stratégia osvetlenia spolieha na strešné svetlá. V takýchto priestoroch sa na výpočet pomeru rovnomernosti musí použiť buď vhodný softvér, alebo v prípade pravidelnej sústavy strešných svetlíkov v celom priestore sa na určenie pomeru rovnomernosti môže použiť obrázok 2.36 (strana 37) v príručke CIBSE Lighting Guide LG10.
CN3.8	Denné svetlo - výpočet miery rovnomernosti	Výpočet miery rovnomernosti, minimálny faktor denného svetla a minimálna osvetlenie denným svetlom môžu vylúčiť oblasti do 0,5 m od stien. Plochy do 0,5 m sa na tento účel nepovažujú za súčasť pracovnej roviny, hoci sú zahrnuté vo výpočtoch priemerného faktora denného svetla a priemerného denného osvetlenia.

Ref	Definície pojmov	Popis
CN3.9	Požiadavka výhľadu na oblohu. Pozri kritérium 4 na str. 83.	V súlade s kritériami oblohy (pozri písmeno b)) v Tabuľke 11 na strane 86musí aspoň 80 % miestnosti, ktorá spĺňa požiadavku priemerného činiteľa denného osvetlenia, dostávať priame svetlo z oblohy, t. j. je prípustné, aby až 20 % miestnosti nespĺňalo požiadavku na výhľad na oblohu, a napriek tomu sa dosiahne vyhovujúca miestnosť.
Úrovne vnútorného a vonkajšieho osvetlenia alebo zónovanie a riadenie		
CN3.10	Národné príručky osvedčených postupov osvetlenia	V referenčnom liste pre danú krajinu nájdete príslušné usmernenie o osvedčených postupoch v oblasti osvetlenia v krajine posudzovania. Alternatívne sa navrhované dokumenty vzťahujú na minimálne požiadavky stanovené v zozname schválených noriem a váh. Ak pre danú krajinu neexistujú príslušné príručky osvetlenia, mal by projektový tím preukázať súlad s európskymi normami EN 12464-1 Svetlo a osvetlenie - Osvetlenie pracovných priestorov, 2011 a EN 12464-2 Osvetlenie pracovísk - Časť 2: Vonkajšie pracovné priestory, 2007.
CN3.11	Obsadenosť a rozmiestnenie pracovných miest neznáme	Ak nie je známa obsadenosť alebo rozmiestnenie pracovných miest, riadenie osvetlenia sa môže zónovať na základe mriežok s rozlohou 40 m², t. j. predpoklad 1 osoby alebo pracovného miesta na 10 m².
CN3.12	Malé priestory	Budovy pozostávajúce výlučne z malých miestností alebo priestorov (menej ako 40 m²), ktoré si nevyžadujú žiadne rozdelenie zón osvetlenia alebo reguláciu, štandardne spĺňajú kritériá zónovania.
CN3.13	Zóny štyroch pracovných priestorov	Limit štyroch pracovných miest je orientačný, ale nie je pevne stanovený. Ak je odôvodnené, aby sa toto číslo zvýšilo, aby zodpovedalo prijatej stratégii osvetlenia, môže sa akceptovať za predpokladu, že posudzovateľ je presvedčený, že cieľ tohto kritéria je splnený, t. j. že existuje vhodné zónovanie alebo riadenie osvetlenia, ktoré umožňuje primeranú mieru kontroly obyvateľov nad osvetlením v ich osobnom pracovnom priestore. Príslušný člen projekčného tímu, napr. konzultant pre osvetlenie, by mal v takomto prípade stanoviť, ako sa to má dosiahnuť.
CN3.14	Priestorové plánovanie a ovládanie osvetlenia - priestory auditórií	Špecifikované ovládacie prvky osvetlenia budú závisieť of veľkosti a použitia priestoru, ale zvyčajne sa očakáva, že v auditóriu so stupňovitým sedením a formálnym prednáškovým alebo demonštračným alebo demonštračným miestom bude kontrola osvetlenia riešená nasledovne: 1. Úplné normálne osvetlenie (na umožnenie vstupu a výstupu, čistenie atď.) 2. Vypnuté osvetlenie demonštračného priestoru a osvetlenie priestoru pre divákov znížené na nízku úroveň (na účely premietania diapozitívov , ale s dostatočným osvetlením pre divákov, aby si mohli robiť poznámky) 3. Všetky svetlá vypnuté (na premietanie tónových diapozitívov, farebných diapozitívov a na účely vizuálnych demonštrácií alebo predstavení) 4. Samostatné lokalizované osvetlenie lektora.

Ref	Definície pojmov	Popis
CN3.15	Žiadne vonkajšie osvetlenie	Ak nie sú špecifikované žiadne vonkajšie svietidlá (buď oddelené od vonkajšej fasády alebo strechy budovy, alebo namontované na nich), kritériá týkajúce sa vonkajšieho osvetlenia sa neuplatňujú a zápočet sa môže udeliť na základe splnenia kritérií pre vnútorné osvetlenie. Z požiadaviek na osvetlenie zón sú vylúčené tieto vnútorné priestory: 1. Priestory pre mediálnu a umeleckú výrobu 2. Športové zariadenia (len priestory na cvičenie vrátane priestorov na hydroterapiu a fyzioterapiu).
CN3.16	Rozdelené miestnosti, ktoré nie sú uvedené	V prípade zónovania miestností alebo priestorov, ktoré nie sú uvedené v kritériách 11 a 12 na strane 89, môže posudzovateľ uplatniť prvok úsudku pri určovaní, či je to, čo je uvedené, vhodné pre daný priestor vzhľadom na jeho konečné využitie a cieľ a kritériá tohto vydania BREEAM.
CN3.17	Úrovne osvetlenia pre oblasti, kde sa pravidelne používajú počítačové obrazovky	Projekty môžu špecifikovať 300 luxov namiesto toho, čo je predpísané v EN 12464: 2011. Je to v súlade s Príručkou pre osvetlenie CIBSE 7.
Špecifické pre druh budovy		
CN4	Vzdelávanie (predškolské zariadenia) a akútne špeciálne vzdelávacie potrebuje ovládacie prvky pre deti	Ak sú do rozsahu hodnotenia zahrnuté priestory pre starostlivosť o deti alebo na akútne špeciálne vzdelávacie potreby, mali by sa zabezpečiť ovládacie prvky pre učiteľa alebo člena personálu, t. j. nie je potrebné, aby boli tieto ovládacie prvky prístupné deťom. Ak sú do rozsahu hodnotenia zahrnuté priestory materských škôl, zabezpečiť ovládacie prvky pre zamestnancov, nie pre deti materských škôl.
CN4.1	Hotely - úrovne osvetlenia v hotelových izbách	Úrovne vnútorného osvetlenia v hotelových izbách sa zvyčajne nemusia zhodovať s úrovňami osvedčených postupov jednotlivých štátov pre kancelárie, pretože tieto priestory sa spravidla nevyužívajú ako pracovný priestor. Ak sú však hotelové izby alebo izby v hotelovom apartmáne určené na použitie ako pracovné priestory podobné malej kancelárii, úrovne osvetlenia by mali zodpovedať úrovniam osvedčených postupov jednotlivých štátov pre tento typ priestoru.

Metodológia

Žiadna.

Dôkazová dokumentácia

Kritériá	Predbežná fáza projektu	Záverečná fáza po výstavbe
Denné svetlo		
Všetky	Projektové výkresy a výpočty denného svetla ALEBO Príslušná časť alebo špecifikácia budovy alebo zmluva potvrdzujúca národné usmernenia o osvedčených postupoch v oblasti denného osvetlenia alebo požiadavky BREEAM.	Správa o inšpekcii miesta BREEAM a fotografický dôkaz ALEBO Výkresy v skutočnom stave a výpočty ALEBO Potvrdenie od projektového tímu, že denné svetlo je v súlade s národnými predpismi osvedčených postupov pre denné osvetlenie alebo požiadavkami BREEAM.
Požiadavky na výhľad a oslnenie		
Všetky	Projektová výkresová dokumentácia. Príslušná časť alebo ustanovenia špecifikácie budovy alebo zmluvy. Plán okna.	Správa o inšpekcii miesta BREEAM a fotografický dôkaz. Výkresy v skutočnom stave. Formálne potvrdenie súladu dodávateľom alebo projektovým tímom.
Vnútorné a vonkajšie osvetlenie		
Všetky	Projektové výkresy alebo dátové listy miestností alebo plány. Príslušná časť alebo špecifikácia budovy alebo zmluva ALEBO List s formálnym potvrdením o zhode od príslušného člena projektového tímu.	Správa o inšpekcii miesta BREEAM a fotografický dôkaz. Výkresy v skutočnom stave. Formálne potvrdenie o zhode od dodávateľa alebo projektového tímu.

Dodatočné informácie

Relevantné definície

Adekvátny výhľad

BREEAM definuje primeraný výhľad von ako výhľad na krajinu alebo budovy (a nie len na oblohu) v úrovni očí (1,2 - 1,3 m) v rámci príslušných priestorov budovy a v ideálnom prípade by mal byť cez vonkajšie okno. Výhľad do vnútorného dvora alebo átria je v súlade s predpismi za predpokladu, že vzdialenosť od otvoru k zadnej stene dvora alebo átria je aspoň 10 m (teda dostatočná vzdialenosť na opätovné zaostrenie očí). Výhľad nemôže byť vnútorný výhľad cez miestnosť, pretože by ho pravdepodobne zakrývali priečky, kartotéky atď.

Priemerný činiteľ denného osvetlenia

Priemerný činiteľ dennej osvetlenosti je priemerná vnútorná osvetlenosť (denným svetlom) na pracovnej rovine v miestnosti, vyjadrená ako percento súčasnej vonkajšej osvetlenosti na horizontálnej rovine pri nezakrytej oblohe podľa normy CIE.

Počítačová simulácia

Softvérové nástroje, ktoré možno použiť na modelovanie zložitejších geometrií miestností na účely denného osvetlenia.

Stavebná zóna

Na účely tohto vydania dokumentu BREEAM je zóna výstavby definovaná ako pozemok, na ktorom sa stavia budova hodnotená podľa normy BREEAM a vonkajšie plochy pozemku, ktoré patria do rozsahu nových prác.

Osvetlenie

Množstvo svetla dopadajúceho na povrch na jednotku plochy merané v luxoch.

Obsadený priestor

Miestnosť alebo priestor v hodnotenej budove, ktorý bude pravdepodobne obsadený používateľom budovy po dobu najmenej 30 minút. Upozorňujeme, že existuje špecifická, nesúvisiaca definícia „neobsadeného“ v súvislosti s akustickým testovaním a meraním, čo by sa nemalo zamieňať s tu používanou definíciou.

Faktor bodového denného svetla

Bodový faktor denného svetla je pomer medzi intenzitou osvetlenia (z denného svetla) v určitom bode na pracovnej rovine v miestnosti, vyjadrený ako percento osvetlenia prijatého na vonkajšej vodorovnej rovine bez prekážok. Vychádza sa z predpokladanej zamračenej oblohy, ktorá sa aproximuje podľa „CIE (Commission Internationale de l'Eclairage) overcast sky“. Minimálny bodový faktor denného svetla je najnižšia hodnota faktora denného svetla v pracovnej rovine v bode, ktorý nie je vo vzdialenosti do 0,5 m od steny. Podobne sa minimálna osvetlenosť vypočíta v najhoršie osvetlenom bode na pracovnej rovine , ktorý nie je vo vzdialenosti 0,5 m od steny. Tieto body sa zvyčajne nachádzajú v blízkosti zadného rohu miestnosti. Počítačové simulácie sú najvhodnejšími nástrojmi na výpočet činiteľov denného osvetlenia a osvetlenosti bodov.

Príslušné priestory budovy:

Denné osvetlenie

Na účely systému BREEAM sú to priestory v budove, v ktorých sa dobré denné osvetlenie považuje za prínos pre používateľov budovy (zvyčajne tie oblasti, v ktorých sa človek nepretržite zdržiava 30 minút alebo viac). Patria sem aj nasledujúce priestory (ak sú obsadené nepretržite 30 minút alebo dlhšie), ktoré sú osobitne uvedené, pretože sa na ne často zabúda:

1. Priestory na cvičenie v športovej hale
2. Laboratóriá, pokiaľ si typ výskumu, ktorý sa bude vykonávať, nevyžaduje prísne kontrolované podmienky prostredia, ako napríklad nepretržité vylúčenie prirodzeného svetla .
3. Samostatné byty
4. Kuchyne a priestory stravovania
5. Všeobecné spoločenské priestory
6. Malé kancelárie (vrátane kancelárií v obytných budovách a rezidenčných inštitúciách)
7. Zasadacie miestnosti (vrátane priestorov v obytných budovách a rezidenčných inštitúciách)
8. Rekreačné priestory
9. Všetky priestory, ktoré môžu zahŕňať prácu zblízka.

To však nezahŕňa nasledujúce položky (ak sú prítomné):

1. Médiá, umelecká produkcia, zmyslové priestory pre špeciálne vzdelávacie potreby, rádiodiagnostické pracoviská a ďalšie priestory vyžadujúce prísne kontrolované akustické alebo svetelné podmienky.

Kontrola oslnenia

Pre kontrolu oslnenia sem patria priestory budovy, kde by osvetlenie a výsledné oslnenie mohlo byť pre používateľov problematické, napr. priestory, ktoré boli navrhnuté tak, aby obsahovali alebo používali pracovné stanice, premietacie plátna atď. a športové haly. Priestory vo vyššie uvedených kategóriách, pre ktoré sú denné svetlo a výhľad vylúčené, by sa nemali hodnotiť podľa kritérií kontroly oslnenia.

Vnútorné a vonkajšie osvetlenie

Ak nie sú špecifikované žiadne vonkajšie svietidlá (buď oddelené od vonkajšej fasády alebo strechy budovy , alebo namontované na nich), kritériá týkajúce sa vonkajšieho osvetlenia sa neuplatňujú a kredit sa môže udeliť na základe splnenia kritérií pre vnútorné osvetlenie. Z požiadaviek na osvetlenie zón sú vylúčené tieto vnútorné priestory:

1. Priestory pre médiá a umeleckú výrobu
2. Športové zariadenia (len priestory na cvičenie vrátane priestorov na hydroterapiu a fyzioterapiu).

Odrazivosť

Pomer svetelného toku odrazeného od povrchu k svetelnému toku, ktorý naň dopadá.

Samostatná kontrola zónovania

Svetelné spínače alebo ovládacie prvky pre určitý priestor alebo zónu budovy, ku ktorým majú prístup a ktoré môžu ovládať osoby nachádzajúce sa v tomto priestore alebo zóne. Takéto ovládače budú umiestnené vo vnútri alebo v blízkosti zóny alebo oblasti, ktorú ovládajú.

Okolitá plocha steny

Okolitá plocha steny sa vzťahuje na plochu (v m^2) vnútornej steny, na ktorej sa nachádza okno alebo otvor, vrátane plochy samotného okna alebo otvoru.

Rovnomernosť

Rovnomernosť je pomer medzi minimálnou osvetlenosťou (denným svetlom) na pracovnej rovine v miestnosti (alebo minimálnym činiteľom denného osvetlenia) a priemernou osvetlenosťou (denným svetlom) na tej istej pracovnej rovine (alebo priemerným činiteľom denného osvetlenia).

Pohľad na oblohu

Oblasti pracovnej roviny majú výhľad na oblohu, keď na ne dopadá priame svetlo z oblohy, t. j. keď je obloha viditeľná z výšky pracovnej roviny.

Výhľad

BREEAM definuje príslušné priestory budovy, ktoré si vyžadujú výhľad, ako priestory budovy, kde:

1. Sú alebo budú umiestnené pracovné stanice alebo lavice alebo stoly pre používateľov budovy
2. Bude sa pracovať zblízka alebo sa budú používať vizuálne pomôcky
3. Výhľad von sa považuje za prínosný pre obyvateľov budovy, napr. v priestoroch, v ktorých obyvatelia pravdepodobne trávia značnú časť času.

Vylúčené oblasti pre každú z nich môžu zahrňovať:

- Konferenčné miestnosti, prednáškové sály, športové haly, akútne SEN a tiež všetky priestory, v ktorých je vylúčenie alebo obmedzenie prirodzeného svetla funkčnou požiadavkou, napr. laboratóriá, mediálne priestory atď.

Pracovná rovina

CIBSE LG10 definuje pracovnú rovinu ako vodorovnú, zvislú alebo naklonenú rovinu, v ktorej leží vizuálna úloha. Pracovná rovina sa obvykle považuje za 0,7 m nad podlahou pre kancelárie a 0,85 m pre priemysel.

Ďalšie informácie

Žiadne.

Hea 02 Kvalita vnútorného vzduchu

(všetky budovy)

Počet dostupných kreditov	Minimálne normy
Závisí od typu budovy	Áno (kritérium 1 nižšie)

Cieľ

Rozpoznať a povzbudiť zdravé vnútorné prostredie prostredníctvom špecifikácie a inštalácie vhodného vetrania, vybavenia a povrchových úprav.

Hodnotiace kritériá

Táto otázka je rozdelená do troch častí:

- Predpoklad - vyhýbanie sa azbestu
- Minimalizácia zdrojov znečistenia ovzdušia (4 kredity)
- Prispôsobivosť - potenciál prirodzeného vetrania (1 kredit)

Na preukázanie súladu sa vyžaduje nasledovné:

Predpoklad

1 Materiály obsahujúce azbest je zakázané špecifikovať a používať v budove.

Minimalizácia zdrojov znečisťovania ovzdušia

Jeden kredit - Plán kvality vnútorného vzduchu (IAQ)

2 Bol vypracovaný a implementovaný plán kvality vnútorného ovzdušia s cieľom uľahčiť proces, ktorý vedie k rozhodnutiam a opatreniam v oblasti návrhu, špecifikácie a inštalácie, ktoré minimalizujú znečistenie vnútorného ovzdušia počas návrhu, výstavby a užívania budovy. Plán kvality vnútorného ovzdušia musí zohľadňovať tieto skutočnosti:
- 2.a Odstránenie zdrojov kontaminantov
- 2.b Riedenie a kontrola zdrojov kontaminantov
- 2.c Postupy pre výplach pred uvedením do prevádzky
- 2.d Testovanie a analýza treťou stranou
- 2.e Udržiavanie kvality vnútorného vzduchu počas používania

Jeden kredit - vetranie

Budova bola navrhnutá tak, aby minimalizovala koncentráciu a recirkuláciu znečisťujúcich látok v budove nasledovne:

3 Uvedené kritérium 2 bolo splnené.

4 Zabezpečenie prívod čerstvého vzduchu do budovy v súlade s kritériami národnej normy osvedčených postupov pre vetranie.

5 Umiestnenie prívodov čerstvého vzduchu je navrhnuté tak, aby sa minimalizoval vstup znečisťujúcich látok do budovy :
- 5.a V klimatizovaných budovách a priestoroch so zmiešaným režimom:

5.a.i Umiestnenie prívodov a odvodov vzduchu v budove vo vzájomnom vzťahu a vo vzťahu k vonkajším zdrojom znečistenia je navrhnuté v súlade s normou EN 13779:20079 príloha A2 (pozri CN3 na strana 106 pre alternatívne metódy zhody).

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5.a.ii Ak sa nedodržiava norma EN 13779:2007[10] príloha A2, prívody a odvody vzduchu v budove sú od seba vzdialené viac ako 10 m a prívody sú vzdialené viac ako 10 m od zdrojov vonkajšieho znečistenia.

5.b V prirodzene vetraných budovách alebo priestoroch: otvárateľné okná alebo ventilátory sú vo vzdialenosti najmenej 10 metrov horizontálne od zdrojov vonkajšieho znečistenia (vrátane umiestnenia akýchkoľvek výfukových plynov v budovách).

6 Systémy HVAC musia v prípade ich existencie obsahovať vhodnú filtráciu na minimalizáciu znečistenia vonkajšieho ovzdušia, ako je definované v prílohe A3 k norme EN 13779:2007.

7 V priestoroch budovy, v ktorých sa vyskytuje veľké množstvo nepredvídateľných alebo premenlivých osôb, sú určené snímače oxidu uhličitého (CO_2) alebo snímače kvality vzduchu a:

7.a V mechanicky vetraných budovách alebo priestoroch: snímače sú prepojené s mechanickým vetracím systémom a zabezpečujú vetranie priestoru riadené podľa potreby.

7.b V prirodzene vetraných budovách alebo priestoroch: snímače majú schopnosť upozorniť vlastníka budovy alebo manažéra, keď úroveň CO_2 prekročí odporúčanú nastavenú hodnotu, alebo sú prepojené s ovládacími prvkami s možnosťou regulovať množstvo čerstvého vzduchu, t. j. automatické otváranie okien alebo strešných vetracích otvorov.

8 V krajinách, kde fajčenie v budovách nie je zákonom zakázané, je uvedená jedna z nasledujúcich možností:

8.a Zavedie sa zákaz fajčenia vo všetkých verejných priestoroch a priestoroch pre zamestnancov budovy a na vhodných miestach jasne viditeľných pre všetkých obyvateľov (t. j. v spoločných priestoroch, kanceláriách a pri vchodoch do budovy) sa umiestnia tabule „Zákaz fajčenia“ ALEBO

8.b Ak je fajčenie povolené len vo vyhradených fajčiarskych miestnostiach a fajčenie je zakázané vo všetkých ostatných oblastiach
s nápismi „Zákaz fajčenia“ umiestnenými na vhodných miestach, ktoré sú jasne viditeľné pre všetkých obyvateľov a kde:

8.b.i Miera vetrania vo vyhradenej miestnosti pre fajčiarov je v súlade s vnútroštátnymi normami osvedčených postupov pre vetranie

8.b.ii Samostatný ventilačný systém zabraňuje recirkulácii v miestnosti a fajčiarska miestnosť je pomocou predsiene oddelená od všetkých ostatných obsadených priestorov

8.b.iii Prívody alebo odvody vzduchu alebo otvárateľné okná alebo ventilátory sú umiestnené tak, aby sa minimalizovala recirkulácia dymu (pozri kritérium 5 na predchádzajúcej strane).

Jeden kredit - emisie zo stavebných produktov

9 Kritérium 2 na predchádzajúcej strane bolo splnené.

10 Najmenej štyri z piatich typov výrobkov uvedených v Tabuľka 17 na strane 101 spĺňajú emisné limity, požiadavky na testovanie a všetky ďalšie požiadavky uvedené v tabuľke 17 na strane 101 alebo si pozriCN3.5 na strane 106.

Jeden kredit - meranie kvality vnútorného vzduchu po výstavbe

11 Kritérium 2 na predchádzajúcej strane bolo splnené.

12 Koncentrácia formaldehydu vo vnútornom ovzduší sa meria po skončení stavby (ale pred jej začatím) a neprekračuje 100 µg/m³ v priemere za 30 minút11.

13 Odber vzoriek a analýza formaldehydu sa vykonáva v súlade s normami ISO 16000-2[12] a ISO 16000-3[13].

14 Celková koncentrácia prchavých organických zlúčenín (TVOC) vo vnútornom ovzduší sa meria po ukončení výstavby (ale pred nasťahovaním) a neprekročí 300 µg/m³, v priemere za 8 hodín s [14].

15 Odber vzoriek a analýza TVOC sa vykonáva v súlade s normami ISO 16000-5[15] a ISO 16000-6[16] alebo ISO 16017-1[17].

16 V prípade zistenia prekročenia týchto limitov projektový tím potvrdí opatrenia, ktoré boli alebo budú vykonané v súlade s plánom IAQ s cieľom znížiť hladiny TVOC a formaldehydu na úroveň uvedených limitov.

17 Namerané úrovne koncentrácie formaldehydu (µg/m³) a TVOC (µg/m³) sa uvádzajú prostredníctvom nástroja BREEAM na hodnotenie a podávanie správ na účely potvrdenia vyššie uvedených kritérií 12 až 15.

Prispôsobivosť - potenciál pre prirodzené vetranie

Jeden kredit

18 Stratégia vetrania budovy je navrhnutá tak, aby bola flexibilná a prispôsobiteľná potenciálnym potrebám užívateľov budovy a klimatickým scenárom. Toto možno preukázať nasledovne:

18.a Obývané priestory budovy sú navrhnuté tak, aby boli schopné zabezpečiť prísun čerstvého vzduchu výlučne prostredníctvom stratégie prirodzeného vetrania. Nasledovné metódy spĺňajú toto kritérium v závislosti od zložitosti navrhovaného systému:

18.a.i Otvárateľná plocha okna v každom obsadenom priestore zodpovedá 5 % hrubej vnútornej podlahovej plochy danej miestnosti alebo podlahovej plochy poschodia. V prípade miestnosti alebo podlahovej dosky s hĺbkou od 7 do 15 m musí byť otvárateľná plocha okien na protiľahlých stranách a rovnomerne rozložená po celej ploche, aby sa podporilo primerané priečne vetranie, ALEBO

18.a.ii Projekt demonštruje, že stratégia prirodzeného vetrania poskytuje primeraný priečny tok vzduchu na udržanie požadovaných podmienok tepelného komfortu a rýchlosti vetrania.

V prípade stratégie, ktorá sa nespolieha na otvárateľné okná alebo ktorá má obývané priestory s pôdorysnou hĺbkou väčšou ako 15 m, musí návrh preukázať, že stratégia vetrania môže zabezpečiť primerané priečne prúdenie vzduchu na zachovanie požadovaných podmienok tepelnej pohody a miery vetrania.

19 Stratégia prirodzeného vetrania je schopná zabezpečiť aspoň dve úrovne kontroly používateľa nad prívodom čerstvého vzduchu do obývaného priestoru (pozri CN3.12 na strane 108 ďalšie podrobnosti).

Poznámka: Všetky otváracie mechanizmy musia byť ľahko prístupné a musia umožňovať primeranú kontrolu prietoku vzduchu používateľom, aby sa zabránilo prievanu. Príslušné priemyselné normy pre vetranie sa môžu použiť na definovanie „primeraných úrovní čerstvého vzduchu“, ktoré sú dostatočné pre obsadenosť a vnútorné zaťaženie znečistením ovzdušia relevantné pre daný typ budovy .

Poznámka: Bytové domy a bytové zariadenia so samostatnými bytmi a samostatnými spálňami musia mať určitý stupeň funkcie otvárateľného okna. Nemusí poskytovať dve úrovne ovládania používateľom (ako sa vyžaduje v kritériách 18 a 19 vyššie), ale musí ho používateľ vedieť ovládať.

Kritériá vzorovej úrovne

Jeden kredit

20 Kritérium 2 na strane 98 bolo splnené.

21 Najmenej štyri z piatich typov výrobkov uvedených v Tabuľka 18 na strane 102 spĺňajú emisné limity, požiadavky na testovanie a všetky ďalšie požiadavky uvedené v tabuľke 18 na strane 102

Dva kredity

22 Kritérium 2 na strane 98 bolo splnené.

23 Všetky typy výrobkov spĺňajú emisné limity, požiadavky na testovanie a všetky ďalšie požiadavky uvedené v tabuľke 18 na strane 102.

Kontrolné zoznamy a tabuľky

Tabuľka 17: Emisné kritériá podľa typu produktu

Typ výrobku (pozri CN3.1)	**Emisný limit***			Požiadavka na testovanie (pozri **CN3.2** a **CN3.3**)	**Ďalšie požiadavky**
	Formaldehyd	**Celkové prchavé organické zlúčeniny (TVOC)**	**Karcinogény kategórie 1A alebo 1B**		
Vnútorné farby a nátery	≤ 0,06 mg/m³	≤ 1,0 mg/m³	≤ 0,001 mg/m³	EN 16402 [18] alebo ISO 16000-9 [19] alebo CEN/TS 16516 [20] alebo Štandardná metóda CDPH v1.1 [21]	Spĺňajú limitné hodnoty obsahu TVOC(tabuľka 19 na strane 104). Farby používané vo vlhkých priestoroch (napr. kúpeľne, kuchyne, technické miestnosti) by mali byť chránené proti vzniku plesní (pozri CN3.4 na strane 106).
Drevené produkty (vrátane drevo podláh)	≤ 0,06 mg/m³ (bez MDF) ≤ 0,08 mg/m³ (MDF)	≤ 1,0 mg/m³	≤ 0,001 mg/m³	ISO 16000-9 [22] alebo CEN/TS 16516 [23] alebo Štandardná metóda CDPH v1.1 24 EN 717-1 (len emisie formaldehydu) [25]	Nie sú k dispozícii
Podlaha materiály (vrátane vyrovnávacích podlahových komponentov a živicových podláh)	≤ 0,06 mg/m³	≤ 1,0 mg/m³	≤ 0,001 mg/m³	ISO 10580 alebo ISO 16000-9 alebo CEN/TS 16516 alebo Štandardná metóda CDPH v1.1	Nie sú k dispozícii
Strop, stena, a akustické tepelné izolačné materiály	≤ 0,06 mg/m³	≤ 1,0 mg/m³	≤ 0,001 mg/m³		Nie sú k dispozícii

Typ produktu (pozri CN3.1)	**Emisný limit***			**Skúšanie požiadavka** (pozriCN3.2 na **CN3.3)**	**Dodatočné** požiadavky na
	OOPP, **malde hyde**	**Spolu volatilné organické ne zlúčeniny (TVOC)**	**Kategória** 1, 1A a 1 b **karcinogén**		
Interiérové lepidlá a tesniace materiály (vrátane lepidiel na podlahy)	≤ 0,06 mg/m³	≤ 1,0 mg/m³	≤ 0,001 mg/m³	EN 13999 (Časti 1 - 4) [26, 27, 28, 29] alebo ISO 16000-9 alebo CEN/TS 16516 alebo Štandardná metóda CDPH v1.1	Nie sú k dispozícii
* Súlad s emisnými limitmi sa preukáže po 28 dňoch v komore na testovanie emisií alebo skôr, ako je to stanovené v príslušnej norme pre požiadavky na testovanie					

Tabuľka 18: Vzorové emisné kritériá podľa typu produktu

Typ produktu (pozri CN3.1)	**Emisný limit***					**Dodatočná požiadavka**
	Formal dehyd	**Celkové prchavé organické zlúčeniny (TVOC)**	**Celkové poloprchavé organické zlúčeniny (TSVOC)**	**Karcinogén y kategórie 1A alebo 1B**	Požiadavka na testovanie (pozri **CN3.2** a **CN3.3**)	
Vnútorné farby a nátery	≤ 0,01 mg/m³	≤ 0,3 mg/m³	≤ 0.1 mg/m³	≤ 0,001 mg/m³	EN 16402 [30] alebo ISO 16000-9 alebo CEN/TS 16516 alebo Štandardná metóda CDPH v1.1	Spĺňajú limity obsahu VOC (Tabuľka č. 19 na strane 93). str. 104). Farby používané vo vlhkých priestoroch (napr. kúpeľne, kuchyne, technické miestnosti) by mali chrániť pred vznikom plesní (pozri CN3.4 na str. 106).

Produkt typ (pozri CN3.1)	Emisný limit*					Dodatočná požiadavka
	For malde hyde	Spolu volatilné organické komponentov (TVOC)	Celkom polo-volatilné organické komponentov (TSVOC)	Kategória 1, 1A a 1 b karcinogény	Testovanie požiadavka (pozri CN3.2 na CN3.3)	
Drevené výrobky vrátane drevených podláh	≤ 0,01 mg/m³	≤ 0,3 mg/m³	≤ 0.1 mg/m³	≤ 0,001 mg/m³	ISO 16000-9 alebo CEN/TS 16516 alebo Štandardná metóda CDPH v1.1 EN 717-1 (iba emisie formaldehydu) [31]	Nie sú k dispozícii
Podlahové materiály (vrátane vyrovnávacích hmôt a živicových podláh)	≤ 0,01 mg/m³	≤ 0,3 mg/m³	≤ 0.1 mg/m³	≤ 0,001 mg/m³	ISO 10580 alebo ISO 16000-9 alebo CEN/TS 16516 alebo Štandardná metóda CDPH v1.1	Nie sú k dispozícii
Stropné, stenové a akustické a tepelné izolačné materiály	≤ 0,01 mg/m³	≤ 0,3 mg/m³	≤ 0.1 mg/m³	≤ 0,001 mg/m³	ISO 10580 alebo ISO 16000-9 alebo CEN/TS 16516 alebo Štandardná metóda CDPH v1.1	Nie sú k dispozícii
Interiérové lepidlá a tesniace materiály (vrátane lepidiel na podlahy)	≤ 0,01 mg/m³	≤ 0,3 mg/m³	≤ 0.1 mg/m³	≤ 0,001 mg/m³	EN 13999 (Časti 1-4) [32, 33, 34, 35] alebo ISO 16000-9 alebo CEN/TS 16516 alebo Štandardná metóda CDPH v1.1	Nie sú k dispozícii

* Súlad s emisnými limitmi sa preukáže po 28 dňoch v komore na testovanie emisií alebo skôr, ako je to stanovené v príslušnej norme pre požiadavky na testovanie

Tabuľka 19: Maximálny obsah TVOC pre farby a nátery

Kategória výrobku	Obsah voľných TVOC vo výrobku pripravenom na použitie (g/l)	Požiadavky na testovanie (pozri CN3.3)
Vnútorné matné náterové farby na steny a stropy (lesk < 25 pri 60°)	10	ISO 11890-2 alebo ISO 17895 alebo Výpočet na základe zložiek a surovín
Lesklé vnútorné steny a stropy (lesk > 25 pri 60 °)	40	
Interiérové farby na armatúry a nosné obvodové konštrukcie z dreva a kovu	90	
Interiérové laky na obloženie a moridlá na drevo vrátane nepriehľadných moridiel na drevo	65	
Tenkovrstvové interiérové moridlá na drevo	50	
Základné náterové farby	15	
Základné spojivá	15	
Jednozložkové nátery	100	
Dvojzložkové reaktívne nátery na osobitné koncové použitie, ako sú podlahy	80	
Viacfarebné nátery	80	
Nátery s dekoratívnym efektom	80	

Poznámky o súlade

Ref	Podmienky	Popis
Hrubá stavba a jadro (iba nebytové a rezidenčné inštitúcie)		
CN1	Príslušné kritériá hodnotenia	**Predpoklad: kritérium 1** Obidve možnosti: Platia všetky kritériá týkajúce sa typu a funkcie budovy. **Kvalita vnútorného vzduchu: kritérium 2** Obidve možnosti: Toto kritérium sa neuplatňuje. **Vetranie: kritériá 3 až 8** Len plášť: Tieto kritériá sa neuplatňujú. Plášť a jadro: Uplatňujú sa kritériá 4 a 5 na strane 98 **Úrovne emisií: kritériá 9 až 17 a 20 až 23** Obidve možnosti: Tieto kritériá sa neuplatňujú. **Prispôsobivosť- potenciál pre prirodzené vetranie: kritériá 18 až 19** Obidve možnosti: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy Podrobnejší popis možností vyhodnotenia hrubej stavby a jadra nájdete v Prílohe D - Posúdenie projektu hrubej stavby a jadra na strane 409.
CN1.1	Vetracie systémy. Pozri kritériá 4 a 5 na str. 98	Plášť a jadro: Ak nie sú ventilačné systémy v kompetencii návrhára plášťa a jadra, súlad sa môže preukázať prostredníctvom stratégie údržby budovy, ak je to vopred stanovené budovanou formou alebo poskytovaním základných služieb, podľa vhodnosti pre zvolenú možnosť plášťa a jadra.
Bytové - čiastočne a úplne vybavené		
CN2	Príslušné hodnotiace kritériá - Obydlia pre jednu rodinu a obydlia pre viaceré rodiny	**Predpoklad: kritérium 1** Obidve možnosti: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy. **Plán kvality vnútorného vzduchu: kritérium 2** Obidve možnosti: Toto kritérium sa neuplatňuje. **Vetranie: kritériá 3 až 8** Obidve možnosti: Uplatňujú sa kritériá 4 až 6 na strane 99 . **Emisie zo stavebných výrobkov: kritériá 9 na 10** Obidve možnosti: Uplatňuje sa kritérium 10 na strane 99 . **Meranie kvality vnútorného vzduchu po výstavbe: kritériá 11 až 17** Obidve možnosti: Tieto kritériá sa neuplatňujú. **Prispôsobivosť - potenciál pre prirodzené vetranie: kritériá 18 až 19** Obidve možnosti: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy. **Vzorové: kritériá 20 až 23** Obidve možnosti: Tieto kritériá sa neuplatňujú. Pozri Prílohu E – Uplatniteľnosť BREEAM New Construction na obydlia pre jednu rodinu a obydlia pre viaceré rodiny, čiastočne a úplne vybavené na str. 412, kde nájdete podrobnejší popis možností hodnotenia bytových domov.

Ref	Definície pojmov	Popis
Všeobecné		
Minimalizácia zdrojov znečisťovania ovzdušia		
CN3	Alternatívne metódy preukazovania súladu s kritériami pre prívod a odvod vzduchu	Splnenie kritérií sa môže preukázať pomocou alternatívnych metód (napr. štúdie v aerodynamickom tuneli, modelovanie výpočtovej dynamiky tekutín (CFD)), ak také metódy preukazujú, že navrhované umiestnenie prívodu a odvodu vzduchu zabraňuje významnej recirkulácii odsávaného vzduchu za typických veterných podmienok.
CN3.1	Výrobky, ktoré nevypúšťajú prchavé organické látky	Výrobky, ktoré prirodzene nevypúšťajú prchavé organické látky, ako sú tehly, prírodný kameň, betón, keramické dlaždice, sklo, kovové povrchy atď., sa nemusia posudzovať a môžu sa považovať za plne vyhovujúce kritériám, pokiaľ sa pri ich výrobe alebo povrchovej úprave nepoužívajú nátery, spojivá alebo tmely na organickej báze.
CN3.2	Požiadavky na testovanie emisných limitov	Požiadavky na testovanie emisných limitov vychádzajú z použitia štandardizovaných metód skúšobnej komory na emisie. Perforátor, banka, exsikátor a iné skúšobné metódy založené na extrakcii sú výslovne vylúčené. Súlad s týmito požiadavkami možno dosiahnuť použitím alternatívnych noriem, ak sa v nich stanovujú metódy emisných skúšok v skúšobnej komore podobné metódam uvedeným v normách v tabuľke 17 a tabuľke 18 na strane 102. Posudzovatelia BREEAM musia pred udelením akýchkoľvek kreditov za túto otázku predložiť BRE Global na schválenie podrobnosti o akýchkoľvek alternatívnych normách.
CN3.3	Akreditácia organizácií vykonávajúcich odber vzoriek alebo laboratórne analýzy	Všetky organizácie používané na odber vzoriek a analýzu vzduchu v interiéri alebo na analýzu emisií zo stavebných produktov musia byť akreditované podľa normy ISO/IEC 17025[36] s osobitnou akreditáciou, ktorá sa vzťahuje na: Odber vzoriek: Čerpaný odber vzoriek formaldehydu vo vzduchu; Čerpaný odber vzoriek prchavých organických látok vo vzduchu Chemická analýza: Stanovenie formaldehydu; Stanovenie VOC. Odber vzoriek a chemickú analýzu vnútorného vzduchu môžu vykonávať samostatné organizácie, ale obidve musia byť akreditované.
CN3.4	Farby používané vo vlhkých priestoroch	Je potrebné preukázať, že farby používané vo vlhkých priestoroch chránia pred vznikom plesní. Dôkazom môžu byť výsledky príslušných testov (napr. testovanie odolnosti voči hubám alebo riasam) alebo informácie o výrobku či vyhlásenie výrobcu. Existujú európske štandardné testy, ktoré by sa mohli použiť: EN 15457 37 a EN 15458 38.
CN3.5	Spoločnosť BREEAM uznala alternatívne schémy úrovne emisií zo stavebných výrobkov	Usmernenie č. 22, ktoré je k dispozícii na webovej stránke BREEAM, obsahuje zoznam schválených alternatívnych schém uznávaných BREEAM, ktoré možno použiť na preukázanie súladu s úrovňami emisií zo stavebných produktov. Ak chcú posudzovatelia, klienti alebo prevádzkovatelia systémov požiadať o uznanie iných systémov, ktoré nie sú v súčasnosti uvedené v zozname, obráťte sa na kanceláriu BREEAM (breeam@bregroup.com), kde získate podrobnosti o postupe podávania žiadostí.

Ref	Definície pojmov	Popis
CN3.6	Výrobky používané v malých množstvách na ad hoc účely	Všetky výrobky špecifikované pre projekt, ktoré patria do jedného z typov výrobkov uvedených v tabuľke 17 a Tabuľka 18 na strane 102 sa musia posúdiť v rámci tohto problému. Uznáva sa však, že môže byť ťažké kontrolovať špecifikáciu niektorých výrobkov (napr. tesniacich materiálov), ktoré sa používajú v malých množstvách na ad hoc účely, ako je „výroba tovaru“. Preto sa všetky takto používané výrobky nemusia posudzovať z hľadiska tohto problému. Posudzovateľ BREEAM by mal na základe vlastného úsudku určiť, či sa výrobky, ktoré sa používajú alebo majú používať na ad hoc účely , budú používať vo významných množstvách, a preto ich treba posúdiť z tohto hľadiska.
CN3.7	Vlastné vyhlásenie o úrovniach emisií zo stavebných produktov	Vlastné vyhlásenie výrobcov o úrovniach emisií zo stavebných výrobkov je prijateľné, ak testovanie vykonalo akreditované laboratórium v súlade s bodom 3. 3 na predchádzajúcej strane alebo ak výrobca vyhlási, že výrobok neobsahuje žiadne látky emitujúce formaldehyd alebo VOC.
CN3.8	Počet typov výrobkov, ktoré musia spĺňať požiadavky	Ak sú v rámci budovy špecifikované štyri alebo menej typov výrobkov, počet typov výrobkov, ktoré sa musia posúdiť z hľadiska kritérií emisií, sa úmerne znižuje takto: Ak sú prítomné štyri výrobky, musia byť v súlade tri výrobky Ak sú prítomné tri výrobky, musia byť v súlade dva výrobky Ak sú prítomné dva alebo menej výrobkov, musia byť v súlade všetky výrobky.
CN3.9	Rozsah posúdenia pre typy výrobkov inštalovaných alebo použitých v budove	Posudzovať sa musia len výrobky, ktoré sa inštalujú alebo používajú v častiach budovy , kde ich emisie môžu ovplyvniť kvalitu vnútorného ovzdušia. Na účely tejto problematiky to znamená akýkoľvek výrobok inštalovaný alebo aplikovaný vo vnútri vnútorného povrchu infiltračnej, parotesnej alebo vodotesnej fólie budovy , alebo ak nie je prítomná, vo vnútri vnútorného povrchu vnútornej tepelnoizolačnej vrstvy obalu budovy .
CN3.10	Bytové zariadenie	Rozsah kreditov VOC sa nevzťahuje na zariadenie, napr. stoly alebo police, zameriava sa na kľúčové vnútorné povrchové úpravy a vybavenie, ktoré sú súčasťou budovy.
Prispôsobivosť - Potenciál prirodzeného vetrania		
CN3.11	Mechanicky vetrané alebo chladené budovy. Pozri kritériá 18 a 19 na str. 100.	Budovy, ktoré využívajú stratégiu mechanického vetrania alebo chladenia, môžu tento kredit získať za predpokladu, že sa preukáže, že prvky požadované v kritériách môžu byť ľahko dostupné pre používateľa budovy, napr. okná, ktoré sú pevne zatvorené pri stratégii klimatizácie, sa môžu upraviť na otváracie okná. Cieľom kritérií potenciálu prirodzeného vetrania je zabezpečiť, aby budova bola schopná zabezpečiť čerstvý vzduch pomocou stratégie prirodzeného vetrania. Ak je budova prevažne prirodzene vetraná, ale je potrebné mechanické vetranie, aby sa zlepšilo vetranie počas najvyťaženejších podmienok (t. j. v čase maximálnej obsadenosti, najvyššej teploty, alebo obidve) z dôvodu funkcie alebo špecifických spôsobov využívania budovy, udelenie kreditu za prirodzené vetranie je možné za predpokladu, že výpočty alebo modelovanie preukážu, že pre prijatý projekt alebo plán budovy bude potrebný mechanický ventilačný systém pre ≤ 5 % ročných hodín v obsadených priestoroch.

Ref	Definície pojmov	Popis
CN3.12	Úrovne vetrania. Pozri kritérium 19 na str. 100.	Obidve úrovne vetrania musia byť schopné dosiahnuť: Vyššia úroveň: vyššia miera vetrania dosiahnuteľná na odstránenie krátkodobých zápachov alebo na zabránenie prehriatiu v lete Nižšia úroveň: primeraná úroveň čerstvého vzduchu bez prievanu, aby sa uspokojila potreba dobrej kvality vzduchu v interiéri počas celého roka, dostatočná pre obsadenie priestoru a vnútorné znečistenie priestoru.
CN3.13	Priemyselné budovy bez kancelárií	Ak budova nemá žiadne kancelárske priestory, uplatňujú sa len predpoklady v rámci tohto problému.
CN3.14	Maloobchodné budovy bez kancelárií	Prispôsobivosť - potenciál pre udelenie kreditu za prirodzenú ventiláciu sa týka len kancelárskych priestorov. Ak budova nemá žiadne kancelárske priestory, tento kredit sa odfiltruje.

Metodológia

Žiadna.

Dôkazová dokumentácia

Kritériá	Predbežná fáza projektu	Záverečná fáza po výstavbe
Predpoklad		
1	Príslušná časť alebo ustanovenia špecifikácie budovy alebo zmluvy alebo príslušnej legislatívy. Projektová výkresová dokumentácia.	Dokumentácia od výrobcov. Správa posudzovateľa BREEAM z inšpekcie na mieste a fotografický dôkaz alebo výkresy, špecifikácie a výpočty „as-built“ ALEBO Formálny list od projektového tímu alebo hlavného dodávateľa potvrdzujúci, že od fázy projektovania nedošlo k žiadnym zmenám.
Minimalizovanie znečistenia ovzdušia vo vnútorných priestoroch		
2–7	Kópia plánu kvality vnútorného vzduchu. Príslušná časť alebo ustanovenia špecifikácie budovy alebo zmluvy. Projektová výkresová dokumentácia.	Kópia plánu kvality vnútorného vzduchu. Správa posudzovateľa BREEAM z inšpekcie na mieste a fotografický dôkaz alebo výkresy „as-built“. V prípade budovy s prirodzeným vetraním list projektového tímu alebo hlavného dodávateľa potvrdzoval, že budova bola postavená v súlade s projektom v súlade s kritériami BREEAM. V prípade mechanicky vetranej budovy, správa z testovania od manažéra z uvádzania do prevádzky, ktorá potvrdzuje požadované hodnoty čerstvého vzduchu.

Kritériá	Predbežná fáza projektu	Záverečná fáza po výstavbe
9–10	Kópia plánu kvality vnútorného vzduchu. Príslušná časť alebo ustanovenia špecifikácie budovy alebo zmluvy.	Kópia plánu kvality vnútorného vzduchu. List od výrobcu alebo kópie dokumentácie potvrdzujúce skúšobné normy a dosiahnuté emisie.
11–17	Kópia plánu kvality vnútorného vzduchu. Záväzok vykonať potrebné testovanie po ukončení výstavby.	Kópia plánu kvality vnútorného vzduchu. Potvrdenie projektového tímu, že odporúčania sú stále relevantné a boli implementované. Výsledky testov na formaldehyd a TVOC.
Potenciál pre prirodzené vetranie		
18–19	Príslušná časť alebo ustanovenia špecifikácie budovy alebo zmluvy. Formálny list od projektového tímu s podrobnosťami o stratégii vetrania a výpočtami alebo výsledkami príslušných softvérových nástrojov na modelovanie.	Dokumentácia výrobcov alebo dodávateľov. Správa posudzovateľa BREEAM z inšpekcie na mieste a fotografický dôkaz* alebo výkresy, špecifikácie a výpočty „as-built“ ALEBO Formálny list od projektového tímu alebo hlavného dodávateľa, ktorý potvrdzuje, že od fázy návrhu nedošlo k žiadnym zmenám. * Náhodná kontrola vybraných obsadených miest priestorov. Od posudzovateľa sa nevyžaduje, aby skontroloval každý otvor vo všetkých priestoroch alebo miestnostiach.

Dodatočné informácie

Relevantné definície

Priestory s veľkou a nepredvídateľnou obsadenosťou

Nižšie sú uvedené príklady týchto typov priestorov:

- Auditóriá
- Telocvične
- Maloobchodné predajne alebo obchodné centrá
- Kiná
- Čakárne

Ak posudzovaná budova nemá žiadne priestory, ktoré sa považujú za veľké s nepredvídateľnou štruktúrou obsadenosti, toto kritérium sa neuplatňuje.

Karcinogén kategórie 1A alebo 1B

Karcinogénne zlúčeniny zistiteľné na základe požiadaviek na testovanie emisií prchavých organických látok v Tabuľke 1 a Tabuľke 2, ktoré sú klasifikované ako karcinogénne látky kategórie 1A alebo 1B v Prílohe VI k Nariadeniu (ES) č. 1272/2008 o klasifikácii, označovaní a balení látok a zmesí[39], ktoré sú uvedené ako *karcinogénne* prchavé organické látky

Obytná alebo obývaná miestnosť

Miestnosť používaná na účely bývania alebo miestnosť v nebytovom priestore obsadzovaná ľuďmi (napr. kancelária, hotelová izba, učebňa), ktorá sa však nepoužíva výlučne ako kuchyňa, kúpeľňa, pivnica, technická miestnosť alebo na uskladnenie zariadení alebo vybavenia.[41]

Obývané priestory

Pozri príslušnú definíciu uvedenú v časti Hea 01 Vizuálny komfort na str. 83. Z definície obývaných priestorov pre kritériá potenciálu prirodzeného vetrania možno vylúčiť nasledujúce priestory budovy, ak sú pre daný typ budovy relevantné:

1. Pomocné priestory budovy, napr. WC, chodby, schodiská, sklady, výrobné priestory
2. Plavecké alebo vodoliečebné bazény
3. Sauna, parná sauna alebo turecký kúpeľ (len pre hotelový typ budovy)
4. Miestnosti stravovania a malé kuchynky
5. Umyvárne alebo priestory na prezliekanie
6. Laboratórium alebo iné priestory, kde sú funkčnou požiadavkou prísne kontrolované podmienky prostredia
7. Prevádzkové, obchodné alebo pomocné priestory v priemyselných budovách.

Obývané priestory, ktoré si vyžadujú lokálne odsávacie vetranie, napr. laboratóriá, dielne a priestory pre potravinársku technológiu, musia stále preukazovať, že spĺňajú kritériá potenciálneho prirodzeného vetrania (pokiaľ nie sú v tejto definícii uvedené ako vyňaté priestory).

Otvárateľná plocha okna

Otvoriteľná plocha okna je definovaná ako geometrická voľná vetracia plocha, ktorá vznikne, keď je vetrací otvor, napr. okno, otvorený v normálnom prevádzkovom rozsahu na účely vetrania (t. j. nezahŕňa otvorené plochy, ktoré vznikajú pri otváraní vratných okien na účely čistenia atď.). Nie je to zasklená plocha fasády ani zasklená plocha otvárateľnej časti okna (pokiaľ sa neotvára úplne).

Zdroje vonkajšieho znečistenia

Patria sem okrem iného:

1. Diaľnice a hlavné prístupové cesty v posudzovanej lokalite
2. Parkoviská, priestory pre zásobovanie a čakacie zálivy pre vozidlá
3. Ostatné výfukové plyny z budov vrátane výfukových plynov z prevádzok budov , priemyselných alebo poľnohospodárskych procesov. Obslužné a prístupové cesty s obmedzeným a zriedkavým prístupom (napríklad cesty používané len na zber odpadu) pravdepodobne nepredstavujú významný zdroj vonkajšieho znečistenia. Tieto cesty sa preto môžu vylúčiť z kritérií tejto problematiky. Nezahŕňa to miesta na vyzdvihnutie alebo odstavenie vozidla a odpočívadlá.

Celkové poloprchavé organické zlúčeniny (TSVOC)

Súčet koncentrácií identifikovaných a neidentifikovaných prchavých organických zlúčenín eluovaných medzi n-hexadekánom (vylúčené) a n-dokozanom (vrátane) na plynovej chromatografickej kolóne.

Veľmi prchavé organické zlúčeniny (TVOC)

Súčet koncentrácií identifikovaných a neidentifikovaných prchavých organických zlúčenín eluovaných medzi a vrátane n-hexánu a n-hexadekánu na plynovej chromatografickej kolóne.

Ďalšie informácie

Meranie kvality vnútorného vzduchu po výstavbe

Meranie formaldehydu a TVOC sa musí robiť v súlade s príslušnými normami (uvedenými v kritériách). Normy ISO 16000-2 [42] a ISO 16000-5 poskytujú návod na stratégie odberu vzoriek pre formaldehyd a VOC. Vzorky by sa mali odoberať v miestnostiach, ktoré budú dlhodobo obývané, ako sú spálne, obývacie izby, učebne, kancelárie atď. Vzorky by sa mali odobrať z reprezentatívneho počtu miestností, a nie z každej miestnosti v budove. Napríklad v kancelárskej budove by mal odber vzoriek z jednej bunkovej alebo jednopriestorovej kancelárie stačiť na posúdenie kvality vnútorného vzduchu pre tento typ obytného priestoru v budove (za predpokladu, že ostatné bunkové kancelárie majú rovnakú špecifikáciu materiálov a stratégiu vetrania). Vo väčších miestnostiach, ako sú otvorené kancelárske priestory, môžu byť potrebné ďalšie miesta odberu vzoriek, aby sa zistila homogenita vnútorného prostredia.

Neistoty pri odbere vzoriek a analýze sú nevyhnutné a neodvrátiteľné, preto sa odporúča, aby sa na každom mieste odberu vzoriek odoberali opakované vzorky (v ideálnom prípade minimálne tri vzorky pre každý parameter merania). Pred odberom vzoriek by sa prirodzene vetrané miestnosti mali intenzívne vetrať 15 minút a potom by sa vonkajšie dvere a okná mali zatvoriť najmenej na 8 hodín (napr. cez noc) pred začatím odberu vzoriek, keď by mala byť miestnosť stále zatvorená. V prípade mechanicky vetraných miestností by mal byť ventilačný systém v prevádzke za štandardných prevádzkových podmienok aspoň 3 hodiny pred začatím odberu vzoriek. Miesta odberu vzoriek by mali byť najmenej 1 až 2 m od steny a vo výške medzi 1 až 1,5 m.

Tieto informácie sú určené na pomoc projektovým tímom a posudzovateľom BREEAM pri vhodnom rozsahu merania kvality vnútorného ovzdušia po ukončení výstavby a ako také majú slúžiť len ako usmernenie a nie ako požiadavka na dodržiavanie predpisov. Stratégia odberu vzoriek by sa mala určiť na základe rady príslušnej osoby určenej na vykonávanie testov.

Hea 03 Bezpečné zachytávanie v laboratóriách (iba nebytové domy)

Počet dostupných kreditov	Minimálne normy
Závisí od typu budovy	Žiadne

Cieľ

Rozpoznať a podporiť zdravé vnútorné prostredie prostredníctvom bezpečného zadržania a odstránenia znečisťujúcich látok.

Hodnotiace kritériá

Na preukázanie súladu sa vyžaduje nasledovné:

Jeden kredit - Laboratórne zachytávacie zariadenia a zachytávacie priestory

1 Pred dokončením rozpracovaného projektu sa vykonalo objektívne posúdenie rizík navrhovaných laboratórnych zariadení, aby sa zabezpečilo, že sa pri návrhu laboratória zohľadnia potenciálne riziká.

2 Ak sú špecifikované zachytávacie zariadenia, ako sú digestory, ich výroba a inštalácia sa vykonáva v súlade s národnými normami osvedčených postupov pre požiadavky na bezpečnosť a výkon v laboratórnych zachytávacích zariadeniach alebo sa vyrábajú a inštalujú v súlade s týmito normami:

- 2.a Digestory na všeobecné použitie: EN 14175 Časti 1-7 (podľa potreby)[43]
- 2.b Recirkulačné filtračné digestory
- 2.c Mikrobiologické bezpečnostné skrinky: EN 12469:200044 (pre výrobu)
- 2.d Čisté digestory, boxy na rukavice, izolátory a malé priestory: EN ISO 14644-7:2004[45]
- 2.e Kĺbové výsuvné ramená: PD CEN/TR 1658946

Alebo pre školy, univerzity a vyššie vzdelávanie s laboratóriami a digestormi:

- 2.f Ak sú špecifikované laboratórne zachytávacie zariadenia, ktoré sú určené na vypúšťanie z vonkajšej strany, musí sa postupovať podľa pokynov v národnej prílohe k EN 14175-2, aby sa zabezpečilo dosiahnutie primeranej rýchlosti vypúšťania.

Jeden kredit - Budovy s laboratórnymi zariadeniami s ochrannou úrovňou 2 a 3

3 Ak sú špecifikované alebo prítomné laboratórne zariadenia s ochrannou úrovňou 2 a 3, musia spĺňať kritériá a ciele najlepšej praxe v oblasti bezpečnosti a výkonnosti. Toto možno preukázať nasledovne:

- 3.a Uvedené kritérium 1 bolo splnené.
- 3.b Ventilačné systémy sú v súlade s národnými usmerneniami pre osvedčené postupy. Ak neexistuje žiadne usmernenie o osvedčených postupoch na vnútroštátnej úrovni, dodržiava sa usmernenie o osvedčených postupoch stanovené v nariadeniach „NÁVRH HSE o biologických činiteľoch a geneticky modifikovaných organizmoch (obmedzené použitie) 2010[47] vo vzťahu k vetracím systémom
- 3.c Filtre pre všetky oblasti označené ako záchytné filtre úrovne 2 a 3 sú umiestnené mimo hlavného laboratórneho priestoru pre ľahšie čistenie alebo výmenu a filtre sú ľahko prístupné pre pracovníkov údržby alebo technikov.

4 Projektový tím preukáže, že umiestnenie jednotlivých digestorov a výšky komínov boli zvážené v súlade s vnútroštátnymi usmerneniami pre osvedčené postupy. Ak neexistujú vnútroštátne usmernenia o osvedčených postupoch, výška komína sa vypočíta podľa technického usmernenia HMIP (rozptyl)D1[48].

Kontrolné zoznamy a tabuľky

Žiadne.

Poznámky o súlade

Ref	Podmienky	Popis
Hrubá stavba a jadro (iba nebytové a rezidenčné inštitúcie)		
CN1	Príslušné hodnotiace kritériá	Obidve možnosti: Táto otázka sa neuplatňuje. Podrobnejší popis možností vyhodnotenia hrubej stavby a jadra nájdete v Prílohe D - Posúdenie projektu hrubej stavby a jadra na strane 409.
Obytné - čiastočne a úplne vybavené		
CN2	Príslušné hodnotiace kritériá - Obydlia pre jednu rodinu a obydlia pre viaceré rodiny	Obidve možnosti: Táto otázka sa neuplatňuje. Pozri Prílohu E – Uplatniteľnosť BREEAM New Construction na obydlia pre jednu rodinu a obydlia pre viaceré rodiny, čiastočne a úplne vybavené na str. 412, kde nájdete podrobnejší popis možností hodnotenia bytových domov.
Všeobecné		
CN3	Národné normy osvedčených postupov a príslušné priemyselné normy	Pozri Zoznam schválených noriem a váh (ASWL), kde nájdete príslušné zverejnené národné osvedčené postupy v krajine hodnotenia. Prípadne sa môžu použiť normy, ktoré projektový tím považuje za rovnocenné, podľa postupu uvedeného v Prevádzkovej príručke posudzovateľa. Ak pre danú krajinu neexistujú príslušné normy, projektový tím by mal preukázať súlad s britskými alebo európskymi normami uvedenými v referenčnom liste každej príslušnej krajiny.
CN3.1	Budova nemá žiadne laboratórne zachytávacie zariadenia	Upozorňujeme, že kritériá a kredity pre laboratóriá a ochranné zariadenia sa uplatňujú len vtedy, ak sa v hodnotenej budove nachádzajú laboratórne priestory, digestory alebo iné ochranné zariadenia.

Metodológia

Žiadna.

Dôkazová dokumentácia

Kritériá	Predbežná fáza projektu	Záverečná fáza po výstavbe
Všetky	Kópia navrhovaného hodnotenia rizík laboratórnych zariadení. Príslušná časť alebo ustanovenia stavebnej špecifikácie alebo zmluvy alebo formálny list od projektového tímu. Projektová výkresová dokumentácia.	Správa o kontrole na mieste BREEAM a fotografické dôkazy alebo výkresy v skutočnom stave. Korešpondencia od projektového tímu potvrdzujúca inštaláciu kompatibilného systému. alebo list od týchto strán potvrdzujúci, že ich skrinky a skrine sa vyrábajú a inštalujú v súlade s príslušnými normami.

Dodatočné informácie

Relevantné definície

Stupne ochrany

Stupne ochrany 2 a 3 sú definované v dokumente Riadenie, projekt a prevádzka mikrobiologických zachytávacích laboratórií (The Management, Design and Operation of Microbiological Containment Laboratories 2001, ACDP).

Dymová skriňa alebo bezpečnostná skrinka

Vedecké vybavenie určené na obmedzenie vystavenia osoby nebezpečným výparom alebo biologickému materiálu. Vzduch sa nasáva cez kryt skrine, ktorý vedie kontaminovaný vzduch preč od experimentálnej oblasti a tých, ktorí používajú zariadenie.

Hodnotenie rizík

Na účely príslušných laboratórnych kritérií v tomto vydaní je posúdenie rizika systematické zvažovanie akejkoľvek činnosti, pri ktorej existuje nebezpečenstvo, po ktorom nasledujú rozhodnutia o použitých látkach, vybavení a postupoch a o obmedzeniach a preventívnych opatreniach potrebných na to, aby bolo riziko prijateľne nízke.
Nižšie je uvedený zoznam užitočných zdrojov:

1. ISO 15189: 2012, Zdravotnícke laboratóriá - požiadavky na kvalitu a odbornosť
2. CWA 15793:2011 (Systém riadenia biologickej bezpečnosti a biologickej ochrany laboratórií).

Ďalšie informácie

EN 14175 Rýchlosť vypúšťania z digestora: V časti 2 sa uvádza, že rýchlosť vypúšťania z digestorov by mala byť aspoň 7 m/s, ale vhodnejšia je hodnota 10 m/s, aby sa zabezpečilo, že vypúšťanie nebude zachytené v aerodynamickom prúde komína. Najmä na veterných miestach môžu byť potrebné vyššie rýchlosti vypúšťania, ale vyššie rýchlosti môžu spôsobiť problémy s hlukom.

Súlad v rámci EÚ by sa preukázal splnením nasledujúcich smerníc v závislosti od typu laboratória:

- Smernice ES 2000/54/ES
- Smernica 98/81/ ES
- Smernica 2005/83/ES.

Hea 04 Termálny komfort (všetky budovy)

Počet dostupných kreditov	Minimálne normy
3	Žiadne

Cieľ

Zabezpečiť, aby sa prostredníctvom návrhu dosiahli primerané úrovne tepelnej pohody a aby sa zvolili ovládacie prvky na udržanie tepelne príjemného prostredia pre obyvateľov budovy.

Kritériá hodnotenia

Na preukázanie súladu sa vyžaduje nasledovné:

Jeden kredit - Tepelné modelovanie

1 Tepelné modelovanie (alebo analytické meranie alebo vyhodnocovanie úrovní tepelnej pohody v budove) sa uskutočňovalo pomocou indexov predpokladanej priemernej hodnoty (PMV) a predpokladaného percenta nespokojných (PPD) v súlade s normou ISO 7730: 2005 49, pričom sa v plnej miere zohľadnilo sezónnych výkyvov.

2 Na určenie úrovne tepelnej pohody v budove sa použili miestne kritériá tepelnej pohody na stránke budú jednotlivé rozsahy vnútorných zimných a letných teplôt v súlade s odporúčanými kritériami tepelnej pohody v norme ISO 7730:2005, pričom žiadne oblasti nebudú spadať do úrovní definovaných ako predstavujúce miestnu nespokojnosť.

3 Úrovne tepelného komfortu v obsadených priestoroch spĺňajú požiadavky kategórie B stanovené v Tabuľke A.1 Prílohy A k norme ISO 7730: 2005.

4 V prípade klimatizovaných budov sa indexy PMV a PPD založené na uvedenom modelovaní uvádzajú prostredníctvom nástroja na hodnotenie a podávanie správ BREEAM.

Jeden kredit - Prispôsobivosť pre predpokladaný scenár zmeny klímy

5 Kritériá 1 a 4 sú splnené.

6 Tepelné modelovanie dokazuje, že príslušné požiadavky stanovené vo vyššie uvedenom kritériu 3 sú splnené pre prostredie s predpokladanou zmenou klímy (pozri Príslušné definície na strane 118).

7 Ak nie sú splnené kritériá tepelnej pohody pre predpokladané klimatické zmeny prostredia, projektový tím preukáže, ako bola budova upravená alebo navrhnutá tak, aby sa dala v budúcnosti ľahko upraviť pomocou pasívnych konštrukčných riešení, aby následne spĺňala požiadavky podľa vyššie uvedeného kritéria 6.

8 V prípade klimatizovaných budov sa indexy PMV a PPD založené na uvedenom modelovaní uvádzajú prostredníctvom nástroja na hodnotenie a podávanie správ BREEAM.

Jeden kredit - Teplotná zonácia a riadenie

9 Kritériá 1 a 4 sú splnené.

10 Analýza tepelného modelovania (vykonaná na účely splnenia vyššie uvedených kritérií 1 až 4) poskytla informácie o stratégii regulácie teploty pre budovu a jej používateľov.

11 Stratégia pre navrhované systémy vykurovania alebo chladenia preukazuje, že sa zaoberá týmito otázkami:

11.a Zóny v budove a spôsob, akým by služby v oblasti budov mohli tieto oblasti efektívne a primerane vykurovať alebo chladiť. Zvážte napríklad rozdielne požiadavky na centrálne jadro budovy v porovnaní s vonkajším obvodom pri oknách.

11.b Stupeň kontroly požadovaný používateľmi pre tieto zóny na základe diskusií s koncovým používateľom (alebo alternatívne typ budovy alebo použitie špecifického projektového usmernenia, prípadové štúdie, spätná väzba) berie do úvahy:

- 11.b.i Používateľské znalosti o stavebných službách
- 11.b.ii Typ obsadenosti, vzory a funkcie miestností (a preto požadovaná primeraná úroveň kontroly)
- 11.b.iii Ako bude používateľ pravdepodobne pracovať so systémami alebo s nimi komunikovať, napr. či bude pravdepodobne otvárať okien, úprava termostatických ventilov radiátorov (TRV) na radiátoroch alebo zmena nastavenia klimatizácie atď.
- 11.b.iv Očakávania používateľov (môžu sa líšiť v lete a v zime) a stupeň individuálnej kontroly (t. j. dosiahnutie rovnováhy medzi preferenciami používateľov, napr. niektorí používatelia majú radi čerstvý vzduch a iní nemajú radi prievan).

11.c Ako budú navrhované systémy vzájomne na seba pôsobiť (ak existuje viac ako jeden systém) a ako toto môže ovplyvniť tepelný komfort používateľov budovy

11.d Potreba dostupného manuálneho prepínania ovládacích prvkov pre používateľov budovy pre akékoľvek automatické systémy.

Kontrolné zoznamy a tabuľky

Žiadne.

Poznámky o súlade

Ref	Podmienky	Popis
Hrubá stavba a jadro (iba nebytové a rezidenčné inštitúcie)		
CN1	Príslušné hodnotiace kritériá	**Tepelné modelovanie: kritériá 1 až 4 na predchádzajúcej stráne** Len plášť: Táto otázka sa neuplatňuje. Plášť a jadro: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy. **Prispôsobivosť - pre predpokladanú zmenu klímy: kritériá 5 na predchádzajúcej strane až 8 na predchádzajúcej strane** Len plášť: Tieto kritériá sa neuplatňujú. Plášť a jadro: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy. **Tepelné zónovanie a kontroly: kritériá 9 na predchádzajúcej strane až 11 na predchádzajúcej strane** Obidve možnosti: Tieto kritériá sa neuplatňujú. Podrobnejší popis možností vyhodnotenia hrubej stavby a jadra nájdete v Prílohe D - Posúdenie projektu hrubej stavby a jadra na strane 409.
CN1.1	Tepelný model - tepelné modelovanie. Pozri kritériá 1 až 4 na predchádzajúcej strane.	Plášť a jadro: Ak sa na účely tepelného modelu vyžadujú predpoklady, musia byť primerané a reprezentovať typické vzory použitia a zaťaženia vzhľadom na parametre a funkciu budovy. Upozorňujeme, že tepelné modelovanie bude možno potrebné dokončiť na základe typického teoretického usporiadania.

Ref	Definície pojmov	Popis
CN1.2	Tepelný model – prispôsobivosť . Pozri kritériá 5 až 8 na str. 114.	Plášť a jadro: Ak sa na účely tepelného modelu vyžadujú predpoklady, musia byť primerané a reprezentovať typické vzory použitia a zaťaženia vzhľadom na parametre a funkciu budovy. Upozorňujeme, že tepelné modelovanie bude možno potrebné dokončiť na základe typického teoretického usporiadania.
Bytové - čiastočne a úplne vybavené		
CN2	Príslušné hodnotiace kritériá - Obydlia pre jednu rodinu a obydlia pre viaceré rodiny	Obidve možnosti: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy. Pozri Prílohu E – Uplatniteľnosť BREEAM New Construction na obydlia pre jednu rodinu a obydlia pre viaceré rodiny, čiastočne a úplne vybavené na str. 412, kde nájdete podrobnejší popis možností hodnotenia bytových domov.
Všeobecné		
CN3	Typické vzory obsadenosti a použitia	Ak nie je možné potvrdiť počet používateľov budovy, ktorí ju využívajú, napr. pri špekulatívnych stavbách, potom sa použijú štandardné miery obsadenosti uvedené v Tra 04 Maximálna kapacita parkovacích miest: Tabuľka 38 na str. 224 na určenie predvoleného počtu používateľov. Tam, kde nie sú známe ani typické spôsoby použitia, je možné použiť Tra 01 Dostupnosť verejnej dopravy: Tabuľka 33 na str. 220 sa môže použiť na určenie typických otváracích hodín rôznych typov budov. Projektový tím musí odôvodniť alebo potvrdiť výšku obsadenosti a vzorce použitia použité v tepelnom modeli.
CN3.1	Alternatíva ku kritériu 3 na str. 114	V niektorých prípadoch môže byť jednoduchšie preukázať súlad s konštrukčnými kritériami kategórie B v Tabuľke A.5 v Prílohe A k norme ISO 7730: 2005. BREEAM to považuje za vhodný ekvivalent tabuľky A.1; kritériá príkladného návrhu uvedené v tabuľke A.5 však musia byť uplatniteľné na typ budovy alebo priestoru a úrovne činnosti v rámci projektu. Kritérium 4 na strane 114 stále vyžaduje, aby sa nahlasovali PMV a PPD a príloha D k ISO 7730: 2005 obsahuje kód programu BASIC, ktorý prevádza tieto projektové parametre na PMV a PPD. Pomocou tohto programu je možné získať hodnoty PMV a PPD a preukázať priamy súlad s Tabuľkou A.1.
CN3.2	Národná alebo miestna alternatíva k norme ISO	Je možné použiť národný alebo miestny ekvivalent normy ISO 7730:2005 , ktorý však musí byť schválený spoločnosťou BRE Global. Zoznam schválených noriem a váh sa môže použiť na kontrolu predtým schválených noriem alebo na navrhnutie novej národnej alebo miestnej normy.

Ref	Definície pojmov	Popis
CN3.3	Budovy s menej komplexnými vykurovacími alebo chladiacimi systémami. Pozri kritérium 11 na str. 114.	V prípade budov s menej zložitými systémami vykurovania alebo chladenia musí stratégia tepelnej pohody spĺňať len kritériá 11.a na strane 115 a 11.b na strane 115. Súlad je možné preukázať tam, kde priestorové plánovanie umožňuje samostatné riadenie používateľmi (v rámci obsadeného priestoru) každej obvodovej oblasti (t. j. do 7 m od každej vonkajšej steny) a centrálnej zóny (t. j. viac ako 7 m od vonkajších stien). Napríklad primerané TRV umiestnené v zónach po obvode budovy a zabezpečenie miestneho ovládania vnútorných priestorov, ako sú napríklad jednotky fan-coil. Poznámka: Požiadavka na vzdialenosť pre menšie budovy je približná; avšak pred prijatím riešení, ktoré úplne nespĺňajú vyššie uvedené kritériá, musí posudzovateľ dôkladne zvážiť ciele tejto otázky. Príklady potenciálne vyhovujúcich opatrení na reguláciu vykurovania nájdete v technologickej príručke CTG065 Regulácia vykurovania[50].
Špecifické pre druh budovy		
CN4	Priemyselné budovy: Priemyselná jednotka bez kancelárskych priestorov	Ak priemyselná jednotka nemá kancelárske priestory, ale len prevádzkové alebo skladovacie priestory, táto otázka BREEAM sa neuplatňuje.
CN4.1	Vzdelávanie: Ovládacie prvky používateľov. Pozri kritérium 11 na str. 114.	V tejto otázke sú ovládacie prvky používateľovi určené len na použitie personálom.

Metodológia

Žiadna.

Dôkazová dokumentácia

Kritériá	Predbežná fáza projektu	Záverečná fáza po výstavbe
1–4	Príslušná časť alebo ustanovenia stavebnej špecifikácie alebo zmluvy alebo korešpondencia (napr. list, e-mail alebo zápisnica zo stretnutia) od projektového tímu. Tepelné modelovanie, merania a výsledky vyhodnotenia s potvrdením, že sú v požadovaných limitoch. Údaje PMV/PPD od projektového tímu.	Tepelné modelovanie, merania a výsledky vyhodnotenia odzrkadľujúce akékoľvek zmeny v konštrukcii a výsledných údajoch PMV/PPD s potvrdením, že sú v požadovaných limitoch.

Kritériá	Predbežná fáza projektu	Záverečná fáza po výstavbe
6–8	Tepelné modelovanie a výsledky vyhodnotenia s potvrdením, že sú v požadovaných limitoch. Údaje PMV/PPD od projektového tímu.	Tepelné modelovanie a výsledky vyhodnotenia odzrkadľujúce akékoľvek zmeny v konštrukcii a výsledných údajoch PMV/PPD s potvrdením, že sú v požadovaných limitoch.
10–11	Stratégia tepelnej pohody a výsledky softvéru, ktoré zdôrazňujú body, ktoré boli zohľadnené, a príslušné rozhodnutia. Potvrdenie, že modelovací softvér je v súlade s BREEAM. Príslušná časť alebo ustanovenia stavebnej špecifikácie alebo zmluvy. Projektová výkresová dokumentácia.	Podľa fázy projektovania. Správa o inšpekcii miesta BREEAM a fotografický dôkaz.* *Pri veľkých budovách sa neočakáva, že posudzovateľ skontroluje každý jednotlivý obsadený priestor, ale očakáva sa náhodný výber priestorov, ktoré potvrdzujú súlad.

Relevantné definície

Obsadený priestor

Pozri Hea 01 Vizuálny komfort na str. 83, pre účely záležitosti BREEAM Hea 04 však táto definícia vylučuje nasledovné:

1. Átriá alebo koncertné siene
2. Vstupné haly alebo priestory recepcie
3. Pomocné priestory, napr. priestory s krátkodobým pobytom ľudí, sklady a priestory pre rastliny.

Pasívny projekt

Pasívny projekt využíva rozloženie, štruktúru a formu na zníženie alebo odstránenie mechanického chladenia, kúrenia, vetrania a osvetlenia. Medzi príklady pasívneho projektu patrí optimalizácia priestorového plánovania a orientácie na riadenie ziskov zo slnečnej energie a maximalizácia denného osvetlenia, manipulácia s tvarom budovy a štruktúrou na uľahčenie prirodzených stratégií vetrania a efektívne využívanie tepelnej hmoty na zníženie maximálnych vnútorných teplôt.

Predpokladaná priemerná hodnota (PMV)

PMV je index, ktorý predpovedá priemerné hodnoty veľkej skupiny osôb v sedembodovej stupnici tepelného snímača založenej na tepelnej rovnováhe ľudského tela. Tepelná rovnováha sa dosiahne, keď sa vnútorná tvorba tepla v tele rovná strate tepla do okolitého prostredia. Sedembodovú stupnicu tepelných pocitov nájdete v časti Ďalšie informácie na nasledujúcej strane.

Predpokladaná percentuálna nespokojnosť (PPD)

PPD je index, ktorý stanovuje kvantitatívny predpoklad percenta tepelne nespokojných ľudí, ktorí pociťujú prílišný chlad alebo prílišné teplo. Na účely ISO 7730 sú tepelne nespokojní ľudia tí, ktorí budú mať pocit, že je príliš horúco, teplo, chladno alebo zima. Pozri sedembodovú stupnicu tepelnej citlivosti v časti Ďalšie informácie na titulnej strane.

Predpokladané prostredie po zmene klímy

Softvérové balíky na dynamickú tepelnú simuláciu v súčasnosti umožňujú posudzovať návrhy budov v podmienkach vonkajšej klímy, ktoré sú špecifické pre geografickú polohu. Údaje o počasí priemyselného štandardu by sa mali získavať z vhodných miestnych alebo národných štandardov osvedčených postupov vo forme Testovacích referenčných rokov (TRY) a Návrhových letných rokov (DSY).

Údaje o počasí umožňujú tepelnú analýzu projektov budov za súčasných klimatických podmienok, napriek tomu sa zvyčajne nezohľadňujú predpokladané zmeny v údajoch o počasí, ktoré sa vyskytnú počas životného cyklu budovy v dôsledku zmeny klímy. Na preukázanie súladu by sa údaje o počasí mali používať na základe predpokladaného scenára zmeny klímy. Nasledujúce pravdepodobnostné záznamy údajov o počasí DSY by sa mali použiť na vytvorenie predpokladaného prostredia pre zmenu klímy, v porovnaní s ktorým sa návrh hodnotí:

Budovy s prirodzeným vetraním

- Časové obdobie: 50 rokov po ukončení výstavby
- Scenár emisií: Stredný (A1B)

Budovy s mechanickým vetraním alebo zmiešaným režimom

- Časové obdobie: 15 rokov po dokončení výstavby
- Emisný scenár: Stredný (A1B)

Vyššie uvedené záznamy o počasí predstavujú minimálne požiadavky na vykonanie tepelného modelovania v scenári zmeny klímy a následné preukázanie zhody. Ak sa projekčné tímy domnievajú, že je potrebné dodatočne zohľadniť riziko pre užívateľov budovy alebo citlivosť na prehriatie, môžu sa použiť súbory o počasí, ktoré presahujú minimálne požiadavky uvedené vyššie. Uvedené časové obdobia boli vybrané tak, aby reprezentovali životný cyklus služieb v budove, ktorý sa pravdepodobne vyskytuje v každom type stratégie služieb v budove . Kratšie časové obdobie je zvolené pre mechanicky vetrané alebo zmiešané typy budov z dôvodu zohľadnenia životnosti mechanického servisného zariadenia (pred potrebou väčšej modernizácie alebo výmeny) a s cieľom vyhnúť sa nadmernej špecifikácii zariadenia, ktorá by mohla viesť k neefektívnej prevádzke. Túto informáciu by ste si mali vyžiadať od uznávanej miestnej alebo národnej normy alebo organizácie pre osvedčené postupy. Pred použitím akýchkoľvek takýchto noriem pri posudzovaní by sa malo požiadať o overenie od spoločnosti BRE Global .

Samostatné ovládanie používateľmi

Citlivé ovládanie vykurovania alebo chladenia pre určitý priestor alebo zónu budovy, ku ktorému majú prístup a ktoré môžu ovládať osoby, ktoré tento priestor alebo zónu obývajú. Takéto kontroly budú umiestnené v zóne alebo oblasti, ktorú kontrolujú, alebo v jej blízkosti.

Tepelný komfort

V norme EN ISO 7730:2005: Ergonómia tepelného prostredia. Analytické stanovenie a interpretácia tepelného komfortu - „tepelný komfort“ definovaný pomocou výpočtu indexov PMV a PPD a miestnych kritérií tepelného komfortu a ide o „stav mysle, ktorý vyjadruje spokojnosť s tepelným prostredím“. Pojem „tepelný komfort“ opisuje psychický stav mysle osoby a zvyčajne sa hovorí o tom, či je niekomu príliš teplo alebo príliš zima. Tepelný komfort sa ťažko definuje , pretože musí zohľadňovať celý rad environmentálnych a osobných faktorov, aby sa zistilo, čo spôsobuje, že sa ľudia cítia pohodlne. Cieľom tohto vydania je podporiť primerané a dôkladné zváženie otázok tepelného komfortu a špecifikáciu vhodných ovládacích prvkov pre užívateľov, aby sa zabezpečila maximálna flexibilita priestoru a tepelný komfort pre väčšinu užívateľov budovy .

Tepelná dynamická analýza

Nástroje na analýzu tepelnej pohody možno rozdeliť na niekoľko metód s narastajúcou zložitosťou. Najkomplexnejší z nich a ten, ktorý poskytuje najvyššiu dôveru vo výsledky, je plne dynamický model. Tento typ modelu umožňuje vyhodnotiť ročné zaťaženia vykurovaním alebo chladením, riziká prehriatia a kontrolné stratégie.

Iné informácie

Údaje o počasí s predpokladanou zmenou klímy

V piatej hodnotiacej správe Medzivládneho panelu pre zmenu klímy (IPCC) sa uvádzajú scenáre budúcej zmeny klímy, ktoré možno použiť na prognostiku celého radu alternatívnych pravdepodobnostných údajov o počasí. Tieto údaje o počasí by sa mali použiť na vyhodnotenie vplyvu rôznych scenárov klimatických zmien v krajine, aby sa ovplyvnili konštrukčné vlastnosti budovy počas celého jej životného cyklu. Predpokladané údaje o zmene klímy by mali pochádzať z TRY a DSY .

Aj keď to nie je medzinárodne aplikovateľné, je možné uviesť odkaz na britský projekt UK PROMETHEUS na Exeterskej univerzite, ktorý vytvoril množstvo budúcich meteorologických súborov špecifických pre rôzne miesta v celej Veľkej Británii, vytvorených pomocou generátora počasia pre Veľkú Britániu (Climate Projection 2009) (UKCP09). Súbory o počasí vytvorené v rámci projektu PROMETHEUS sú k dispozícii na tomto mieste:

emps.exeter.ac.uk/engineering/research/cee/research/prometheus/downloads/

Hea 05 Akustické vlastnosti

(všetky budovy)

Počet dostupných kreditov	Minimálne normy
Závisí od typu budovy	Žiadne

Cieľ

Zabezpečiť, aby akustické vlastnosti budovy vrátane zvukovej izolácie spĺňali príslušné normy pre jej účel.

Kritériá hodnotenia

Táto požiadavka je rozdelená do dvoch častí:

- Predpoklad
- Akustické vlastnosti (až 4 kredity)

Na preukázanie súladu sa vyžaduje nasledovné:

Predpoklad

1 Primerane kvalifikovaný akustik (SQA) (pozri Príslušné definície na strane 130) je vymenovaný klientom v príslušnej fáze obstarávacieho procesu (najneskôr však do dokončenia návrhu projektu), aby sa zabezpečilo včasné poradenstvo k návrhu o:
- 1.a Vonkajšie zdroje hluku ovplyvňujúce vybranú lokalitu
- 1.b Usporiadanie pozemku a zónovanie budovy pre dobrú akustiku
- 1.c Akustické požiadavky na používateľov so špeciálnymi sluchovými a komunikačnými potrebami
- 1.d Akustická úprava rôznych zón a fasád.

Normy akustických vlastností pre všetky typy budov okrem bytových domov a bytových zariadení s dlhodobým pobytom

Jeden kredit - vnútorný hluk a zvuková izolácia

2 Všetky priestory obsadené osobami spĺňajú cieľové hodnoty hladiny hluku vo vnútornom prostredí, ako je podrobne uvedené v prísnejšom z kritérií 2. a alebo 2.b nižšie:
- 2.a Cieľové hodnoty hladiny hluku vo vnútornom prostredí v rámci vnútroštátnych stavebných predpisov alebo iných vhodných dobrých noriem osvedčených postupov
- 2.b Ak pre daný typ budovy neexistujú národné stavebné predpisy alebo normy osvedčených postupov alebo nezabezpečujú cieľové úrovne hluku v interiéri, úrovne hluku v interiéri zodpovedajú úrovniam kritérií „osvedčených postupov“ uvedeným v Tabuľke 20 na str. 122.

3 Kvalifikovaný akustik vykonáva merania okolitého hluku, aby sa zabezpečilo, že príslušné priestory dosahujú požadované úrovne. Ak sa meraniami zistí, že priestory nespĺňajú normy, vykonajú sa nápravné práce a merania sa zopakujú, aby sa pred odovzdaním a nasťahovaním potvrdilo, že sa dosiahli požadované úrovne.

4 Zvuková nepriezvučnosť medzi akusticky citlivými miestnosťami a ostatnými obývanými oblasťami je v súlade s indexom súkromia, ako je podrobne uvedené v prísnejších kritériách 4.a alebo 4.b na nasledujúcej strane:
- 4.a Zvuková izolácia medzi akusticky citlivými miestnosťami a ostatnými obývanými priestormi spĺňa ciele v rámci národných predpisov alebo iných vhodných noriem osvedčených postupov

4.b V relevantných prípadoch vnútroštátne predpisy alebo dobré normy pre postupy nie neexistujú pre budova alebo nie sú nie sú poskytujú zvukovú izoláciu výkonnostné ciele, je zvuková izolácia medzi akusticky citlivými miestnosťami a ostatnými obývanými priestormi spĺňa nasledujúcimi index súkromia: Dw + *L*AeqT > 75. Ak klient alebo projektový tím považuje súkromie za rozhodujúce (napr. ordinácia lekára, poradenská miestnosť v banke) alebo ak miestnosť susedí s hlučným priestorom, ako je napríklad hudobná miestnosť, mal by tento priestor spĺňať zvýšený index súkromia: Dw + *L*AeqT > 85.

- Dw je vážený rozdiel hladín zvuku medzi dvoma priestormi
- L_{AeqT} je nameraná hladina hluku vo vnútornom prostredí v akusticky citlivej miestnosti (na účely udelenia kreditov v etape projektovania sa môže použiť projektovaná hladina hluku vo vnútornom prostredí).

5 Hladiny akustického tlaku v zdrojových priestoroch a prijímacích priestoroch, z ktorých sa určuje Dw, sa merajú v súlade s (EN) ISO 140-4:1998 a hodnotia sa v súlade s (EN) ISO 717-1:1996. Merania musia vychádzať z dokončených, ale nezariadených miestností , pričom sa zohľadní a zahrnie vplyv všetkých kobercov a akusticky pohltivých stropov .

Len školské budovy

6 Priestory na vyučovanie a učenie s ľahkými strechami a strešným zasklením preukazujú, že hladiny akustického tlaku v týchto priestoroch nie sú vyššie ako 25 dB nad príslušnými limitmi uvedenými v tabuľke 20 na nasledujúcej strane.

Jeden kredit - doby dozvuku

7 Miestnosti alebo priestory používané na reč (vrátane zasadacích miestností a miestností na verejné vystúpenia) alebo miestnosti používané na hudobné vystúpenia a skúšky dosahujú časy dozvuku podľa prísnejších kritérií 7.a alebo 7.b a 7.c:

7.a Preukážte, že doba dozvuku alebo ekvivalentná absorpčná plocha pre príslušné priestory spĺňa ciele v rámci príslušných národných predpisov alebo iných vhodných noriem osvedčených postupov

7.b Ak príslušné národné predpisy alebo normy osvedčených postupov nevyžadujú kontrolu doby dozvuku, dosiahnite doby dozvuku v súlade s Tabuľkou 21 na str. 123.

7.c Okrem toho, ak je to pre posudzovanú budovu relevantné, všetky priestory používané na účely výučby, odbornej prípravy a vzdelávania dosahujú časy dozvuku v súlade s tabuľkou 22 na strane 123

Až do štyroch kreditov -normy akustických vlastností pre obytné budovy a zariadenia na dlhodobý pobyt

8 Budova spĺňa požiadavky na akustické vlastnosti a požiadavky testovania, ako je podrobne uvedené v prísnejších požiadavkách:

8.a Hodnoty vzduchovej a nárazovej nepriezvučnosti sú v súlade s normami na zlepšenie výkonu v porovnaní s príslušnými vnútroštátnymi predpismi uvedenými v Tabuľke 23 na str. 124

8.b Úrovne vzduchovej a krokovej nepriezvučnosti zodpovedajú normám výkonu špecifikovaným v Tabuľke 24 na str. 124, ak nie je uvedené inak v rámci týchto kritérií.

9 Program testovania pred dokončením vykoná skúšobný orgán, ktorý spĺňa požiadavky:

9.a Na základe bežného programu skúšania opísaného v príslušných vnútroštátnych predpisoch pre každú skupinu alebo podskupinu miestností na obytné účely; musí sa preukázať, že sa dosiahli výkonnostné normy podrobne opísané v tejto otázke ALEBO

9.b Ak neexistujú príslušné vnútroštátne predpisy alebo ak sa v nich vyžadujú laboratórne merania, musí sa program predbežného testovania na mieste vykonať na základe usmernenia „Frekvencia požadovaného testovania“ (pozri postupy výpočtu v Metodike na strane 117) pre každú skupinu alebo podskupinu izieb.
str. 128) pre každú skupinu alebo podskupinu miestností.

10 Počet pridelených kreditov bude závisieť od zlepšenia národných právnych predpisov určených podľa Tabuľky 23 na str. 124 alebo Tabuľky 24 na str. 124. Ak sa komerčný priestor nachádza pod bytovým priestorom, vyžadujú sa len testy vzduchovej nepriezvučnosti.

Kontrolné zoznamy a tabuľky

Tabuľka 20: Výber osvedčených postupov pre cieľové hodnoty hladiny hluku vo vnútornom prostredí v neobývaných priestoroch

Funkcia priestoru	Hladina vnútorného hluku*
Všeobecné priestory (sály, toalety)	≤ 40 dB LAeqT
Kancelárie pre jednu osobu	≤ 40 dB LAeqT
Kancelárie pre viac osôb	< 40-50 dB LAeqT
Zasadacie miestnosti	< 35-40 dB LAeqT
Recepcie	< 40-50 dB LAeqT
Priestory určené na reč, napr. učebne, seminárne alebo prednáškové miestnosti	≤ 35 dB LAeqT
Koncertná sála, divadlo alebo auditórium	≤ 30 dB LAeqT
Neformálne kaviarne alebo jedálne	≤ 50 dB LAeqT
Stravovacie kuchyne	≤ 50 dB LAeqT
Reštauračné priestory	< 40-55 dB LAeqT
Bary	< 40-45 dB LAeqT
Predajné priestory	< 50-55 dB LAeqT
Manuálne dielne	≤ 55 dB LAeqT
Nahrávacie štúdiá	≤ 30 dB LAeqT
Laboratóriá	≤ 40 dB LAeqT
Športové haly alebo bazény	≤ 55 dB LAeqT
Knižničné priestory	< 40-50 dB LAeqT
Hotelové izby	< 35 dB LAeqT
* Ak sú stanovené rozsahy hladín hluku a koncový používateľ nepovažuje súkromie za problém, je prijateľné ignorovať spodnú hranicu rozsahu a kritériá úrovne hluku považovať za nižšie alebo rovnaké ako horná hranica rozsahu [51].	

Tabuľka 21: Príručka pre dobu dozvuku T pri 500 Hz v neobývaných miestnostiach pre reč a hudbu

Objem miestnosti m³	Doba dozvuku T* s	
	Reč	Hudba
50	0,4	1,0
100	0,5	1,1
200	0,6	1,2
500	0,7	1,3
1000	0,9	1,5
2000	1,0	1.6
* Ak časy dozvuku uvedené vyššie alebo v odkazovaných dokumentoch nie sú vhodné pre typ posudzovaného priestoru alebo budov , akustik musí potvrdiť, prečo je to tak. Okrem toho musí akustik vo fáze návrhu stanoviť alternatívne vhodné doby dozvuku a poskytnúť ich na preukázanie súladu.		

Tabuľka 22: Výkonnostné normy pre dozvuk vo výučbových a študijných priestoroch - doba dozvuku so strednou frekvenciou, Tmf, v dokončených, ale neobývaných a nezariadených miestnostiach

Typ miestnosti (prijímacia miestnosť)	Tmf (sekundy)*
Otvorená miestnosť Učebné priestory Priestor so zdrojmi	< 0,8 < 1,0
Učebne Malé (menej ako 50 osôb) Veľké (viac ako 50 osôb)	< 0,8 < 1,0
Nahrávacie štúdio	0,6 - 1,2
Riadiaca miestnosť pre nahrávanie	< 0,5
Knižnice	< 1,0
Audiovizuálne videokonferenčné miestnosti	< 0,8
* Tmf je aritmetický priemer doby odrazu zvuku v oktávových pásmach 500 Hz, 1 kHz a 2 kHz [52].	

Tabuľka 23: Normy zvyšovania výkonnosti vzduchovej a krokovej nepriezvučnosti pre národné právne predpisy alebo normy

Kredity	Kredity udelené podľa zlepšenia oproti vnútroštátnym právnym predpisom, normám alebo iným definovaným východiskovým hodnotám	
	Akustická izolácia proti zvukom šíreným vzduchom dB	Akustická izolácia proti nárazovému zvuku dB
Individuálne spálne a samostatné byty		
1	Hodnoty izolácie sú minimálne o 3 dB vyššie	Hodnoty izolácie sú minimálne o 3 dB nižšie*
3	Hodnoty izolácie sú minimálne o 5 dB vyššie	Hodnoty izolácie sú minimálne o 5 dB nižšie*
4	Hodnoty izolácie sú minimálne o 8 dB vyššie	Hodnoty izolácie sú minimálne o 8 dB nižšie*
*Index používaný na vyjadrenie izolácie proti nárazovému zvuku je zvyčajne založený na úrovni prenášaného nárazového zvuku, takže nižšia nameraná hodnota znamená väčšiu odolnosť proti prenosu nárazového zvuku. Ak je to naopak pre miestne definovaný národný index , udelenie kreditu bude založené na rovnakom zvýšení výkonu, ako je podrobne uvedené pre vzduchovú nepriezvučnosť a na sprievodnom vyhlásení SQA.		

Tabuľka 24: Normy pre vzduchovú a nárazovú zvukovú izoláciu

Kredity	Kredity udeľované podľa noriem zvukovej izolácie	
	Akustická izolácia proti zvukom šíreným vzduchom DnT,w + Ctr dB (minimálne hodnoty)	Akustická izolácia proti nárazovému zvuku L'nT,w dB (maximálne hodnoty)
Individuálne spálne a samostatné byty		
1	48	59
3	50	57
4	53	54

Poznámky o súlade

Ref	Podmienky	Popis
Hrubá stavba a jadro (iba nebytové a rezidenčné inštitúcie)		
CN1	Príslušné kritériá hodnotenia	**Kritéria vnútorného hluku:** Obidve možnosti: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy (v tomto prípade sa uplatňuje alternatívna metóda preukazovania zhody, pozri CN1.1 nižšie ďalšie informácie). **Kritériá zvukovej izolácie a dozvuku:** Obidve možnosti: Tieto kritériá sa neuplatňujú Podrobnejší popis možností vyhodnotenia hrubej stavby a jadra nájdete v Prílohe D - Posúdenie projektu hrubej stavby a jadra na strane 409.
CN1.1	Alternatívne spôsoby preukazovania súladu	Základná forma stavby má veľký vplyv na akustické vlastnosti budovy a v prípade výstavby len hrubej stavby alebo hrubej stavby s jadrom by tento aspekt stavby nebol pod kontrolou nájomcu. SQA musí vykonať kvantifikovateľné posúdenie špecifikácie stavebnej formy, konštrukcie a všetkých vonkajších faktorov, ktoré môžu ovplyvniť hladiny hluku vo vnútornom prostredí. Na základe tohto posúdenia musí SQA potvrdiť, že vzhľadom na typické usporiadanie a špecifikáciu vybavenia pre daný typ budovy je pravdepodobné, že stavba splní úrovne požadované na preukázanie súladu s kritériami BREEAM. V prípade, že ešte nie sú definované konkrétne funkcie a priestory v budove , musí akustik vychádzať z posúdenia najcitlivejšieho typu miestnosti, ktorá sa v budove pravdepodobne nachádza, ako najhorší možný prípad. Napríklad pri posudzovaní maloobchodu, kde sa pravdepodobne nachádzajú kancelárie, by mal akustik vykonať posúdenie na základe tohto scenára. Ak sa to podarí, môže sa udeliť jeden kredit.
Bytové - čiastočne a úplne vybavené		
CN2	Príslušné hodnotiace kritériá - Obydlia pre jednu rodinu a obydlia pre viaceré rodiny	Obidve možnosti: Uplatňujú sa iba kritériá 1 a 8 až 10 na strane 121. Pozri Prílohu E – Uplatniteľnosť BREEAM New Construction na obydlia pre jednu rodinu a obydlia pre viaceré rodiny, čiastočne a úplne vybavené na str. 412, kde nájdete podrobnejší popis možností hodnotenia bytových domov.
CN2.1	Predvolený prípad pre obydlia pre jednu rodinu - Platí pre samostatne stojace obydlia	Ak nejde o pripojené domy, udeľujú sa štyri kredity.

Ref	Definície pojmov	Popis
CN2.2	Pripojené obydlia pre viaceré rodiny, v ktorých sa deliace steny alebo podlahy vyskytujú len medzi neobývanými miestnosťami	K dispozícii sú tri kredity. Poznámka: Tieto kritériá sa vzťahujú len na steny, podlahy a schodiská, ktoré vykonávajú funkciu oddelenia obydlia od ďalšieho obydlia. Vnútorné priečky sú mimo rozsahu tohto vydania.
Špecifické pre danú krajinu		
CN3	Iné príslušné normy alebo predpisy týkajúce sa osvedčených postupov	Ako je podrobne uvedené v kritériách hodnotenia, je možné použiť národný alebo miestny ekvivalent k uvedeným požiadavkám BREEAM, ktorý však musí byť schválený spoločnosťou BRE Global. Zoznam schválených noriem a váh sa môže použiť na kontrolu predtým schválených noriem alebo na navrhnutie novej národnej alebo miestnej normy.
CN3.1	Typy budov bez priestorov „používaných na rozprávanie“	Ak typ budovy nemá priestory „používané na rozprávanie“, nemusí spĺňať príslušné kritériá „doby dozvuku“. V týchto prípadoch sa kredit za dozvuk môže udeliť štandardne, ak budova spĺňa kritériá hladiny hluku vo vnútornom prostredí a zvukovej izolácie.
CN3.2	Akusticky citlivé miestnosti	Ak sa v tomto vydaní BREEAM uvádza pojem „akusticky citlivé miestnosti“, vzťahuje sa na akúkoľvek miestnosť alebo priestor, ktorý projektový tím alebo klient považuje za akusticky citlivý na účely ochrany súkromia, čo môže zahŕňať tieto typy priestorov alebo miestností (ak sú špecifikované): 1. Kancelárie pre jednu osobu a kancelárie pre viac osôb 2. Miestnosti určené na stretnutia, pohovory, konzultácie alebo ošetrenie 3. Miestnosti používané na verejné vystúpenia alebo semináre 4. Akákoľvek iná miestnosť alebo priestor, ktoré projektový tím alebo klient považuje za akusticky citlivé na účely ochrany súkromia.
CN3.3	Nápravné práce	Ak sa v rámci programu testovania pred dokončením zistí, že priestory nespĺňajú normy, musia sa pred odovzdaním a obsadením vykonať nápravné práce a priestory sa musia opätovne otestovať, aby sa zabezpečila zhoda. Nápravné práce sa musia vykonať vo všetkých postihnutých a potenciálne postihnutých priestoroch vrátane miestností alebo priestorov, ktoré predtým neboli testované, s podobnou konštrukciou a požiadavkou na výkon. Správa o skúške alebo sprievodná korešpondencia by mala obsahovať jasné vyhlásenie, že skúška je v súlade s požadovanou normou (ak je špecifikovaná) alebo s kritériom 3 a metodikou BREEAM na strane 128 a mala by obsahovať príslušné kritériá vyhovenia alebo nevyhovenia.
CN3.4	Index ochrany osobných údajov	Na zvýšenie hladiny okolitého hluku, ak sa vyžaduje súkromie alebo ak ciele okolitého hluku zahŕňajú minimálnu aj maximálnu hranicu, môže byť potrebný umelý zdroj zvuku alebo systém zvukového maskovania. Akýkoľvek umelý zdroj zvuku alebo systém maskovania zvuku by mal byť nainštalovaný a v prevádzke v čase akustického testovania, aby sa preukázal súlad.

Ref	Definície pojmov	Popis
CN3.5	Doby dozvuku	Ak čas dozvuku požadovaný príslušnou normou nie je vhodný pre typ posudzovaného priestoru alebo budovy, orgán NKÚ musí potvrdiť, prečo je to tak. Okrem toho musí kvalifikovaný akustik stanoviť alternatívne vhodné doby odrazu zvuku vo fáze projektovania a poskytnúť ich na preukázanie zhody.
CN3.6	Program testovania	Nie je prípustné vykonať kratší testovací program z dôvodu pripravenosti pracoviska v deň testovania. Ak sa tento problém vyskytne, malo by sa naplánovať dodatočné testovanie. Môže sa stať, že v niektorých prípadoch by bolo prijateľné testovanie pri nižšom ako typickom režime. V takomto prípade musí skúšobný orgán pred udelením kreditov poskytnúť jasné zdôvodnenie.
Špecifické pre druh budovy		
CN4	Dlhodobé pobytové zariadenia. Miestnosti nie sú zahrnuté do obytných kritérií.	Dlhodobé pobytové zariadenia často obsahujú kombináciu „neobytných“ priestorov, ako sú kancelárie, malé maloobchodné predajne, zasadacie miestnosti atď., a obytných priestorov, napr. samostatných bytov alebo izieb na bývanie. Ak menej ako 5 % podlahovej plochy hodnotenej budovy zahŕňa „nebytové“ priestory, tieto priestory sa nemusia hodnotiť, preto je potrebné hodnotiť len obytné priestory na základe obytných kritérií, aby sa preukázalo splnenie kritéria 8 na str. 121. Ak viac ako 5% podlahovej plochy posudzovanej budovy zahŕňa priestory iné samostatné byty alebo miestnosti na obytné účely: Ak sa udeľuje 1 kredit, na preukázanie súladu je potrebné posúdiť len samostatné obydlia alebo miestnosti na obytné účely. V prípade udelenia 3 alebo 4 kreditov musia „nebytové“ priestory spĺňať príslušné kritériá pre svoju funkciu a na preukázanie súladu je potrebné posúdiť samostatné obydlia alebo miestnosti na obytné účely. Výpočet percentuálneho podielu podlahovej plochy, ktorý je „nebytový“, by mal zahŕňať len obsadené priestory (ako je definované v otázke BREEAM Hea 01 Vizuálny komfort na str. 83).
CN4.1	Zvuková izolácia prenášaná vzduchom	Spálne v hoteloch musia byť považované za akusticky citlivé miestnosti. Zvuková izolácia (DnT,w) priečok a podláh medzi miestnosťami a medzi miestnosťami a chodbami by mala byť > 50 dB.
CN4.2	Len obytné priestory - akustické testovanie	Testovanie by malo prebiehať medzi obytnými miestnosťami na prízemí a prípadne na vyšších podlažiach. Ak v projekte nie je dostatok vhodných oddeľovacích stien alebo podláh na vykonanie počtu testov špecifikovaných v príslušných národných predpisoch alebo normách, musia sa odskúšať všetky dostupné vhodné deliace steny alebo podlahy. Poznámka: deliace steny môžu byť definované ako steny, ktoré oddeľujú byty.

Ref	Definície pojmov	Popis
CN4.3	Len obytné priestory - projekty na zmiešané použitie	V prípade projektov so zmiešaným využitím , kde komerčné priestory majú spoločnú deliacu stenu alebo podlahu s obytnými priestormi, navrhne kvalifikovaný akustik vhodné základné parametre s odkazom na vnútroštátne alebo medzinárodné usmernenia alebo osvedčené postupy.
CN4.4	Iba obytné priestory - obchodný priestor	Ak je obchodný priestor oddelený od obydlia alebo miestnosti na obytné účely deliacou stenou alebo podlahou, skúška sa vykoná medzi obchodným priestorom a obydlím, pričom obchodný priestor sa použije ako zdrojová miestnosť bez ohľadu na objem.
CN4.5	Iba obytné priestory - testovanie pred ukončením	Skúšky pred dokončením sa nevyžadujú, ak sa deliace steny alebo podlahy vyskytujú len medzi neobytnými miestnosťami alebo neobytnými miestnosťami a inými priestormi. V takýchto prípadoch sa môžu udeliť tri kredity po posúdení kvalifikovaným akustikom, ktorý potvrdí, že konštrukcie, ktoré sú podrobne opísané, by boli schopné dosiahnuť príslušné požiadavky na výkon. V prípade samostatne stojacich obydlí sa nevyžaduje žiadne testovanie pred dokončením. V takýchto prípadoch môžu byť štandardne udelené štyri kredity.
CN4.6	Iba obytné priestory - postupy merania	Ďalšie informácie na strane 130 sú uvedené požiadavky na vykonanie meraní a výpočtov na preukázanie súladu s touto problematikou BREEAM. Menovaný akustik musí potvrdiť, že akustické vlastnosti boli namerané alebo vypočítané v súlade s týmito postupmi. Ak akustik považuje za potrebné odchýliť sa od týchto postupov, musí uviesť odôvodnené dôvody, prečo tak urobil.

Metodológia

Postupy skúšania, merania a výpočtu; len pre nebytové priestory

Ak nie je vo vyššie uvedených tabuľkách kritérií pre príslušný typ budovy alebo v rámci príslušnej referenčnej normy alebo usmernenia uvedené konkrétne usmernenie týkajúce sa testovania, merania a výpočtu, akustik môže pri meraní alebo výpočte úrovní požadovaných na preukázanie dodržať tieto postupy: súlad s touto záležitosťou BREEAM.

Merania zvukovej izolácie (pred zvukmi prenášanými vzduchom a nárazom) by sa mali vykonávať v súlade s príslušnou časťou normy ISO 16283. Na meranie času dozvuku by sa mali použiť príslušné zásady normy ISO 354:2003 a mali by sa dodržiavať pokyny uvedené v norme ISO 16283-1:2014, pokiaľ ide o počet pozícií zdroja a mikrofónu a merania dozvuku. Pri meraniach hluku okolia, keď nie sú k dispozícii žiadne osobitné pokyny, by sa mali použiť tieto postupy .

1. Mal by sa zahrnúť hluk z vnútorných zdrojov (napr. mechanické vetracie systémy, hluk z prevádzok, hlučné systémy), ako aj z vonkajších zdrojov (napr. hluk z dopravy prenášaný cez fasádu budovy) a ak sú súčasťou stratégie vetrania otvárateľné okná, malo by sa predpokladať, že sú otvorené na účely výpočtov a otvorené na účely meraní. Ak otvárateľné okná nie sú súčasťou stratégie vetrania pozadia alebo trvalého vetrania, potom by sa na účely výpočtu mali považovať za zatvorené a na účely meraní za zatvorené.
2. Do meraní by sa nemal zahrnúť hluk od osôb a kancelárskych zariadení (napr. počítačov).
3. Ak nie je v referenčnom dokumente uvedené inak, testovaniu na mieste podlieha aspoň 1 z 10 miestností alebo priestorov každej úrovne výkonu.
4. Merania by sa mali vykonať aspoň v štyroch miestnostiach, v ktorých možno očakávať najvyššie hladiny hluku buď preto, že sú na najhlučnejšej fasáde, alebo preto, že sú na prirodzene vetranej fasáde.
5. Ak sa používajú rôzne stratégie vetrania, merania by sa mali vykonávať v miestnostiach využívajúcich každú z týchto stratégií. V opačnom prípade by sa merania mali vykonávať v miestnostiach na najhlučnejšej fasáde.

6. T v *L*AeqT sa berie ako trvanie bežného pracovného dňa (zvyčajne 8 hodín od 9.00 do 17.00).
7. Merania sa nemusia vykonávať počas 8 hodín, ak je možné použiť kratšiu dobu merania. V takomto prípade by sa mali merania vykonať, keď úrovne vonkajšieho hluku predstavujú bežné podmienky počas celého dňa.
8. Obdobie merania kratšie ako 30 minút môže poskytnúť reprezentatívne hodnoty hladín hluku vo vnútornom prostredí a v takomto prípade sa môže použiť. Nemali by sa však používať merania kratšie ako 5 minút .
9. Merania by sa mali vykonať minimálne na troch miestach v miestnostiach vo výške 1,2 m nad podlahou na úrovni a aspoň 1 m od akéhokoľvek povrchu.
10. Ak je to relevantné, meranie vzduchovej nepriezvučnosti medzi výučbovými priestormi by sa malo vykonať medzi jednou zo štyroch dvojíc susedných miestností (alebo výučbových priestorov) každého typu miestnosti alebo kategórie požiadaviek na výkon a typu konštrukcie.
11. Ak je to relevantné, meranie krokovej nepriezvučnosti by sa malo vykonať v jednom zo štyroch učebných priestorov (oddelených od vyššie uvedených miestností) každého typu miestnosti alebo kategórie požiadaviek vlastností a typu konštrukcie.
12. Nameraná úroveň hluku v okolí by sa mala použiť na určenie súladu s kritériami pre akusticky citlivé miestnosti. Ak v čase uvedenia do prevádzky nie je možné merať hladiny hluku v okolí bez prítomnosti stavebných alebo iných cudzích zdrojov hluku, ktoré nebudú prítomné po dokončení budovy, potom by sa pre mechanické služby mala použiť nižšia úroveň 35 dB,LAeq alebo najnižší návrhový limit pre akusticky citlivý priestor.

Vyššie uvedené informácie sú určené ako návod na vykonanie akustických skúšok alebo meraní na preukázanie súladu s požiadavkami na výkonnosť podľa BREEAM. Ak akustik považoval za potrebné odchýliť sa od uvedených postupov, mal by uviesť dôvod a potvrdiť, že alternatívne postupy sú primerané na preukázanie, že budova spĺňa požiadavky na akustické vlastnosti.

Postupy skúšania, merania a výpočtu; len obytné budovy a dlhodobé ubytovacie zariadenia

Frekvencia testovania

Ak krajina nemá právne predpisy týkajúce sa frekvencie skúšok, v nasledujúcom usmernení sa stanovuje počet skúšok vzduchovej alebo nárazovej nepriezvučnosti, ktoré sa majú vykonať na každej skupine alebo podskupine. Jednotkou je buď byt alebo dom. Ak jednotky obsahujú jednu obytnú miestnosť, t. j. obytné apartmány, počet požadovaných testov sa znižuje na polovicu.

Nasledujúce pokyny a príklady sa týkajú definovania skupín a podskupín:

- Počet jednotiek v každej skupine alebo podskupine sa zaokrúhľuje nahor na najbližších 10.
- Na každých 10 jednotiek v rámci tej istej skupiny alebo podskupiny sa vykoná najmenej jeden súbor testov.

Tabuľka 25: Zloženie testovacieho súboru

Typ testovania	Domy Počet testov	Byty
Skúška izolácie deliacich stien pred zvukmi prenášanými vzduchom medzi jednotkami	2	2
Skúška izolácie deliacich stien pred zvukmi prenášanými vzduchom medzi jednotkami	Nie je k dispozícii	2
Skúšky izolácie deliacich podláh proti nárazovým zvukom medzi jednotkami	Nie je k dispozícii	2

Príklad série testov a zhody Príklad 1

Ak stavba pozostáva z troch domov, vyžaduje sa jeden súbor testov:

— Dve skúšky izolácie deliacich stien pred zvukmi prenášanými vzduchom medzi domovými jednotkami.

Príklad 2

Ak výstavba pozostáva zo 42 domov a 59 bytov, potom sa bude vyžadovať päť súborov testov medzi domami a 6 súborov testov medzi bytmi:

- 10 skúšok izolácie deliacich stien pred zvukmi prenášanými vzduchom medzi domovými jednotkami
- 12 skúšok izolácie deliacich stien pred zvukmi prenášanými vzduchom bytovými jednotkami
- 12 skúšok izolácie deliacich stien pred zvukmi prenášanými vzduchom medzi bytovými jednotkami
- 12 skúšok izolácie deliacich podláh proti nárazovým zvukom medzi bytovými jednotkami

Dôkazová dokumentácia

Kritériá	Predbežná fáza projektu	Záverečná fáza po výstavbe
Všetky (nebytový typ)	Odborná správa alebo štúdia a výpočty od akustika. Menovací dekrét alebo iné potvrdenie preukazujúce, kedy bol akustik vymenovaný. Príslušná časť alebo ustanovenia špecifikácie alebo zmluvy alebo formálny list od projektového tímu ohľadom záväzkov.	Odborná správa alebo štúdia a výpočty od akustika po výstavbe preukazujúce splnenie príslušných kritérií pre kredity. Dokumentácia, ako je formálny list od akustika alebo protokol o skúške, ktorý potvrdzuje, že spĺňajú definíciu kvalifikovaného akustika spoločnosti BREEAM. Ak boli vykonané sanačné práce odborná správa alebo štúdia v teréne a výpočty od akustika po dokončení prác preukazujúce splnenie požiadaviek pre udelenie kreditov.
Všetky (obytné budovy a rezidenčné inštitúcie)	Ak sa vykoná testovanie pred dokončením, list od projektanta potvrdzujúci zámer: 1. Splniť príslušné výkonnostné úrovne na zvukovú izoláciu 2. Využiť služby príslušné skúšobného orgánu na ukončenie testovania.	Kópie výsledkov skúšok zvukovej izolácie v teréne alebo list potvrdzujúci, že boli dosiahnuté požadované normy zvukovej izolácie uvedené v kritériách posudzovania A Dôkaz o vykonaní testov testovací orgán v súlade s predpismi.

Dodatočné informácie

Relevantné definície

Akusticky citlivé miestnosti

Ak sa v tejto otázke BREEAM odkazuje na „akusticky citlivé miestnosti“, vzťahuje sa to na každú miestnosť alebo priestor, ktorý projektový tím alebo klient považuje za akusticky citlivý na účely ochrany súkromia, ktorý môže zahŕňať tieto typy priestoru alebo miestností (ak sú uvedené):

1. Bunkové kancelárie
2. Miestnosti určené na stretnutia, pohovory, konzultácie alebo ošetrenie

Okrem toho:

1. Vzdelávacie budovy alebo priestory: miestnosti na výučbu a učenie, t. j. učebne, prednáškové sály
2. Miestnosti používané na verejné vystúpenia alebo semináre
3. Akákoľvek iná miestnosť alebo priestor, ktoré projektový tím alebo klient považuje za akusticky citlivé na účely ochrany súkromia.

Vyhovujúci skúšobný orgán

Skúšobný orgán v súlade s predpismi je definovaný ako:

1. Organizácie, ktoré sú akreditované členom Medzinárodného akreditačného fóra (IAF: www.iaf.nu) v príslušnom rozsahu ALEBO
2. Organizácie, ktoré môžu preukázať, že dodržiavajú príslušné zásady normy ISO/IEC 17024 (Posudzovanie zhody - Všeobecné požiadavky na orgány vykonávajúce certifikáciu osôb)[53] v vo vzťahu k požiadavkám BREEAM.

Dw Úroveň váženého rozdielu

Jednočíselná veličina, ktorá charakterizuje izolácie pred zvukmi prenášanými vzduchom medzi miestnosťami, ale ktorá nie je prispôsobená referenčným podmienkam. Poznámka: Úroveň váženého rozdielu sa používa na charakterizovanie izolácie medzi miestnosťami v budove tak, ako sú; hodnoty sa zvyčajne nemôžu porovnávať s meraniami vykonanými za iných podmienok (pozri (EN) ISO 717-1).

Skupiny

Rozdelenie do skupín by sa malo uskutočniť podľa týchto kritérií; miestnosti na obytné účely by sa mali považovať za tri samostatné skupiny. Okrem toho, ak sa v rámci niektorej z týchto skupín vyskytnú významné rozdiely v type konštrukcie, mali by sa zodpovedajúcim spôsobom vytvoriť podskupiny.

Podskupiny

Miestnosti na obytné účely; podskupina by mala byť podľa typu deliacej podlahy a typu deliacej steny. Dôležitá je aj konštrukcia sprievodných prvkov (t. j. prvkov nad, pod a na oboch stranách priestoru, napríklad stien, podláh, dutín) a ich spojov. Ak existujú významné rozdiely medzi vedľajšími údajmi, bude potrebné ďalšie rozdelenie do podskupín. Rozdelenie do podskupín nemusí byť potrebné v prípade obytných miestností, ktoré majú rovnakú konštrukciu deliacej steny alebo podlahy s rovnakými pridruženými konštrukciami a v prípade, že rozmery a usporiadanie miestností sú vo veľkej miere podobné.
Niektoré miestnosti na obytné účely sa môžu považovať za miestnosti s nepriaznivými vlastnosťami; príkladom môžu byť byty s veľkými plochami bočných stien bez okna na štítovej strane. Bolo by nevhodné, aby boli zahrnuté do jednej skupiny a mali by tvoriť vlastné podskupiny.

Obytné miestnosti

Na účely tejto problematiky sa za obytné miestnosti považujú všetky miestnosti, v ktorých osoby sedia alebo ležia a vyžadujú primerane tiché prostredie na sústredenie alebo odpočinok. Takýmito miestnosťami sú spálne, obývacie izby, jedálne, pracovne, ako aj kuchyne s jedálňou a kuchyne s obývacou izbou.

Ľahké strechy

Strechy s hmotnosťou na jednotku plochy menšou ako 150 kg/m^2

Kancelárie pre viac osôb

Kancelárske priestory, ktoré nemajú bunkový charakter, t. j. sú otvorené a navrhnuté tak, aby sa do nich zmestili viac ako dva stoly alebo pracovné miesta.

Neobytné miestnosti

Na účely tejto problematiky patria medzi neobytné miestnosti všetky miestnosti, ktoré sa nepovažujú za obytné miestnosti (ako je definované vyššie). Patria sem miestnosti, ako sú kuchyne, kúpeľne, toalety, chodby, garáže a práčovne.

Obývané priestory

Pozri Hea 01 Vizuálny komfort na strane 83 a všimnite si, že pre túto problematiku BREEAM (Hea 05 Akustické vlastnosti) je na nasledujúcej strane uvedená špecifická, nesúvisiaca definícia Neobývaných priestorov s odkazom na akustické testovanie a meranie - podrobnosti nájdete v poznámkach o zhode na strane 125 .

Skúška zvuku pred dokončením

Skúšky by sa mali vykonať, keď je stavba v podstate dokončená, ale môžu sa vykonať aj pred dekoráciou alebo po nej. Ak nie je v príslušných vnútroštátnych stavebných predpisoch alebo normách uvedené inak, v prípade obydlí by sa skúšky zvukovej izolácie mali vykonať pred inštaláciou povrchových úprav podlahy, ako sú koberce, drevené podlahy alebo vinylové krytiny.

Miestnosť na obytné účely

Miestnosť alebo súbor miestností, ktoré nie sú obydlím (domom alebo bytom) a ktoré používa jedna alebo viac osôb na bývanie a spanie. Zahŕňa izbu v ubytovni, hoteli, penzióne, internáte alebo v obytnom dome, bez ohľadu na to, či je izba oddelená od ostatných izieb alebo usporiadaná v skupine s ostatnými izbami, ale nezahŕňa izbu v nemocnici alebo v inom podobnom zariadení, ktorá sa používa na ubytovanie pacientov.

Vhodne kvalifikovaný akustik (SQA)

Osoba, ktorá dosiahne všetky nasledujúce body, sa môže považovať za „vhodne kvalifikovanú“ na účely hodnotenia BREEAM.

1. Je držiteľom titulu PhD. alebo rovnocennej kvalifikácie v oblasti akustických alebo zvukových skúšok.
2. Má minimálne trojročnú prax (za posledných päť rokov). Tieto skúsenosti musia jasne preukazovať praktické pochopenie faktorov ovplyvňujúcich akustiku vo vzťahu k výstavbe a zastavanému prostrediu; vrátane poradenskej činnosti pri poskytovaní odporúčaní pre vhodné úrovne akustických parametrov a zmierňujúce opatrenia.
3. Fyzická osoba, ktorá má uznanú akustickú kvalifikáciu a členstvo v príslušnom profesionálnom orgáne.

Ak kvalifikovaný akustik overuje akustické merania alebo výpočty vykonané iným akustikom, ktorý nespĺňa požiadavky orgánu SQA, musí si správu minimálne prečítať a preskúmať a písomne potvrdiť, že ju považuje za správnu:

1. Predstavuje dobré priemyselné postupy
2. Je vhodná vzhľadom na posudzovanú budovu a rozsah navrhovaných prác
3. Vyhýba sa neplatným, skresleným a prehnaným odporúčaniam.

Okrem toho sa vyžaduje písomné potvrdenie od overovateľa tretej strany, že sú v súlade s definíciou kvalifikovaného akustika.

Kancelárie pre jednu osobu

Kancelárske bunky určené na umiestnenie jedného alebo dvoch stolov alebo pracovných miest (zvyčajne nie väčších ako 10 m²).

Neobsadené priestory

Ak sa v tejto otázke BREEAM odkazuje na „neobývaný priestor“, týka sa to charakteru priestoru na účely vykonania akustických výpočtov alebo meraní, t. j. takéto merania sa musia vykonať, keď je priestor neobývaný, a teda bez akýchkoľvek zdrojov hluku.

Vážené štandardizované rozdiely úrovní ($DnT_{,w}$)

HTM 08-01 to definuje ako „jednotka na hodnotenie izolácie pred zvukmi prenášanými vzduchom na mieste“.

Vážená normalizovaná úroveň akustického tlaku pri náraze ($LnT_{,w}$)

HTM 08-01 to definuje ako „jednotka na hodnotenie izolácie proti nárazovým zvukom na mieste“.

Ďalšie informácie

Krivky hodnotenia hluku (NR)

Posudzovanie hluku na základe kriviek NR často používajú konzultanti v oblasti stavebných služieb na predpovedanie hladín vnútorného hluku spôsobeného mechanickými vetracími systémami. V požiadavke BREEAM sa však používa hladina hluku vo vnútornom prostredí LAeq,T, ktorá zahŕňa vonkajší hluk prenášaný cez fasádu, ako aj vnútorný hluk, napríklad hluk z mechanických ventilačných systémov. Pri absencii silného nízkofrekvenčného hluku sa LAeq,T dá odhadnúť z hodnoty NR pomocou nasledovného vzorca: LAeq,T≈ NR + 6 dB. Preto, ak hodnota NR je známa, ale nie . hladiny akustického tlaku v jednotlivých frekvenčných pásmach,

odhad hladiny hluku vo vnútornom prostredí LAeq,T sa stále dá určiť z

NR pre hluk z prevádzky budovy.. LAeq,T pre vonkajší hluk prenášaný cez fasádu sa potom musí skombinovať s LAeq,T pre služby budovy.

Hea 06 Dostupnosť (všetky budovy)

Počet dostupných kreditov	Minimálne normy
Závisí od typu budovy	Áno (len bytové priestory)

Cieľ

Rozpoznať a podporovať účinné opatrenia, ktoré podporujú bezpečné a zabezpečené používanie a prístup do budovy a z budovy.

Hodnotiace kritériá

Na preukázanie súladu sa vyžaduje nasledovné:

Jeden kredit - bezpečný prístup

1 Vyhradené cyklistické pruhy majú tieto minimálne rozmery:
- 1.a V prípade spoločných trás pre chodcov a cyklistov je minimálna celková šírka kombinovanej cesty 3,0 m.
- 1.b Ak je cyklistický pruh oddelený od pešej cesty a vozovky, minimálna šírka cyklotrasy je 2,0 ma peší chodník je 1,5 m.
- 1.c Ak je cyklotrasa súčasťou vozovky, minimálna šírka jazdného pruhu je 1,5 m.

2 Vyhradené cyklistické chodníky poskytujú priamy prístup od vchodov na stavenisko ku všetkým skladom bicyklov bez potreby odbočovať z cyklistickej trasy a prípadne sa pripájajú na cyklistické chodníky mimo staveniska (alebo inú vhodnú bezpečnú trasu), ak tieto chodníky vedú popri hranici staveniska .

3 Chodníky na stavenisku poskytujú priamy prístup od vchodov na stavenisko k vchodom do budov a spájajú sa s verejnými chodníkmi mimo staveniska (ak existujú), čím poskytujú praktický a pohodlný prístup k miestnym dopravným uzlom a iným zariadeniam mimo staveniska (ak existujú).

4 V prípade, že sú k dispozícii, sú odstavné plochy navrhnuté mimo prístupovej cesty alebo v jej tesnej blízkosti a poskytujú priamy prístup k chodníkom pre chodcov, čím sa predchádza potrebe prechodu chodcov cez prístupové cesty vozidiel.

5 Na miestach, kde sa trasy pre chodcov križujú s prístupovými cestami pre vozidlá, sú vyhradené priechody pre chodcov a sú zavedené vhodné opatrenia na upokojenie dopravy, aby sa na týchto priechodoch spomalila doprava .

6 Pri veľkých stavbách s veľkým počtom užívateľov z radov verejnosti alebo návštevníkov musia byť chodníky pre peších označené značkami k ďalším miestnym zariadeniam občianskej vybavenosti a uzlom verejnej dopravy mimo lokality (ak existujú).

7 Osvetlenie prístupových ciest, trás pre chodcov a cyklistických chodníkov je v súlade s kritériami vonkajšieho osvetlenia definovanými v Hea 01 Vizuálny komfort na strane 83, t.j. v súlade s národnou príručkou osvedčených postupov pre osvetlenie ciest.

Tam, kde sú súčasťou hodnoteného projektu oblasti dodávok vozidlom a miesta na vykladanie a vystúpenie z vozidla, platí nasledovné:

8 Do priestorov na doručovanie tovaru nie je priamy prístup cez všeobecné parkovacie plochy a nekrižujú sa ani nezdieľajú trasy pre chodcov a cyklistov a iné vonkajšie plochy občianskej vybavenosti prístupné používateľom budov a širokej verejnosti.

9 Pre nákladné vozidlá je vyhradené parkovisko alebo čakáreň s vhodným oddelením od manévrovacieho priestoru a parkoviska pre zamestnancov a návštevníkov.

10 Parkovacie plochy a plochy na otáčanie sú navrhnuté tak, aby sa s nimi dalo jednoducho manévrovať podľa typu dodávkového vozidla, ktoré bude pravdepodobne vchádzať na stavenisko, čím sa predíde potrebe opakovaného manévrovania.

11 Na skladovanie odpadových nádob a paliet je vyhradený priestor mimo priestoru na manévrovanie vozidiel na zásobovanie a parkovania pre zamestnancov alebo návštevníkov (ak je to vhodné vzhľadom na typ budovy alebo jej funkciu).

Inkluzívny a prístupný projekt (všetky budovy okrem obytných domov)

Jeden kredit

12 Budova je navrhnutá tak, aby bola vhodná na daný účel, primeraná a prístupná všetkým potenciálnym používateľom.

13 Stratégia prístupu je vyvinutá v súlade s Kontrolným zoznamom A3 na str. 428. Stratégia prístupu sa zaoberá minimálne prístupom všetkých používateľov k rozvoju a v rámci neho s osobitným dôrazom na tieto aspekty:
- 13.a Používatelia so zdravotným postihnutím; riešenie a navrhovanie . dizajn riešenia ktoré odstraňujú prekážky, ktoré definujú zdravotné postihnutie
- 13.b Ľudia rôznych vekových skupín, pohlaví, etnickej príslušnosti a úrovne fyzickej zdatnosti
- 13.c Rodičia s deťmi (ak je to vhodné vzhľadom na využitie alebo typ budovy).

14 Pre budúcich užívateľov a používateľov budovy sú k dispozícii zariadenia (pozri poznámky o dodržiavaní predpisov nižšie) vrátane prípadných zariadení, ktoré možno zdieľať a ktoré sú prístupné členom verejnosti alebo komunity bez toho, aby získali nekontrolovaný prístup do iných častí budovy (pokiaľ to bezpečnostné procesy a postupy nezakazujú).

Inkluzívny a prístupný projekt (len bytové priestory)

Dva kredity

15 Ak sú zavedené národné normy osvedčených postupov alebo miestne právne predpisy, ktoré pokrývajú (minimálne) požiadavky z kontrolného zoznamu pre domovy celoživotného bývania (pozri kontrolný zoznam A4 na strane 430), posudzovaný projekt musí zabezpečiť súlad s týmito normami alebo právnymi predpismi.

16 Ak v krajine posudzovania neexistuje kompatibilná miestna norma, investor alebo projektant musí potvrdiť (pomocou kontrolného zoznamu A4 na strane 430), že posudzovaná stavba spĺňa všetky kritériá celoživotného bývania.

Kontrolné zoznamy a tabuľky

Žiadne.

Poznámky o súlade

Ref	Podmienky	Popis
Hrubá stavba a jadro (iba nebytové a rezidenčné inštitúcie)		
CN1	Príslušné hodnotiace kritériá	Obidve možnosti: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy Podrobnejší popis možností vyhodnotenia hrubej stavby a jadra nájdete v Prílohe D - Posúdenie projektu hrubej stavby a jadra na strane 409.
Obytné - čiastočne a úplne vybavené		

Ref	Definície pojmov	Popis
CN2	Príslušné hodnotiace kritériá - Obydlia pre jednu rodinu	**Bezpečný prístup: kritériá 1 až 11 na predchádzajúcej strane** Obidve možnosti: Tieto kritériá sa neuplatňujú. **Inkluzívny a prístupný projekt (len pre nebytové priestory): kritériá 12 až 14 na predchádzajúcej strane** Obidve možnosti: Tieto kritériá sa neuplatňujú. **Inkluzívny a prístupný projekt (len pre bytové priestory): kritériá 15 až 16 na predchádzajúcej strane** Obidve možnosti: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy. Pozri Prílohu E – Uplatniteľnosť BREEAM New Construction na obydlia pre jednu rodinu a obydlia pre viaceré rodiny, čiastočne a úplne vybavené na str. 412, kde nájdete podrobnejší popis možností hodnotenia bytových domov.
CN2.1	Príslušné hodnotiace kritériá - Obydlia pre viaceré rodiny	**Bezpečný prístup: kritériá 1 až 11 na predchádzajúcej strane** Obidve možnosti: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy. **Inkluzívny a prístupný projekt (len pre nebytové priestory): kritériá 12 až 14 na predchádzajúcej strane** Obidve možnosti: Tieto kritériá sa neuplatňujú. **Inkluzívny a prístupný projekt (len pre nebytové priestory): kritériá 15 až 16 na predchádzajúcej strane** Obidve možnosti: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy. Pozri Prílohu E – Uplatniteľnosť BREEAM New Construction na obydlia pre jednu rodinu a obydlia pre viaceré rodiny, čiastočne a úplne vybavené na str. 412, kde nájdete podrobnejší popis možností hodnotenia bytových domov.
Všeobecné		
CN3	Projekt nemá žiadne vonkajšie oblasti stavebnej lokality. Pozri kritériá 1 až 11 na predchádzajúcej strane.	Kritériá bezpečného prístupu sa vzťahujú len na stavby, ktoré majú plochy mimo posudzovanej budovy a v rámci hraníc posudzovanej stavby (bez ohľadu na to, či za tieto vonkajšie plochy zodpovedá alebo bude zodpovedať budúci užívateľ budovy). Patria sem vonkajšie parkovacie plochy. Ak posudzovaná budova nemá žiadne vonkajšie priestory a prístup do budovy je priamo z verejnej komunikácie alebo chodníka, t. j. na mieste nie je prístup pre vozidlá a parkovacie plochy, potom sa kritériá týkajúce sa bezpečného prístupu neuplatňujú . V takýchto prípadoch sa musia posúdiť a udeliť dva dostupné kredity na základe splnenia kritérií inkluzívneho a prístupného dizajnu .
CN3.1	Zakryté parkovacie plochy. Pozri kritériá 2 až 11 na predchádzajúcej strane.	Ak posudzovaná budova nemá vonkajšie plochy, ale má kryté parkovisko a cyklisti, chodci alebo zásobovacie vozidlá majú prístup do budovy cez túto plochu, potom sa uplatňujú príslušné kritériá bezpečného prístupu a táto plocha sa musí posúdiť podľa týchto kritérií.
CN3.2	Prístup pre dodávky cez parkovacie plochy (menšie miesta a dodávky). Pozri kritériá 2 až 11 na predchádzajúcej strane (okrem 8 na str. 133).	Kritérium 8 na strane 133 (prístup pre dodávky cez všeobecné parkovacie priestory) sa môže uvoľniť pre menšie miesta, ak je možné potvrdiť, že budova je prevádzkového typu a veľkosti, čo pravdepodobne znamená, že všetky dodávky do budovy sa uskutočnia malými dodávkovými vozidlami a nie ťažkými nákladnými vozidlami.

Ref	Definície pojmov	Popis
CN3.3	Žiadne oblasti pre dodávky a manévrovanie vozidiel. Pozri kritériá 2 až 7 na str. 133.	Kritériá týkajúce sa prístupu pre dodávky vozidiel sa neuplatňujú, ak súčasťou posudzovaného projektu nie sú vyhradené prístupové a odkladacie plochy pre dodávky.
CN3.4	Vyhradené chodníky pre peších z parkovacích miest	Ak nie je praktické zabezpečiť vyhradené chodníky pre chodcov z každého parkovacieho miesta na parkovisku, očakáva sa , že projektové tímy prijmú všetky praktické opatrenia na zaistenie bezpečnosti chodcov. Vo všeobecnosti by sa mala zabezpečiť aspoň bezpečná trasa pre chodcov od východu z parkoviska ku vchodu do budovy. V prípade väčších parkovísk by bolo vhodné zabezpečiť chodníky v pravidelných intervaloch, aby sa uľahčil bezpečný prístup od auta ku vchodu do budovy , a projektový tím by mal preukázať, že to dosiahol v čo najväčšej možnej miere.
CN3.5	Spoločné zariadenia	V tomto ohľade neboli stanovené žiadne kritériá, pretože typy priestorov alebo zariadení sa budú líšiť v závislosti od veľkosti budovy, typu, využitia a spätnej väzby z konzultácií. Medzi typické zariadenia, ktoré by sa mohli zdieľať s ostatnými, patria: 1. Športové zariadenia 2. Zasadacie a konferenčné miestnosti 3. Priestor pre zamestnancov alebo návštevníkov (vnútorný alebo vonkajší).
CN3.6	Existujúce zariadenia	Ak sa na mieste nachádzajú existujúce zariadenia, ktoré spĺňajú kritériá hodnotenia spoločných zariadení (vrátane zapojenia používateľov a komunity do fázy konzultácií), je možné udeliť kredity. Tieto zariadenia by sa mohli nachádzať v rámci existujúcej budovy, ktorá nie je súčasťou hodnotenia, za predpokladu, že budova je prístupná všetkým príslušným používateľom budovy.
CN3.7	Potenciálni používatelia spoločných zariadení	Potenciálni používatelia spoločných zariadení sa identifikujú podľa potreby a môžu zahŕňať všetky alebo niektoré z nasledujúcich možností (ak sú relevantné pre typ a využitie budovy): 1. Mimoškolskí používatelia a spôsoby použitia 2. Miestny orgán alebo iný poskytovateľ miestnych komunitných služieb 3. Miestni obyvatelia 4. Vzdelávanie dospelých 5. Skupiny dobrovoľníkov 6. Miestne podniky 7. Prevádzkovatelia alebo členovia klubov a komunitných skupín.

Metodológia

Žiadna.

Dôkazová dokumentácia

Kritériá	Predbežná fáza projektu	Záverečná fáza po výstavbe
1–11	Výkresy návrhu (vrátane plánu stavby v mierke) alebo príslušné časti špecifikácie so zvýraznením všetkých potrebných vyhovujúcich prvkov a rozmerov. V prípade potreby potvrdenie, že sú splnené minimálne požiadavky stanovené v zozname schválených noriem a váh.	Inšpekcia budovy alebo staveniska a fotografický dôkaz potvrdzujúci súlad alebo plán stavby a konštrukčné detaily.
12–14	Prístupová stratégia. Projektové výkresy alebo príslušná časť alebo ustanovenia špecifikácie stavby alebo zmluvy.	Správa z inšpekcie na mieste vypracovaná posudzovateľom BREEAM a fotografický dôkaz.
15–16	Vyplnený Kontrolný zoznam A4 na str. 430, v ktorom sa uvádza záväzok dodržiavať všetky platné body od 1 do 16, podpísaný investorom. Výkresy alebo kópia špecifikácie potvrdzujúca zhodu s položkami v Kontrolnom zozname A4 na str. 430.	Kompletný Kontrolný zoznam A4 na str. 430 v skutočnom stave označujúci súlad so všetkými príslušnými bodmi od 1 do 16. Správa posudzovateľa BREEAM z inšpekcie na mieste a fotografický dôkaz alebo výkresy zhotovenia.

Dodatočné informácie

Relevantné definície

Vonkajšie oblasti stavby

Plochy mimo posudzovanej budovy, ale v rámci hraníc pozemku, ktoré obsahujú prístupové cesty alebo chodníky pre vozidlá alebo chodcov k budove, parkovacie miesta, miesta na vykladanie a odkladanie.

Ďalšie informácie

Žiadne.

Hea 07 Riziká (všetky budovy)

Počet dostupných kreditov	Minimálne normy
1	Žiadne

Cieľ

Znížiť alebo potlačiť vplyv prírodného nebezpečenstva na budovu.

Hodnotiace kritériá

Na preukázanie súladu sa vyžaduje:

Jeden kredit

1 Posúdenie rizík vykonáva vo fáze rámcového návrhu alebo koncepčného návrhu príslušná osoba alebo osoby s cieľom identifikovať všetky potenciálne prírodné riziká v oblasti rozvoja.

2 Ak sa identifikuje potenciálne nebezpečenstvo, príslušná osoba by mala určiť a zaviesť opatrenia na zmiernenie rizika zodpovedajúce jeho úrovni.

Kontrolné zoznamy a tabuľky

Žiadne.

Poznámky o súlade

Ref	Podmienky	Popis
Hrubá stavba a jadro (iba nebytové a rezidenčné inštitúcie)		
CN1	Príslušné hodnotiace kritériá	Obidve možnosti: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy Pozri Príloha D - Posúdenie plášťa a jadra projektu na strane 409 Podrobnejší opis možností hodnotenia plášťa a jadra.
Obytné - čiastočne a úplne vybavené		

Ref.	Podmienky	Popis
CN2	Príslušné hodnotiace kritériá - Obydlia pre jednu rodinu a obydlia pre viaceré rodiny	Obidve možnosti: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy. Pozri Prílohu E – Uplatniteľnosť BREEAM New Construction na obydlia pre jednu rodinu a obydlia pre viaceré rodiny, čiastočne a úplne vybavené na str. 412, kde nájdete podrobnejší popis možností hodnotenia bytových domov.
Všeobecné		
CN3	Ak nie je riziko identifikované alebo záplavy nie sú identifikované ako jediné riziko	Ak nie je identifikované žiadne riziko, táto otázka nebude zahrnutá do hodnotenia. Ak sú jediným identifikovaným rizikom záplavy, táto otázka nebude zahrnutá do Hodnotenia, nakoľko záplavami sa zaoberá otázka Pol 03 BREEAM Odtok povrchovej vody na str. 378.

Metodológia

Žiadna.

Dôkazová dokumentácia

Kritériá	Predbežná fáza projektu	Záverečná fáza po výstavbe
1 na predchádzajúcej strane–2 na predchádzajúcej strane	Kópia hodnotenia nebezpečenstva prírodných rizík. List od príslušnej osoby potvrdzujúci jej súlad s definíciou príslušnej osoby. Potvrdenie termínu posúdenia prírodných rizík v rámci plánu prác.	Ako fáza návrhu.
2 na predchádzajúcej strane	V prípade potreby, kópia posúdenia rizík prírodného nebezpečenstva s podrobnými informáciami o zmierňovacích opatreniach primeraných úrovni rizika pre stavbu A BUĎ Kópia príslušnej časti špecifikácie, v ktorej sa od hlavného dodávateľa požaduje, aby vykonal identifikované zmierňujúce opatrenia ALEBO List od objednávateľa alebo člena projekčného tímu potvrdzujúci, že špecifikácia bude od hlavného dodávateľa vyžadovať, aby implementoval odporúčania príslušnej osoby.	Inšpekcia budovy alebo inšpekcia na mieste (alebo výkresy zhotovenia) a fotografický dôkaz potvrdzujúci, že zmierňujúce opatrenia boli vykonané v súlade s odporúčaniami a špecifikáciou príslušnej osoby.

Dodatočné informácie

Relevantné definície

Príslušné osoby

jednotlivec (alebo jednotlivci) s príslušnými technickými a odbornými skúsenosťami vhodnými na:

- Určenie potenciálu prírodných rizík v oblasti rozvoja
- Určenie pravdepodobných vplyvov na lokalitu, budovu a lokalitu a následné určenie vhodných zmierňujúcich opatrení.

Môže to byť člen (alebo členovia) projektového tímu alebo špecialista, nezávislí od procesu projektu a výstavby. Táto osoba (alebo tieto osoby) by mala postupovať podľa profesionálneho kódexu správania alebo podobného kódexu správania a riadiť sa ním.

Prírodné nebezpečenstvo

Prírodné procesy alebo javy prebiehajúce v biosfére alebo zemskej kôre, ktoré môžu predstavovať škodlivú udalosť. Nižšie uvedený zoznam nie je vyčerpávajúci, ale uvádza typy nebezpečenstiev, ktoré by mali spĺňať definíciu. V rámci tejto problematiky môžu byť relevantné aj iné prírodné riziká. Relevantnosť bude závisieť od miestnych geografických, geologických, hydrologických a klimatických faktorov a posudzovateľ by sa mal uistiť, že klient alebo projektový tím požiadal o príslušné miestne odborné znalosti na ich úplné určenie:

1. Povodne (riešené v Pol 03 Odtok povrchovej vody na str. 378)
2. Prírodné katastrofy geologického pôvodu, ako sú sopečné erupcie, zemetrasenia a zosuvy pôdy
3. Prírodné katastrofy klimatického alebo meteorologického pôvodu , ako sú suchá, lavíny, prívalové vlny vrátane cunami a prílivových vĺn a veterné smršte vrátane cyklónov, hurikánov, tornád, tropických búrok a tajfúnov
4. Lesné požiare.

Prírodná katastrofa

Vážne narušenie fungovania komunity alebo spoločnosti, ktoré spôsobuje rozsiahle ľudské, materiálne, hospodárske alebo environmentálne straty, ktoré presahujú schopnosť postihnutej komunity alebo spoločnosti vyrovnať sa s nimi pomocou vlastných zdrojov.

Ďalšie informácie

Upozorňujeme, že cieľom tohto vydania nie je definovať všetky možné riziká a nebezpečenstvá, ktoré sa môžu vyskytnúť, ale podporiť proces identifikácie, hodnotenia a zmierňovania rizík.

Prírodné nebezpečenstvo, prírodná katastrofa a hodnotenie rizík: Definície použité v tomto vydaní sú prevzaté z www.unisdr.org.

Hea 08 Súkromné priestory

(len obytné priestory)

Počet dostupných kreditov	Minimálne normy
1	Áno

Cieľ

Poskytovať vonkajší priestor, ktorý poskytuje používateľom súkromie a sociálneho zázemia.

Hodnotiace kritériá

Na preukázanie súladu sa vyžaduje:

Jeden kredit

1 Vonkajší priestor (súkromný alebo polo súkromný) musí spĺňať nasledovné požiadavky:
- 1.a Jeho veľkosť umožňuje všetkým používateľom sedieť vonku.
- 1.b Je prístupný pre všetkých cestujúcich vrátane osôb na invalidnom vozíku
- 1.c Je prístupný len obyvateľom určených obydlí.

2 Vonkajšie priestory musia byť priľahlé k obydliam alebo v ich tesnej blízkosti a musia spĺňať požiadavky na minimálnu veľkosť (pozri poznámky o dodržiavaní predpisov nižšie).

Kontrolné zoznamy a tabuľky

Žiadne.

Poznámky o súlade

Ref	Podmienky		Popis
		Hrubá stavba a jadro (iba nebytové a rezidenčné inštitúcie)	
CN1	Príslušné hodnotiace kritériá		Obidve možnosti: Táto otázka sa neuplatňuje. Podrobnejší popis možností vyhodnotenia hrubej stavby a jadra nájdete v Prílohe D - Posúdenie projektu hrubej stavby a jadra na strane 409.
		Obytné - čiastočne a úplne vybavené	

Ref	Definície pojmov	Popis
CN2	Príslušné hodnotiace kritériá - Obydlia pre jednu rodinu a obydlia pre viaceré rodiny	Obidve možnosti: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy. Pozri Prílohu E – Uplatniteľnosť BREEAM New Construction na obydlia pre jednu rodinu a obydlia pre viaceré rodiny, čiastočne a úplne vybavené na str. 412, kde nájdete podrobnejší popis možností hodnotenia bytových domov.
Všeobecné		
CN3	Prístavby k existujúcim budovám	Okrem vyššie uvedených požiadaviek neexistujú žiadne ďalšie alebo odlišné požiadavky špecifické pre projekty rozšírenia.
CN3.1	Minimálne priestorové požiadavky	S výhradou vyšších požiadaviek vyplývajúcich z vnútroštátnych predpisov alebo osvedčených vnútroštátnych postupov sa majú stanoviť na úrovni, ktorá je v súlade s týmito požiadavkami: 1. Pre súkromný priestor: 1,5 m² na spálňu 2. Pre polo súkromný priestor, t. j. zdieľaný prístup všetkých používateľov bytu: 1,0 m² na spálňu.
CN3.2	Vonkajšie priestory	Nasledujú reprezentatívne príklady vonkajších priestorov: 1. Súkromná záhrada 2. Spoločná záhrada alebo dvor, ktoré poskytujú príjemné a odľahlé prostredie, dostatočne veľké na to, aby sa oň mohli deliť všetci obyvatelia určených obydlí a navrhnuté tak, aby bolo jasné, že tento priestor môžu využívať len obyvatelia určených obydlí 3. Balkóny 4. Terasy (strešné alebo iné) 5. Nádvoria.
CN3.3	Vonkajší priestor, ktorý nespĺňa požiadavky	Balkóny typu „Juliet“ vo všeobecnosti nespĺňajú kritériá, pretože sú príliš malé na to, aby poskytovali vonkajší priestor. Uzavreté oblasti, ako sú zimné záhrady, nespĺňajú kritériá.
CN3.4	Prístupné len pre používateľov určených bytov	Projekt priestoru, jeho hranice a vzťah s určeným bytom by mali byť dostatočné jasné, aby bolo zrejmé, že priestor je určený len pre používateľov budovy.

Metodológia

Žiadna.

Dôkazová dokumentácia

Kritériá	Predbežná fáza projektu	Záverečná fáza po výstavbe
Všetky	Výkresy alebo kópia špecifikácie potvrdzujúce: Počet spální, ku ktorým prináleží vonkajší priestor Vonkajší priestor spĺňa požiadavky na minimálnu veľkosť a je umiestnený v blízkosti bytu alebo v jeho tesnej blízkosti A Tam, kde je k dispozícii spoločný vonkajší priestor, podrobnosti o bezpečnostných a kontrolných opatreniach týkajúcich sa prístupu.	Správa o kontrole pracoviska BREEAM a fotografické dôkazy alebo výkresy v skutočnom stave.

Dodatočné informácie

Relevantné definície

Žiadne.

Ďalšie informácie

Žiadne.

Hea 09 Kvalita vnútorného vzduchu

(všetky budovy)

Počet dostupných kreditov	Minimálne normy
1	Áno (len kritérium 1)

Cieľ

Minimalizovať riziko kontaminácie vody pri stavebných službách a zabezpečiť poskytovanie čistých, čerstvých zdrojov vody pre používateľov budov.

Hodnotiace kritériá

Na preukázanie súladu sa vyžaduje:

Jeden kredit

Vodohospodárske systémy budov: Minimalizácia rizika kontaminácie

1 Všetky vodné systémy v budove sú navrhnuté v súlade s opatreniami uvedenými v príslušných vnútroštátnych osvedčených postupoch v oblasti bezpečnosti a ochrany zdravia pri práci príručkách alebo s predpismi na minimalizovanie rizika mikrobiálnej kontaminácie, napr. spôsobeného baktériou Legionella.

2 Ak sa vyžaduje zvlhčovanie, je k dispozícii systém zvlhčovania s poistkou proti poruche.

Používatelia budovy: Zabezpečenie čerstvej pitnej vody (okrem bytových a bytových zariadení - dlhodobý pobyt)

3 V priestoroch so stálym personálom je zabezpečená dodávka zdravotne nezávadnej pitnej vody:
- 3.a Chladiče vody na mieste použitia
- 3.b Zabezpečenie v každej kuchynke pre zamestnancov alebo na vhodnom mieste na každom poschodí a v jedálni pre zamestnancov (ak je k dispozícii).

Dodatočné pre rezidenčné inštitúcie - krátkodobý pobyt

4 Na verejných priestranstvách je k dispozícii zdravá pitná voda:
- 4.a Zabezpečenie vo vestibule alebo vo vstupnej hale a telocvični alebo fitnes, ak sú k dispozícii
- 4.b Ak je pitná voda k dispozícii v každej spálni, chladnička na vodu je prístupná zo všetkých kľúčových verejných priestorov, t. j. baru, salónika, haly, vstupnej haly alebo recepcie, reštaurácie.
- 4.c Ak pitná voda nie je k dispozícii v každej spálni, chladnička na vodu je prístupná zo všetkých kľúčových miest . verejných priestoroch, t. j. bar, spoločenská miestnosť, lobby, vstupná hala alebo recepcia, reštaurácia A špecifikované vo verejných priestoroch vedľa kľúčových prístupových bodov (výťahy a schodiská) ku každému podlažiu alebo priestoru s izbami.

Kontrolné zoznamy a tabuľky

Žiadne.

Poznámky o súlade

Ref	Podmienky	Popis
Hrubá stavba a jadro (iba nebytové a rezidenčné inštitúcie)		
CN1	Príslušné kritériá hodnotenia	**Vodohospodárske systémy budov: Minimalizácia rizika kontaminácie, kritériá 1 a 2 na predchádzajúcej strane** Len plášť: Tieto kritériá sa neuplatňujú. Plášť a jadro: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy. **Používatelia budovy: Zabezpečenie čerstvej pitnej vody, kritérium 3 na predchádzajúcej strane** Obidve možnosti: Tieto kritériá sa neuplatňujú.
Bytové - čiastočne a úplne vybavené		
CN2	Príslušné hodnotiace kritériá - Obydlia pre jednu rodinu a obydlia pre viaceré rodiny	**Vodohospodárske systémy budov: Minimalizácia rizika kontaminácie, kritériá 1 a 2 na predchádzajúcej strane** Obidve možnosti: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy. **Používatelia budovy: Zabezpečenie čerstvej pitnej vody, kritérium 3 na predchádzajúcej strane** Obidve možnosti: Tieto kritériá sa neuplatňujú. Pozri Prílohu E – Uplatniteľnosť BREEAM New Construction na obydlia pre jednu rodinu a obydlia pre viaceré rodiny, čiastočne a úplne vybavené na str. 412, kde nájdete podrobnejší popis možností hodnotenia bytových domov.
Všeobecné		
CN3	Národné príručky osvedčených postupov v oblasti zdravia a bezpečnosti	V zozname schválených noriem a váhových koeficientov (ASWL) nájdete príslušné príručky osvedčených postupov v oblasti bezpečnosti a ochrany zdravia v krajine posudzovania. Prípadne preukážte uplatniteľnosť takto : Minimálne požiadavky stanovené v zozname schválených noriem a váhových koeficientov sú zahrnuté v navrhovaných dokumentoch Ak pre danú krajinu neexistuje vhodný referenčný dokument, projektový tím by mal preukázať súlad s použitím britskej alternatívy, ktorá je uvedená v každom príslušnom referenčnom liste krajiny.
CN3.1	Systém zvlhčovania s ochranou proti zlyhaniu	Systém zvlhčovania odolný voči poruchám je taký, pri ktorom porucha systému, ktorý sterilizuje vodnú paru, vedie k vypnutiu celého systému zvlhčovania. Týmto odstavením sa preto zabráni akémukoľvek riziku, že používatelia budovy budú vystavení neupravenej a potenciálne kontaminovanej vode, kým sa porucha systému neodstráni. Parné zvlhčovanie je príkladom bezpečnostného systému.

Ref	Definície pojmov	Popis
CN3.2	Nové prístavby na rozšírenie existujúcich budov	Ak bude mať novopostavená prístavba a existujúca budova spoločné služby alebo vodovodné systémy, potom sa musia existujúce systémy posúdiť podľa kritérií bez ohľadu na to, či je existujúca budova súčasťou posúdenia alebo nie. Ak je prístavba obsluhovaná nezávislými systémami, podľa kritérií posudzovania sa musia posudzovať len tieto systémy. Ak je zámerom, aby používatelia budovy nového rozšírenia používali vodné systémy v existujúcej budove, potom sa musí potvrdiť, že existujúce systémy spĺňajú kritériá.
CN3.3	Mikrobiálna kontaminácia a zodpovednosť posudzovateľa BREEAM za podávanie správ	Posudzovateľ BREEAM nie je povinný potvrdiť, že projekt je v súlade s príslušnými normami; za to zodpovedá projektový tím. Od posudzovateľa sa len vyžaduje, aby na účely validácie zaznamenal, či projektový tím potvrdil, že splnil alebo nesplnil požiadavky .
CN3.4	Dávkovače vody na mieste spotreby, ktoré nie sú v súlade s predpismi	Nasledujúce typy dávkovačov vody nespĺňajú kritériá tejto problematiky BREEAM: 1. Fontánky s pitnou vodou, pretože je ťažké ich udržiavať v hygienickej a nepodporujú používateľov, aby prijímali dostatok tekutín. 2. Vodovodné kohútiky v priestoroch toaliet (poznámka: kohútiky v priestoroch kuchyne sú v súlade s predpismi) 3. Balená voda z automatov alebo podávaná cez pult.

Metodológia

Žiadna.

Dôkazová dokumentácia

Kritériá	Predbežná fáza projektu	Záverečná fáza po výstavbe
1–2	Príslušná časť alebo ustanovenia stavebnej špecifikácie alebo zmluvy.	Formálne vyhlásenie projektového tímu, hlavného dodávateľa alebo inštalatéra príslušných systémov potvrdzujúce súlad. Správa o inšpekcii miesta BREEAM a fotografické dôkazy alebo výkresy v skutočnom stave.
3	Projektová výkresová dokumentácia.	Správa posudzovateľa BREEAM z inšpekcie na mieste a fotografický dôkaz alebo výkresy zhotovenia.

Dodatočné informácie

Relevantné definície

Legionárska choroba

Typ pneumónie spôsobenej baktériou Legionella pneumophila. Legionárskou chorobou sa ľudia nakazia vdýchnutím malých kvapôčok vody vznášajúcich sa vo vzduchu, ktoré obsahujú baktérie.

Vodný chladič v mieste použitia

Chladiče vody, ktoré sú napojené priamo na vodovodnú a kanalizačnú sieť. Chladiče vody majú dve výhody: ich vzhľad je moderný a atraktívny pre používateľov a väčšina z nich ponúka chladenú vodu aj vodu s teplotou okolia.

Pitná voda

Voda vhodná na ľudskú spotrebu, ktorá neobsahuje žiadny mikroorganizmus, parazit alebo látku v koncentrácii alebo hodnote, ktorá by predstavovala potenciálne nebezpečenstvo pre zdravie ľudí.

Vodné systémy

Na účely tejto otázky toto znamená:

1. Chladiace veže
2. Odparovacie kondenzátory
3. Systémy teplej a studenej vody pre domácnosť
4. Iné zariadenia a systémy obsahujúce vodu, ktorá môže mať teplotu vyššiu ako 20 °C a ktorá môže počas prevádzky alebo údržby uvoľňovať napríklad aerosól:
   a. Zvlhčovače a práčky vzduchu
   b. Kúpele a bazény
   c. Umývanie automobilov alebo autobusov
   d. Mokré čistiace zariadenia
   e. Vnútorné fontány a vodné zariadenia.

Ďalšie informácie

Žiadne.

Energia

Zhrnutie

Táto kategória podporuje špecifikáciu a návrh energeticky účinných riešení, systémov a zariadení budov , ktoré podporujú udržateľné využívanie energie v budove a udržateľné riadenie prevádzky budovy. V tejto časti sa hodnotia opatrenia na zlepšenie vnútornej energetickej účinnosti budovy, podporu znižovania emisií uhlíka a podporu efektívneho riadenia počas celej prevádzkovej fázy životnosti budovy .

Súhrnná tabuľka kategórií

Vydanie	Kredity	Zhrnutie kreditov
Ene 01 Zníženie spotreby energie a emisií uhlíka	13	Uznať zlepšenie energetickej hospodárnosti budovy nad rámec vnútroštátnych stavebných predpisov, pokiaľ ide o potrebu energie na vykurovanie a chladenie, spotrebu primárnej energie a emisie oxidu uhličitého. Podporovať opatrenia prijaté na zníženie dopytu po energii prostredníctvom projektu budovy a špecifikácie systémov. Predpovedať prevádzkovú spotrebu energie podľa koncového použitia a podporovať monitorovanie a riadenie rizík počas výstavby a uvádzania do prevádzky.
Ene 02a Monitorovanie energie	2	Systémy merania energie sú nainštalované tak, aby umožňovali spotrebu energie priradiť ku koncovému použitiu. Podružné merače sú určené pre oblasti s vysokou alebo premenlivou energie vrátane nájomných priestorov
Ene 02b Monitorovanie energie	2	Špecifikácia energetických zobrazovacích zariadení.
Ene 03 Vonkajšie osvetlenie	1	Špecifikácia energeticky účinných svietidiel pre vonkajšie priestory stavby a ovládacích prvkov, ktoré zabránia ich používaniu počas denného svetla alebo v čase, keď nie sú potrebné.
Ene 04 Projekt s nízkymi emisiami uhlíka	3	Analýza navrhovaného dizajnu a vývoja budovy sa vykonáva s cieľom identifikovať možnosti a podporiť prijatie pasívnych konštrukčných riešení. Bola vykonaná štúdia uskutočniteľnosti s cieľom stanoviť najvhodnejšie zdroje energie s nízkymi alebo nulovými emisiami uhlíka (LZC) dostupné na mieste alebo v jeho blízkosti pre budovu alebo projekt a sú uvedené.
Ene 05 Energeticky účinné chladiarenské sklady	3	Chladiaci systém, jeho ovládacie prvky a komponenty boli navrhnuté, nainštalované a uvedené do prevádzky v súlade s príslušnými predpismi a normami a vykazujú úsporu emisií skleníkových plynov (kg CO_2–eq) počas svojej životnosti.

Otázka	Kredity	Zhrnutie kreditov
Ene 06 Energeticky účinné dopravné systémy	3	Na určenie optimálneho počtu a veľkosti výťahov, pohyblivých schodov alebo pohyblivých chodníkov sa vykoná analýza dopytu po preprave a spôsobov používania. Špecifikujú sa energeticky účinné zariadenia.
Ene 07 Energeticky účinné laboratórne systémy	5	Zapojenie klienta s cieľom určiť požiadavky užívateľov a definovať kritériá výkonnosti laboratória s cieľom optimalizovať energetickú náročnosť laboratórnych zariadení. Špecifikácia energeticky účinných zariadení a opatrení s osvedčenými postupmi, ak je to vhodné.
Ene 08 Energeticky účinné zariadenia	2	Identifikácia zariadení budovy, ktoré spotrebúvajú energiu a majú hlavný vplyv na celkovú potrebu energie. Preukázať významné zníženie dopytu po energii.
Ene 09 Priestor na sušenie	Nie je k dispozícii	
Ene 10 Flexibilná reakcia na strane dopytu	1 vzorový kredit	Budova má jeden alebo viacero spotrebičov alebo systémov, ktoré menia svoju prevádzku v závislosti od vonkajších signálov od dodávateľov elektrickej energie.

Ene 01 Ene 01 Zníženie spotreby energie a emisií uhlíka

(všetky budovy)

Počet dostupných kreditov	Minimálne normy
13	Áno

Cieľ

Uznávať a podporovať budovy navrhnuté tak, aby sa minimalizovala prevádzková potreba energie, spotreba primárnej energie a emisie CO_2.

Kritériá hodnotenia

Táto otázka je rozdelené na tieto časti:

- Energetická hospodárnosť
  - Štandardná trasa: Používanie schváleného softvéru na výpočet energie v budovách (až 9
  - kreditov) Základná trasa: Energeticky účinné konštrukčné prvky (až 4 kredity)
- Predpovedanie prevádzkovej spotreby energie (4 kredity)
- Kritériá vzorovej úrovne (až 5 kreditov)

Na preukázanie súladu sa vyžaduje:

Energetická hospodárnosť

Až deväť kreditov - štandardná trasa (možnosť 1): Používanie schváleného softvéru na výpočet energie v budovách

1 Vypočítajte pomer energetickej hospodárnosti pre medzinárodné novostavby (EPR_{INC}). Porovnajte dosiahnuté hodnoty EPR_{INC} s referenčnými hodnotami uvedenými v Tabuľke 26 nižšie a prideľte zodpovedajúci počet kreditov BREEAM.

Tabuľka 26: Ene 01 Referenčná stupnica EPR_{INC}

		Minimálne normy	
BREEAM kredity	$_{EPR}$INC	Hodnotenie	Minimálne požiadavky
1	0,1	-	Dosiahnutie jedného alebo viacerých kreditov si vyžaduje zlepšenie minimálnej úrovne referenčnej energetickej hospodárnosti budovy, ako je definované v CN3.3 na str. 154.
2	0,2		
3	0,3		

Minimálne normy			
BREEAM	**EPR_{INC}**	**Hodnotenie**	**Kredity minimálnych požiadaviek**
4	0,4	Výborný	**Štandardná trasa (možnosť 1)**: EPR_{INC} 0,4 alebo viac. ALEBO 4 kredity za predpovedanie prevádzkovej spotreby energie (ak sa podstatne zlepšila prevádzková energetická hospodárnosť). **Základná trasa (možnosť 2):** 4 kredity
5	0,5		
6	0,6	Vynikajúci	EPR_{INC} 0,6 alebo viac. A 4 kredity za predpoveď prevádzkovej spotreby energie.
7	0,7		
8	0,8		
9	0,9		

Opis spôsobu výpočtu EPR_{INC} z modelovaného dopytu po energii, spotreby primárnej energie a emisií CO_2 v budove je uvedený v Metodológii na str. 157.

Až štyri kredity - základná trasa (možnosť 2): Energeticky účinné konštrukčné prvky

Bez NCM

Ak nie je k dispozícii žiadna NCM a projektový tím sa rozhodne pre iný než alternatívny prístup k modelovaniu (pozriCN3.2 na str. 154), energetická hospodárnosť budovy sa môže určiť pomocou Kontrolného zoznamu A5 na str. 433.

Až štyri kredity

2 Primerane kvalifikovaný inžinier pre energetické modelovanie alebo akreditovaný odborník použil Kontrolný zoznam A5 na str. 433 na určenie počtu kreditov udelených za túto otázku.

3 Primerane kvalifikovaný inžinier pre energetické modelovanie alebo akreditovaný odborník potvrdil, že položky vybrané v rámci Kontrolného zoznamu A5 sú vhodné pre daný typ budovy a miestne klimatické podmienky na udelenie až štyroch kreditov.

Predpovedanie prevádzkovej spotreby energie

Štyri kredity - Predpoveď prevádzkovej spotreby energie.

4 Zapojte príslušných členov projektového tímu do seminára o energetickom projektovaní zameraného na prevádzkovú energetickú hospodárnosť vo fáze koncepčného projektovania (pozri Metodológiu).

5 Vykonanie dodatočného energetického modelovania vo fáze návrhu a po ukončení výstavby s cieľom získať údaje o predpokladanej prevádzkovej spotrebe energie (pozri Predpovedanie spotreby prevádzkovej energie na strane 158).

6 Uveďte predpokladané cieľové hodnoty spotreby energie podľa koncového použitia, predpokladov projektu a vstupných údajov (s odôvodnením).

7 Vykonajte posúdenie rizík s cieľom poukázať na všetky významné projektové, technické a procesné riziká, ktoré by sa mali monitorovať a riadiť počas procesu výstavby a uvedenia do prevádzky.

Kritériá vzorovej úrovne

V nasledujúcom texte sú uvedené kritériá na získanie až piatich príkladných kreditov za túto otázku BREEAM:

Až tri vzorové kredity - Prekročenie nulového čistého regulovaného uhlíka

8 Budova dosiahne deväť kreditov v rámci štandardnej trasy (možnosť 1).

9 Budova bola modelovaná štandardnou cestou (možnosť 1) a modelovanie dokazuje, že 100 % spotreby energie na prevádzku budovy plus percento požiadaviek na spotrebu energie zariadenia budovy sa vyrába prostredníctvom uznaných technológií LZC na mieste alebo v blízkosti miesta s priamym fyzickým pripojením k budove (pozri CN3.7 na str. 155).

10 Udeľte vzorové kredity na základe percentuálneho podielu spotreby energie zariadenia, ktorý je pokrytý uznanými zdrojmi LZC (pozri Tabuľku 27 nižšie).

Tabuľka 27: Vzorové výkonnostné kredity za Prekročenie nulového čistého regulovaného uhlíka

Vzorové kredity	Percento spotreby energie zariadenia, ktoré je pokryté zdrojmi LZC
1	≥ 10
2	≥ 50
3	> 100%

Dva vzorové kredity - fáza po začatí používania

11 Dosiahnite maximum dostupných kreditov v Ene 02a Monitorovanie energie na str. 165 alebo Ene 02b Monitorovanie energie na str. 172. Okrem toho musia predškolské zariadenia, základné školy, súdy, väznice a viacbytové budovy spĺňať požiadavky druhého kreditu na čiastkové meranie podľa funkčných alebo nájomných plôch.

12 Klient alebo nájomca budovy sa zaviaže zaplatiť za etapu po kolaudácii. To si vyžaduje vymenovanie posudzovateľa na a podávanie správ o skutočnej spotrebe energie v porovnaní s cieľmi stanovenými v kritériu 6.

13 Energetický model (kritérium 5) sa uloží, aby sa mohol po obsadení znovu spustiť. To sa dá dosiahnuť buď:
13.a Odovzdaním modelu spoločnosti BRE.
13.b Model si ponecháva vlastník budovy alebo uvedená tretia strana.

Kontrolné zoznamy a tabuľky

Žiadne.

Poznámky o súlade

Ref	Podmienky	Popis
Plášť a jadro (len nebytové a bytové zariadenia)		
CN1	Príslušné kritériá hodnotenia	**Energetická hospodárnosť, kritérium 1** Len plášť: Vypočítajte pomer energetickej výkonnosti len pre dopyt po energii na vykurovanie a chladenie budovy (EPR $_{ED}$). Použite dosiahnutý EPR $_{ED}$ ako EPR $_{INC}$ v Tabuľke 26 na str. 150. **Predpoveď prevádzkovej spotreby energie, kritériá 4 až 7** Len plášť: Tieto kritériá sa neuplatňujú. Len plášť a jadro: Platia všetky hodnotiace kritériá týkajúce sa typu a funkcie budovy. Pozri Prílohu D - Hodnotenie plášťa a jadra projektu na str. 4099 v tomto dokumente schémy, kde nájdete ďalší popis vyššie uvedených možností.
CN1.1	Príslušné kritériá hodnotenia - Len plášť a plášť a jadro	Ak nie je známa účinnosť služieb budovy, mali by sa použiť minimálne normy energetickej účinnosti alebo záložné úrovne požadované príslušnými národnými stavebnými predpismi. Môže to nastať napríklad vtedy, keď služby budovy nie sú v kompetencii projektanta hrubej stavby .
CN1.2	Dohoda o ekologickom vybavení	Pri modelovaní hodnotení len plášťa a plášťa a jadra sa zvyčajne používajú najhoršie predpoklady pre výkonnosť špekulatívnych systémov, pri ktorých nie je známa ich výkonnosť. Tieto predpoklady sú založené na minimálnych normách energetickej účinnosti definovaných vo vnútroštátnych stavebných predpisoch alebo na údajoch o najhoršom prípade. Ak sa použije Dohoda o zelenom vybavení na strane 162 , tieto najhoršie predpoklady možno nahradiť špecifikáciami výkonu požadovanými v dohode o vybavení. Dohoda musí byť zmluvne záväzná. Všetky špekulatívne oblasti, na ktoré sa dohoda nevzťahuje, musia stále používať najhoršie predpoklady.
CN1.3	Iba plášť - Inštalácia služieb budovy	V projektoch, ktoré sa týkajú len plášťa, sa aj v prípade, že nainštalovaný systém (systémy) zlepší primárnu spotrebu a/alebo ukazovatele CO_2EPR, použije len ukazovateľ dopytu po EPR. (KBCN-00078)
CN1.4	Iba plášť - bez merania dopytu po energii	V prípade budov iba s plášťom sa hodnotí len ukazovateľ dopytu po energii. Ak však NCM nie je schopný poskytnúť metriku dopytu po energii, môžu sa namiesto nej použiť dostupné ostatné metriky. (KBCN0576)
Bytové - čiastočne a úplne vybavené		

Ref	Definície pojmov	Popis
CN2	Príslušné hodnotiace kritériá - Obydlia pre jednu rodinu a obydlia pre viaceré rodiny	Obidve možnosti: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy. Pozri Prílohu E – Uplatniteľnosť BREEAM New Construction na obydlia pre jednu rodinu a obydlia pre viaceré rodiny, čiastočne a úplne vybavené na str. 412, kde nájdete podrobnejší popis možností hodnotenia bytových domov.
Všeobecné		
CN3	Prístavby k existujúcim budovám	V prípade prístavby, ktorá využíva služby existujúcej budovy, musí byť energetické modelovanie a percento zlepšenia založené na štruktúre budovy prístavby a službách budovy , ktoré budú slúžiť prístavbe. To zahŕňa všetky existujúce, spoločné a nové zariadenia, ktoré budú slúžiť rozšíreniu. Energetické modelovanie nemusí zohľadňovať existujúcu štruktúru budovy v prípade, že bude mimo rozsahu hodnotenia BREEAM. Nemusí brať do úvahy ani existujúce systémy služieb, ktoré nezabezpečujú rozšírenie.
CN3.1	Vhodne kvalifikovaný inžinier pre modelovanie energie alebo akreditovaný odborník	Ak národná metodika výpočtu (NCM) vyžaduje, aby výpočty energetickej hospodárnosti vykonávali akreditovaní odborníci, títo akreditovaní odborníci musia preukázať aj súlad s touto otázkou BREEAM. Ak NKM nevyžaduje akreditovaných odborníkov alebo sa používa alternatívny schválený softvér na výpočet energie v budove , potom sa primerane kvalifikovaný energie modelovanie inžinier alebo akreditovaný profesionálny musí vykonať modelovanie.
CN3.2	Hierarchia možností	Ak v krajine hodnotenia existuje NCM, na preukázanie súladu s touto otázkou sa musí použiť štandardný postup (možnosť 1). Ak neexistuje národná metóda výpočtu (NCM) ALEBO ak NCM neumožňuje projekčnému tímu vykonať analýzu takých otázok, ako je osvetlenie alebo výroba energie z obnoviteľných zdrojov, projekčný tím môže vykonať dôkladnejšiu analýzu energetickej hospodárnosti budovy pomocou alternatívneho schváleného softvéru na výpočet energie v budove (pozri ďalej CN3.3). Základný postup (možnosť 2) je k dispozícii pre projekčné tímy, ak sa rozhodnú nevykonať energetické modelovanie svojej budovy a ak nie je zavedený NKM. Keďže sa však uprednostňuje energetický model ako spôsob preukázania, že budova je energeticky efektívna, základným spôsobom je možné získať maximálne 4 kredity.
CN3.3	Generovanie referenčnej budovy	Referenčná budova sa vytvorí buď pomocou: 1. Miestne stavebné predpisy alebo normy. ALEBO 2. Príloha G Metóda hodnotenia výkonnosti podľa normy ASHRAE 90.1 (pre všetky budovy okrem nízko podlažných obytných budov) alebo normy ASHRAE 90.2 (pre nízko podlažné obytné budovy). ALEBO 3. Referenčná budova, ako je definovaná v britskom NCM. Táto možnosť je k dispozícii iba v prípade, že sa budova nachádza v miernom podnebí (klimatická zóna podľa Köppen Geiger Cfb). Možnosti 2 a 3 uvedené vyššie sú k dispozícii iba v krajinách, v ktorých je miestna regulácia menej prísna ako Príloha G k energetickej norme ASHRAE 90.1 alebo britský NCM.

Ref	Definície pojmov	Popis
CN3.4	Metriky výkonnosti	Všetky tri ukazovatele výkonnosti - dopyt, spotreba primárnej energie a emisie CO_2 - vygenerované schváleným softvérom na modelovanie budov by sa mali zadať do nástroja na hodnotenie a podávanie správ BREEAM na výpočet skóre Ene 01, a to aj v prípade, že v krajine hodnotenia neexistujú žiadne povinné požiadavky týkajúce sa konkrétneho ukazovateľa. Ak napríklad miestne stavebné predpisy stanovujú cieľ len v súvislosti so spotrebou primárnej energie, ale schválený softvér uvádza aj údaje o spotrebe energie, v nástroji na hodnotenie a podávanie správ BREEAM by sa mali uvádzať údaje o spotrebe primárnej energie aj o spotrebe energie.
CN3.5	Krajiny s NCM, ktoré neuvádzajú správy o všetkých troch ukazovateľoch výkonnosti	Výstupné dokumenty vygenerované schváleným softvérom nemusia obsahovať všetky tri ukazovatele výkonnosti, ktoré vyžaduje BREEAM. V takom prípade je potrebné do nástroja na hodnotenie a podávanie správ zadať všetky dostupné metriky.
CN3.6	Vnútorné osvetlenie sa nevypočítava pomocou schváleného softvéru na výpočet energie budovy	Ak vnútorné osvetlenie nie je zahrnuté do modelových výpočtov, kredity dostupné z modelovania sa znížia a zvyšné kredity sa pridelia za splnenie kritérií osvetlenia v rámci kontrolného zoznamu A5 na strane 433 takto: 1. Pre obytné budovy bude k dispozícii sedem kreditov, pričom až dva dodatočné kredity budú k dispozícii za splnenie kritérií pre nebytové osvetlenie v Kontrolnom zozname A5. a. Jeden kredit za splnenie kritérií 3 a 4. b. Dva kredity za splnenie kritérií 3 až 6. 2. Pre nebytové budovy bude k dispozícii osem kreditov, pričom jeden kredit navyše bude k dispozícii za splnenie kritérií pre osvetlenie nebytových budov v rámci Kontrolného zoznamu A5 (kritériá 1 a 2).
CN3.7	Budova hodnotená ako súčasť väčšieho projektu	Ak je posudzovaná budova súčasťou väčšej stavby a buď nová, alebo existujúca Uznané nízka alebo nulové emisie uhlíka (LZC) technológií je zabezpečené pre celú lokalitu, potom množstvo výroby energie LZC započítané v tejto otázke a následné úspory emisií CO_2 by mali byť úmerné spotrebe energie v budove v porovnaní s celkovou spotrebou energie pre lokalitu. Pozri časť LZC na mieste - zdieľané pripojenie celého miesta na str. 159.
CN3.8	Spotreba energie a emisie uhlíka z neupravených priestorov	Ak hodnotenie obsahuje kombináciu upravených a neupravených priestorov, neupravené priestory sa môžu vylúčiť a výkonnosť vychádza len z upravených priestorov. Ak je celé posúdenie neupravené, musí sa posúdiť celá konštrukcia (konštrukcie) na základe toho, že táto otázka je rozhodujúca pre certifikáciu. (KBCN00049)
CN3.9	Časti budovy, na ktoré sa nevzťahujú národné tepelné predpisy	Ak sa na časti hodnotenej budovy nevzťahujú národné tepelné predpisy, mali by sa z výpočtu EPR vynechať. (KBCN0534)

Ref	Definície pojmov	Popis
CN3.10	Posúdenie energetickej hospodárnosti časti celej budovy	Ak sa hodnotenie týka len časti celej budovy, hodnotenie energetickej hospodárnosti musí byť reprezentatívne pre hodnotenú časť budovy. Jednoduché hodnotenie energetickej hospodárnosti celej budovy by nebolo v súlade s požiadavkami, najmä ak by sa nehodnotené časti budovy používali na iné účely. (KBCN0596)
Špecifické pre druh budovy		
CN4	Obytné budovy - Postup výpočtu pre viacbytové domy	Výpočet Ene 01 by sa mal vyplniť pre každý byt alebo každý typ energie alebo každú energetickú skupinu (pozri CN4.1 nižšie). Pomer energetickej hospodárnosti (EPRINC) by sa potom mal spriemerovať pre celú stavbu pomocou postupu výpočtu uvedeného v Metodológii na nasledujúcej strane buď pre štandardnú trasu (možnosť 1) alebo pre základnú trasu (možnosť 2). Ak sa odporúčaná metóda priemerovania považuje za nevhodnú pre schválenú energetickú metodológiu budovy, môže byť schválený nový výpočet; obráťte sa na spoločnosť BRE Global, ktorá vám poskytne poradenstvo. Príkladom je, keď NCM zohľadňuje spotrebu energie v spoločných priestoroch ako aj v jednotlivých bytoch.
CN4.1	Obytné budovy - energetický typ	Súbor obytných budov na stavbe je rovnakého „energetického typu“, ak majú rovnaké výstupy schváleného softvéru na výpočet energie v budove pre údaje o energetickej hospodárnosti, ako je uvedené v Metodológii na titulnej strane. Budú vykazovať každý z nasledujúcich znakov: 1. Približne rovnaká veľkosť, stavebný tvar a konštrukčné detaily. 2. Rovnaké vykurovanie, systém teplej vody a ovládacie prvky. 3. Rovnaká orientácia a úroveň zatienenia alebo krytia. 4. Rovnaká predpokladaná alebo skutočná priepustnosť vzduchu a systém vetrania.
CN4.2	Obytné budovy - energetické skupiny	Energetické skupiny sa uplatňujú len vtedy, ak budova má viacero bytov, apartmánov v rámci toho istého plášťa budovy alebo susediacich domov. Údaje o výkonnosti uvedené v Metodológii na titulnej strane možno spriemerovať pre celú budovu za predpokladu, že sa v celej budove použije rovnaká stratégia služieb. Tieto domy sú definované ako energetická skupina: 1. V prípade rôznych stratégií služieb (vrátane poskytovania obnoviteľných energetických systémov), by mali byť byty zoskupené podľa stratégie 2. S každou energetickou skupinou sa musí zaobchádzať samostatne na účely hodnotenia a na výpočet percentuálneho zlepšenia sa používa priemerná skutočná miera emisií z budovy a referenčná miera emisií z budovy. Posudzovateľ BREEAM rozhoduje o tom, či použije alebo nepoužije energetické skupiny metódu priemerovania alebo na dokončenie výpočtu pre každý jednotlivý byt. Poznámka: Toto pravidlo priemerovania sa nemôže uplatňovať na obydlia pre jednu rodinu.

Ref	Definície pojmov	Popis
CN4.3	Nebytové budovy - Energetické modelovanie, používanie budovy podľa normy BREEAM a nájomné zmluvy	Legislatívne kritériá pre energetické modelovanie sa môžu líšiť v závislosti od veľkosti budovy, jej využitia, služieb a nájomného usporiadania. V niektorých prípadoch sa modelovanie môže uskutočniť pre celú budovu, v iných prípadoch sa modelovanie môže uskutočniť pre každú jednotlivú jednotku alebo nájomnú plochu v rámci budovy. Rozsah hodnotenia BREEAM sa zvyčajne vzťahuje na celú budovu bez ohľadu na to, či sa táto budova skladá z viacerých jednotiek, ktoré sa majú prenajímať. Ak sa pre každú jednotku vyžaduje energetické modelovanie, pozri Ene 01 Zníženie spotreby energie a emisií uhlíka na str. 150. Ak stavba má podmienené spoločné priestory alebo priestory prenajímateľa, plocha týchto priestorov, ak nie je zohľadnená inak, by sa mala rozdeliť a priradiť k jednotlivým jednotkám. Podiel spoločných plôch priradených ku každej jednotke musí zodpovedať pomeru každej jednotky k celkovej ploche všetkých jednotiek. Do hodnotenia Ene 01 musia byť zahrnuté všetky jednotky, vykurovacie systémy a spoločné priestory v rámci hodnotenej budovy.
CN4.4	Maloobchod - len plášť - zasklenie nie je v rozsahu	V prípade, že obvodový plášť maloobchodnej budovy nie je dokončený a zasklenie zabezpečí budúci nájomca (nájomcovia), sú k dispozícii dve možnosti: 1. Postupujte podľa CN1.2 na str. 153. 2. Hodnotenie môže vychádzať z najhorších prípustných parametrov podľa príslušných národných stavebných predpisov. (KBCN0937)

Metodológia

Ene 01 Metodológia výpočtu s použitím štandardnej trasy (možnosť 1)

Metodológia výpočtu EPR_{INC} zohľadňuje pri určovaní počtu kreditov dosiahnutých v tejto otázke tri ukazovatele výkonnosti modelovanej budovy. Tieto tri metriky sú:

1. Dopyt po energii na vykurovanie a chladenie budovy
2. Spotreba primárnej energie v budove
3. Celkové výsledné emisie CO_2-eq.

Tieto tri ukazovatele skutočnej výkonnosti modelovanej budovy sa porovnávajú s príslušnou národnou normou, ktorá je v súlade so stavebnými predpismi (t. j. s východiskovou hodnotou), a každý z nich sa vyjadruje ako percentuálne zlepšenie. Percentuálne zlepšenia sa potom porovnávajú s modelovaným stavom budov a prepočítavajú sa na pomer výkonnosti pre každú metriku. Tieto pomery sa pre každú metriku vážia a sčítajú, aby sa určil celkový pomer energetickej hospodárnosti (EPR_{INC}).

Výpočet sa určuje na základe nasledujúcich údajov o výkonnosti:

- Podlahová plocha budovy (m^2)
- Dopyt po energii na vykurovanie a chladenie referenčnej budovy (MJ/m^2)
- Skutočný dopyt po energii na vykurovanie a chladenie budovy (MJ/m^2)
- Referenčná spotreba primárnej energie budovy (kWh/m^2)
- Skutočná spotreba primárnej energie budovy (kWh/m^2)
- Referenčná miera emisií budovy (kg CO_2-eq/m^2)
- Skutočná miera emisií z budovy (kg CO_2-eq/m^2)

Údaje o energetickej hospodárnosti sa získavajú z ročného energetického modelovania špecifikovaných alebo navrhnutých regulovaných pevných zariadení a konštrukcie budovy, ktoré vykonáva akreditovaný energetický posudzovateľ alebo člen projekčného tímu pomocou schváleného softvéru na výpočet energie v budove.

Údaje potrebné na energetické modelovanie, ktoré sú potrebné na určenie energetickej hospodárnosti budovy, sa získavajú zo softvéru na energetické modelovanie, ktorý je v súlade s národnou výpočtovou metódou a ktorý projektový tím používa na preukázanie súladu s predpismi o stavebníctve. Tieto údaje sa potom zadajú do kalkulačky BREEAM Ene 01, aby sa určil EPR_{INC} a počet dosiahnutých kreditov. Kalkulačka Ene 01 sa nachádza v nástroji na hodnotenie a podávanie správ BREEAM v časti Energia.

Metodológia je podrobne popísaná v Usmernení 48, ktoré si môžete prevziať z webovej stránky BREEAM.

Výpočet EPR v prípade viacerých výstupov modelovania

Ak sa pre vývoj, ktorý je registrovaný ako jedno hodnotenie, vytvorí viac ako jeden modelový výstup, na výpočet počtu kreditov, ktoré sa majú udeliť, by sa mal použiť plošný vážený priemer. Toto neplatí, ak sa použije prístup „podobných budov“.

Každý z výstupov energetickej hospodárnosti z dokumentov (skutočné kg CO_2-eq/m², referenčné kg CO_2-eq/m² atď.) sa musí vážiť podľa plochy, aby sa vytvorili priemerné hodnoty vážené podľa plochy, ktoré sa zadajú do nástroja na hodnotenie a podávanie správ. Pri použití tejto metódy priložte ako podporný dôkaz svoje výpočty a výstupy váženia plochy.

Predpoveď prevádzkovej spotreby energie

Usmernenie k predpovedi spotreby energie a po ukončení používania definuje metodológiu, ktorá sa má použiť na modelovanie spotreby energie vo fáze projektovania a následné overenie počas používania na získanie kreditov Ene 01. Cieľom metodológie je motivovať k lepšiemu pochopeniu techník energetického modelovania a odmeniť presnejšie predpovede spotreby energie v počiatočných fázach, aby sa podporil lepší projekt a výstavba nových budov.

Vhodne kvalifikovaný pracovník, ktorý sa zaoberá energetickým modelovaním, musí namodelovať niekoľko scenárov vytvárajúcich rozsah predpokladanej spotreby energie na základe posúdenia rizík využívania energie v budove.

Tieto scenáre budú zohľadňovať:

- Počasie
- Prevádzkové hodiny systémov
- Počet hodín obsadenosti
- Faktory riadenia

Viac informácií nájdete v Usmernení č. 32 *Energetické predpovede a hodnotenie po ukončení užívania* na webovej stránke BREEAM. Účelom tohto usmernenia je opísať metodiku predpovedania energetickej hospodárnosti a následného monitorovania po kolaudácii. Týka sa to najmä kritérií predpovedania prevádzkovej spotreby energie (štyri kredity) a kritérií po ukončení užívania (dva vzorové kredity).

Odhad dopytu po energii zariadení pre systémy alebo procesy v budovách

Ak sa o kredity požiadalo za predpovedanie prevádzkovej spotreby energie a vykonalo sa prevádzkové energetické modelovanie (kritérium 5), výstup tohto modelovania by sa mal použiť na odhad dopytu po energii zariadení.

Ak takéto výstupy nie sú k dispozícii, uplatňujú sa tieto usmernenia:

V súčasnosti neexistuje žiadna štandardná alebo národná metodika výpočtu na modelovanie energetickej náročnosti zariadení v budove. Na preukázanie súladu s kritériami „vzorovej úrovne“ sa môže modelovaná prevádzková spotreba energie budovy použiť ako náhradný ukazovateľ jeho dopytu po energii zariadení, t. j. energia na zariadenie sa rovná 100 % energie na službu. Hoci tento prístup nie je presný, umožňuje BREEAM hodnotiť a udeľovať kredity budovám, ktoré spĺňajú určitú časť svojich potrieb energie pre budovu, tieto údaje možno presne predpovedať a použiť na určenie percentuálneho podielu potrieb energie zariadenia, ktoré sa spĺňajú prostredníctvom obnoviteľných zdrojov energie. Dopyt po energii zariadení možno odhadnúť na základe nameraných údajov z podobného alebo rovnakého typu budovy s rovnakým neregulovaným zaťažením systému alebo procesu alebo pomocou metodológie popísanej v dokumente CIBSE TM54 „Hodnotenie prevádzkovej energetickej hospodárnosti budov vo fáze projektovania“, 2013.

Seminár o energetickom projektovaní zameraný na prevádzkovú energetickú výkonnosť

Seminár o energetickom projektovaní by sa mal zamerať na stanovenie cieľovej energetickej hospodárnosti budovy a na zváženie, ako sa bude udržiavať plánovaná energetická hospodárnosť budovy od projektovania až po používanie a meranie hodnotenia. Malo by tiež zvážiť, ako bude energetická hospodárnosť budovy ovplyvnená budúcimi poveternostnými podmienkami, zmenami v používaní a odchýlkami v očakávanom používaní budovy, a zvážiť odolnosť systémov budovy.

Fáza po začatí používania

Ak sa dosiahnu vzorové kredity a bude nasledovať fáza po začatí používania, vlastník budovy bude musieť:

- Uviesť spotrebu energie za prvých 12 mesiacov bežného používania pre všetky relevantné koncového použitia.
- Uveďte spotrebu energie za prvých 12 mesiacov, rozdelenú do mesačných intervalov, pre všetky relevantné konečné použitia (pozri Človek 05 Následná starostlivosť na strane 74).
- Porovnajte nahlásené údaje o spotrebe energie s cieľmi stanovenými v kritériu 6 na str. 151.
- Identifikujte príčiny nezrovnalostí a potrebné nápravné opatrenia.

LZC na mieste - zdieľané pripojenie celého miesta

Aby bola technológia s nízkymi alebo nulovými emisiami uhlíka (LZC) uznaná v rámci BREEAM, musí mať priame fyzické prepojenie s hodnotenou budovou.

ALEBO

Kde sa nachádza technológia LZC:

- na tom istom mieste,
- je vo vlastníctve a správe tej istej organizácie ako hodnotená budova a ak nie je
- praktické fyzicky pripojiť hodnotiť budovu k systému

Je prijateľné priradiť energiu vyrobenú touto technológiou k posudzovanej budove proporcionálne ako výpočet predpokladanej spotreby energie budovy v porovnaní s celkovou spotrebou energie celej lokality.

Ak chcete prideliť elektrinu z obnoviteľných zdrojov podľa pomernej spotreby, postupujte podľa týchto krokov:

1. Získajte celkové ročné množstvo elektrickej energie z obnoviteľných zdrojov energie vyrobenej na mieste.
2. Vylúčte všetku elektrinu z obnoviteľných zdrojov, ktorá bola vyvezená do siete.
3. Určite príslušnú spotrebu elektrickej energie všetkých budov na celom mieste (predpokladanú pre novostavby, meranú pre existujúce budovy).

Ak chýbajú údaje o spotrebe, elektrina z obnoviteľných zdrojov sa nesmie priradiť k hodnotenej budove. V tomto prípade sa musí predpokladať, že všetka spotrebovaná elektrina pochádza zo siete.

Dôkazová dokumentácia

Kritériá	Predbežná fáza projektu	Záverečná fáza po výstavbe
1	Kópia správy a výstupných dokumentov vytvorených schváleným softvérom pre hodnotenú budovu vo fáze projektovania, ktorá znázorňuje: 1. Vlastná budova a referenčné údaje týkajúce sa výkonnosti budovy. 2. Názov schváleného softvéru použitého na modelovanie na výpočet energetickej hospodárnosti 3. Potvrdenie odborných znalostí a skúsenosti osoby vykonávajúcej modelovanie v súlade s požiadavkami miestnych stavebných predpisov A V prípade potreby list od osoby vykonávajúcej modelovanie potvrdzujúci: 4. Údaje použité na modelovanie referenčnej budovy sa preberá z miestnych stavebných predpisov, z Príloha G normy ASHRAE 90.1 alebo z britskej Národnej metodológie výpočtu. Výstupné dokumenty musia vychádzať z fáza analýzy „podľa projektu“.	Dokumentácia tretej strany, a to nasledovne: 1. Skutočný certifikát energetickej hospodárnosti budovy a výstupné dokumenty schváleného softvéru. Vyžaduje sa to ako súčasť preukázania, že budova v stave, v akom je postavená, spĺňa miestne stavebné predpisy, prílohu G normy ASHRAE 90.1 alebo britskú národnú metodiku výpočtu. 2. Výkresy postavenej budovy, ktoré to dokazujú, že špecifikácia použitá a modelovaná vo fáze projektu zodpovedá špecifikácii dokončenej budovy. 3. Výpočty spojené s priemerovaním, keď sa vyskytlo. Koncové hodnotenie musí zohľadňovať všetky zmeny špecifikácie počas výstavby.
2–3	Vyplnená kópiu Kontrolného zoznamu A5. Príslušné ustanovenia špecifikácie potvrdzujúce podrobnosti o dodržiavaní jednotlivých požiadaviek. List od inžiniera zodpovedného za zázemie budovy potvrdzujúci, že položky vybrané z kontrolného zoznamu sú vhodné pre typ budovy a miestne klimatické podmienky.	Výkresy v skutočnom stave a špecifikácie, ktoré preukazujú súlad s kritériami.
4	Zápisnica zo seminára, dohodnuté výsledky.	Podľa predbežnej fázy návrhu.
5–7	Predpokladané hodnoty spotreby energie, predpoklady projektu, vstupné údaje a posúdenia rizík, ako je podrobne uvedené v usmerneniach k energetickým predpovediam a po ukončení používania, ktoré sú k dispozícii na webovej stránke BREEAM. Potvrdenie o kvalifikácii a skúsenostiach vhodne kvalifikovaného energetického modelára.	Podľa predbežnej fázy návrhu. Ak sa vo fáze po začatí používania zmenili predpoklady projektu a vstupné údaje, malo by sa energetické modelovanie vykonať znova, aby sa zohľadnili tieto zmeny.

Kritériá	Predbežná fáza projektu	Záverečná fáza po výstavbe
8–10	Kópia správy, výpočtov alebo výstupov od výrobcu, dodávateľa, inžiniera alebo softvérového modelovania, ktoré potvrdzujú nasledovné: 1. Celková výroba energie z uznaných zdrojov LZC (kWh/rok) 2. Zdroje energie LZC 3. Vypočítaný odhad spotreby „energie zariadenia“ zo systémov alebo procesu (kWh/rok). 4. Vypočítaný odhad vyvezeného prebytku energie.	Podľa požiadaviek kritérií 1 až 3 a podľa predbežnej fázy projektovania.
11–13	Záväzok klienta prejsť do fázy po začatí používania a nahlásiť spotrebu energie. Ak je energetický model zachovaný zo strany vlastníka budovy alebo tretej strany, údaje o organizácii a konkrétne odkazy na energetický model.	Podľa predbežnej fázy návrhu.

Dodatočné informácie

Relevantné definície

Skutočná miera emisií z budovy

Ide o predpokladanú mieru emisií CO_2 v budove, ktorá je vyjadrená v kg CO_2-eq/m^2/rok a vypočítaná schváleným softvérom na výpočet energie v budove.

Schválený softvér na výpočet energie v budovách

Softvér schválený na účely preukázania súladu s požiadavkami na energetickú účinnosť a emisie uhlíka podľa stavebných predpisov (a následne súladu so smernicou o energetickej hospodárnosti budov, EPBD). V krajinách s existujúcou národnou metodológiou výpočtu (NCM) môžu byť nástroje schválené na používanie v rámci NCM automaticky schválené ako softvér na energetické modelovanie budov.
Tieto budú potvrdené spoločnosťou BRE v rámci procesu schvaľovania noriem a zoznamu váh. Ak chce projektový tím použiť na hodnotenie tejto otázky alternatívny modelovací softvérový balík, vyžiadajte si od spoločnosti BRE Global schválenie energetického softvéru, aby ste zistili, či softvérový balík spĺňa minimálne požiadavky z hľadiska minimálnych možností, konštrukčných funkcií a výsledkov testovania. Ak sú tieto minimálne požiadavky splnené, pred použitím balíka na účely preukázania súladu s Ene 01 sa bude vyžadovať schválenie od spoločnosti BRE Global (prostredníctvom procesu zoznamu schválených noriem a váh).

Stavebné predpisy

Stavebné predpisy stanovujú normy pre projektovanie a výstavbu budov s cieľom zaistiť bezpečnosť a zdravie ľudí v týchto budovách alebo v ich blízkosti. Zahŕňajú aj požiadavky na zabezpečenie úspory paliva a energie a zabezpečenie zariadení pre prístup a pohyb osôb vrátane osôb so zdravotným postihnutím v budovách.

Priame fyzické pripojenie k budove

Aby bolo možné túto otázku riešiť, technológia LZC musí mať priame pripojenie k budove (v prípade elektrickej energie sa to často označuje ako usporiadanie súkromného vedenia). Ak sa vyrobí elektrická energia, ktorá prevyšuje okamžitý dopyt budovy, môže sa táto elektrina dodať späť do národnej siete. Uhlíkový prínos spojený s akoukoľvek elektrickou energiou dodanou do siete týmto spôsobom možno priradiť len k

jednotlivým zariadeniam alebo budove. V prípadoch, keď je budova zásobovaná zo spoločného zariadenia, nie je možné prideliť žiadnu uhlíkovú výhodu budovám, ktoré nie sú pripojené na spoločné zariadenie.

Dynamický simulačný model (DSM)

Softvérový nástroj, ktorý modeluje energetické vstupy a výstupy pre rôzne typy budov v priebehu času.

Dopyt po energii

Energia budovy určená na koncové použitie v budove, ako je vykurovanie priestorov, príprava teplej vody, chladenie priestorov, osvetlenie, výkon ventilátorov a čerpadiel. Energetické nároky sú rovnaké ako zaťaženie miestnosti. Jeden z výstupov z modelovania sa týka len dopytu po energii na vykurovanie a chladenie, nie iných spôsobov využívania energie v budovách.
Dopyt po energii na vykurovanie a chladenie ovplyvňujú faktory vrátane tepelných strát stavebnej konštrukcie, priepustnosti vzduchu, zasklenia a tienenia.

Pomer energetickej náročnosti pre International New Construction (EPRINC)

Metrika, ktorá je jedinečná pre BREEAM a vypočítava sa pomocou kalkulačky BREEAM Ene 01 s použitím výstupov zo schváleného softvéru na výpočet energie v budove. Je to pomer, ktorý definuje výkonnosť hodnotenej budovy z hľadiska jej dopytu po energii na služby, spotreby primárnej energie a emisií CO_2-eq. Toto meradlo výkonnosti sa používa na určenie počtu kreditov Ene 01, ktoré budova získa v hodnotení BREEAM. Popis spôsobu definovania a výpočtu (EPR_{INC}) je uvedený v Metodológii na str. 157.

Energia zariadení

Spotreba energie v budove vyplývajúca zo systémov alebo procesov v budove, iná ako energia služieb (pozri definíciu nižšie). Môže to zahŕňať spotrebu energie zo systémov, ktoré sú neoddeliteľnou súčasťou budovy a jej prevádzky, napr. výťahy, pohyblivé schody, chladiace systémy, potrubné digestory; alebo spotrebu energie zo zariadení súvisiacich s prevádzkou, napr. servery, tlačiarne, počítače, mobilné digestory, varné a iné spotrebiče.

Zmluva o ekologickom vybavení

Zmluva o ekologickom vybavení je formálna, právne záväzná dohoda medzi stavebníkom alebo vlastníkom budovy a nájomcami. Zmluva o ekologickom vybavení (alebo „zelené“ doložky či časti v nájomnej zmluve) tak môže byť dôkazom na preukázanie súladu s príslušnými kritériami BREEAM v priebežnej fáze projektovania a v koncovej fáze hodnotenia po ukončení výstavby. Tá zo zmluva by mala odkazovať na požiadavky špecifikácie alebo úrovne, ktoré sú deklarované a definované v tejto technickej príručke.

Cieľom BREEAM je podporiť vzájomne výhodný vzťah medzi investorom alebo vlastníkom budovy a jej budúcimi nájomníkmi, aby sa zabezpečilo, že úplne vybavená prevádzková budova bude spĺňať najvyššie možné environmentálne normy. Ak sa ako dôkaz predloží zmluva, ktorá zaväzuje nájomcu, že zariadenie bude spĺňať kritériá tohto vydania BREEAM, je možné udeliť kredity .

Národná metodológia výpočtu (NCM)

Národná metodológia výpočtu (NCM) umožňuje kvantifikovať prevádzkovú spotrebu energie v budovách a emisie CO_2-eq vyplývajúce zo služieb v budovách alebo zo systémov a vlastností budov. V rámci Európy je NCM krajiny metodológiou používanou na preukázanie súladu so smernicou EÚ o energetickej hospodárnosti budov .

NZC v blízkosti miesta

Uznávaný zdroj výroby energie LZC, ktorý sa nachádza v blízkosti miesta hodnotenej budovy. Zdroj s najväčšou pravdepodobnosťou poskytuje energiu pre celú miestnu komunitu budov alebo jej časť, vrátane hodnotenej budovy, napr. decentralizovaná výroba energie napojená na komunitnú tepelnú sieť alebo obnoviteľné zdroje elektrickej energie pripojené prostredníctvom súkromného vedenia.

LZC na mieste

Uznávaný zdroj výroby energie LZC, ktorý sa nachádza na tom istom mieste ako hodnotená budova.

Spotreba primárnej energie

Meria sa ním obsah primárnej energie z dodaného paliva alebo iných zdrojov energie. Zohľadňuje energiu spojenú s výrobou palív, transformáciou energie (napr. výroba elektriny) a distribučných

procesov, vrátane strát, okrem vlastného energetického obsahu paliva alebo zdroja energie.

Uznané technológie s nízkymi alebo nulovými emisiami uhlíka (LZC)

Technológie, ktoré môžu prispieť k dosiahnutiu požiadaviek tejto otázky, musia využívať energiu z týchto zdrojov:

- Vietor
- Slnečné žiarenie (solárne tepelné a fotovoltaické)
- Geotermálne a hydrotermálne zdroje energie
- Vodná energia
- Biomasa z odpadu a biopalivá získané zo surovín druhej generácie z biomasy alebo z odpadových zdrojov vrátane skládkového plynu a plynu z čističiek odpadových vôd (pozriCN5.7 a CN5.8 v Ene 04 Projekt s nízkymi emisiami uhlíka)
- Odpadové teplo (pozri CN5.4 v Ene 04 Projekt s nízkymi emisiami uhlíka)
- Teplo alebo elektrina zo spaľovania odpadu (pozri CN5.6 v Ene 04 Projekt s nízkymi emisiami uhlíka)

Referenčná budova

Hypotetická budova rovnakej veľkosti, tvaru, orientácie a zatienenia ako skutočná budova, s rovnakými činnosťami, zónami a typmi systémov a vystavená rovnakým poveternostným údajom, ale s vopred definovanými vlastnosťami špecifikovanými pre stavebný materiál, vybavenie a služby.

Referenčná miera emisií z budovy

Referenčná miera emisií z budovy je minimálna požiadavka na energetickú hospodárnosť novej budovy (kg CO_2-eq/m²/rok), ako je definovaná v miestnych stavebných predpisoch alebo medzinárodných normách. Vypočíta sa v súlade so schváleným softvérom na výpočet energie v budove a vyjadruje sa ako hmotnosť CO_2-eq emitovaného za rok na meter štvorcový celkovej úžitkovej plochy budovy (kg CO_2-eq/m²/rok).

Energia služieb

Spotreba energie v budovách vyplývajúca z pevných vnútorných systémov osvetlenia, pevného vykurovania alebo chladenia, teplovodného servisu alebo mechanického vetrania.

Primerane kvalifikovaný inžinier pre modelovanie energie alebo akreditovaný odborník

Fyzická osoba, ktorá má:

- Minimálne 3 roky relevantných skúseností v oblasti energetického modelovania budov za posledných 5 rokov.
- Uznávaná kvalifikácia alebo diplom, ako je stavebný inžinier alebo inžinier pre energetické modelovanie budov.
- Široké odborné znalosti na pokrytie všetkých požadovaných technických aspektov, ktoré zaručujú, že zadávanie údajov do energetického modelu je primerané a výsledky odrážajú skutočnú výkonnosť budovy.

Môže to byť osoba, ktorá podniká ako živnostník alebo je zamestnaná vo verejných alebo súkromných podnikateľských subjektoch.

Ďalšie informácie

Energetický model predložený spoločnosti BRE

Energetický model bude predložený spoločnosti BRE, aby pomohol pri zabezpečovaní kvality vo fáze po začatí používania a pri priebežnom vývoji BREEAM. Spoločnosť BRE uchová modely v bezpečí svojich systémov a zverejní ich len v prípade, že to bude potrebné na posúdenie po kolaudácii.

Schválené predloženie softvéru

V krajinách s existujúcou národnou metodológiou výpočtu (NCM) sa nástroj(e schválené na používanie v rámci NCM môžu používať ako schválený softvér na výpočet energie v budovách bez nášho predchádzajúceho schválenia za predpokladu, že softvér spĺňa tieto požiadavky na modelovanie stanovené v Smernici 2002/91/ES o energetickej hospodárnosti budov (16. december 2002):

1. Tepelné vlastnosti budovy (plášť a vnútorné priečky atď.), ktoré môžu zahŕňať aj vzduchotesnosť;
2. Inštalácia vykurovania a zásobovanie teplou vodou vrátane ich izolačných vlastností;
3. Inštalácia klimatizácie;
4. Vetranie;
5. Inštalácia zabudovaného osvetlenia;

6. Poloha a orientácia budov vrátane vonkajšej klímy;
7. Pasívne solárne systémy a ochrana pred slnečným žiarením;
8. Prirodzené vetranie;
9. Vnútorné klimatické podmienky vrátane navrhnutej vnútornej klímy.

Ak chce projektový tím použiť alternatívny modelovací softvérový balík, posudzovateľ by mal najprv skontrolovať Zoznam schválených noriem a váhových koeficientov, aby zistil, či je v ňom daný softvér uvedený. Ak sa softvér nenájdete v ASWL, stiahnite si a vyplňte formulár Ene 01 Schválenie energetického softvéru z BREEAM Projects a pošlite ho technickému tímu prostredníctvom webového formulára pre otázky o projektoch BREEAM spolu s príslušnými dôkazmi.

Ene 02a Monitorovanie energie

(nebytové plus bytové zariadenia)

Obytné budovy nájdete v časti Ene 02b Monitorovanie energie na str. 172.

Počet dostupných kreditov	Minimálne normy
Závisí od typu budovy	Áno

Cieľ

Podporovať inštaláciu čiastkových meraní energie, ktoré umožnia monitorovanie prevádzkovej spotreby energie. Umožniť manažérom a konzultantom po odovzdaní porovnávať skutočnú výkonnosť s cieľmi s cieľom informovať priebežné riadenie a znížiť prípadné rozdiely vo výkonnosti.

Kritériá hodnotenia

Táto požiadavka je rozdelená do dvoch častí:

- Čiastkové meranie podľa koncového použitia (1 kredit)
- Čiastkové meranie podľa funkčných alebo nájomných plôch (1 kredit)

Upozornenie:

- Prvý kredit sa vzťahuje na všetky typy budov.
- Druhý kredit sa nevzťahuje na predškolské zariadenia, základné školy a bytové zariadenia - dlhodobý pobyt.

Na preukázanie súladu sa vyžaduje:

Jeden kredit - čiastkové meranie podľa koncového použitia

1 Inštalujú sa merače energie, ktoré umožňujú priradiť aspoň 90 % odhadovanej ročnej spotreby energie každého paliva alebo dodávky energie ku kategórii koncového použitia (pozri Metodológiu na str. 168).

2 Systém merania energie je primeraný veľkosti budovy:
- 2.a V prípade budov s hrubou vnútornou plochou väčšou alebo rovnou 1000 m² sú merače energie súčasťou systému monitorovania a riadenia energie (pozri Relevantné definície na str. 170).
- 2.b V prípade budov s hrubou vnútornou plochou menšou ako 1000 m² sú merače energie:
  - 2.b.i Súčasť vhodného systému monitorovania a riadenia energie.
  - 2.b.ii Prístupné merače s pulzné výstupy alebo iný otvorený komunikačný protokol výstupy.

3 Používatelia budov môžu identifikovať kategóriu koncového použitia, na ktorú sa vzťahuje každý merač (napr. prostredníctvom označenia).

Jeden kredit - čiastkové meranie podľa funkčných alebo nájomných oblastí

4 Inštalujú sa merače energie, ktoré umožňujú priradiť spotrebu energie k nasledovnému:
- 4.a Prenajaté plochy (pozri Metodológiu na str. 168)
- 4.b Príslušné funkčné oblasti (pozri Metodológiu na str. 168)

5 Systém merania energie je primeraný veľkosti budovy:
- 5.a V prípade budov s hrubou vnútornou plochou väčšou alebo rovnou 1000 m² sú merače energie súčasťou systému monitorovania a riadenia energie (pozri Relevantné definície na str. 170).
- 5.b V prípade budov s hrubou vnútornou plochou menšou ako 1000 m² sú merače energie:

5.b.i Súčasť vhodného systému monitorovania a riadenia energie.
5.b.ii Prístupné merače s pulzné výstupy alebo iný otvorený komunikačný protokol výstupy.

6 Používatelia budov môžu identifikovať kategóriu koncového použitia, na ktorú sa vzťahuje každý merač (napr. prostredníctvom označenia).

Kontrolné zoznamy a tabuľky

Tabuľka 28: Príklady príslušných funkčných oblastí pre rôzne typy budov

Typ budovy	Relevantné funkčné oblasti
Kancelárske budovy	1. Kancelárske priestory, podľa poschodia 2. Stravovanie
Maloobchodné budovy	1. Predajné priestory 2. Skladovanie a sklady 3. Skladovanie v chlade 4. Kancelárie 5. Stravovanie 6. Nájomné jednotky
Priemyselné jednotky	1. Kancelárske priestory 2. Prevádzkový priestor 3. Pomocné priestory (napr. jedálne)
Hotelové budovy	1. Kancelárske priestory 2. Stravovanie (napr. kuchyňa, reštaurácia) 3. Konferenčné oddelenia 4. Bazén alebo rekreačné zariadenia 5. Spálne, podľa poschodia alebo jadra (alebo podobné výhodné zoskupenie)
Školské budovy	1. Kuchyne (okrem malých kuchýň pre zamestnancov a technologických miestností) 2. Dielne 3. Prednáškové sály 4. Konferenčné miestnosti 5. Divadelné štúdiá 6. Bazény 7. Športové haly 8. Spracovateľské priestory 9. Laboratóriá 10. Miestnosti s vysokou ochranou v laboratóriách 11. Komory s kontrolovaným prostredím 12. Priestory pre zvieratá 13. IT serverové miestnosti 14. IT pracovné a študijné miestnosti (vrátane IT vybavených priestorov knižnice a všetkých priestorov s viac ako jedným počítačovým terminálom na 5 m²) Poznámka: Individuálne čiastkové meranie štandardných učební alebo seminárnych miestností sa nevyžaduje.

Typ budovy	Relevantné funkčné oblasti
Nemocnice a iné zdravotnícke zariadenia	1. Zariadenia lekárskej fyziky 2. Rehabilitácia vrátane hydroterapeutických bazénov 3. Oddelenia centrálnych sterilných zásob (alebo ekvivalent) 4. Spracovateľské priestory (napr. komerčné kuchyne a práčovne) 5. IT serverové miestnosti 6. Farmaceutické oddelenia 7. Laboratóriá 8. Priestory v prenájme (napr. stravovacie zariadenia, maloobchod, práčovňa) Poznámka: V malých zdravotníckych budovách (hrubá vnútorná podlahová plocha menšia ako 1000 m²), ktoré nemajú funkčné oblasti s vysokým energetickým zaťažením, sa môžu zabezpečiť čiastkové merače na podlahovú plochu.
Iné budovy	Ostatné typy budov s jedným bytom môžu použiť vyššie uvedené funkčné oblasti ako pomôcku pre typ oblastí, ktoré môžu vyžadovať čiastkové meranie.
Poznámky: 1. V tejto tabuľke sú uvedené spoločné funkčné oblasti podľa typu budovy. Zoznamy nie sú vyčerpávajúce a v prípade, že existujú ďalšie oblasti s vysokým alebo premenlivým energetickým zaťažením, mali by sa tiež zohľadniť ako súčasť celkovej stratégie merania.	

Poznámky o súlade

Ref	Definície pojmov	Popis
Hrubá stavba a jadro (iba nebytové a rezidenčné inštitúcie)		
CN1	Príslušné hodnotiace kritériá	**Čiastkové meranie podľa koncového použitia, kritériá 1 na 3 na str. 165** Len plášť: Tieto kritériá sa neuplatňujú. Plášť a jadro: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy. **Čiastkové meranie v oblastiach s vysokým zaťažením energie a v oblastiach s vysokým nájomným, kritériá 4 na 6 na predchádzajúcej strane** Len plášť: Tieto kritériá sa neuplatňujú. Plášť a jadro: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy, s výhradou týchto podmienok: Na prívode energie do každej samostatnej prenajatej jednotky musia byť nainštalované merače alebo pre podlahovú plochu v rámci posudzovaného projektu. Podrobnejší popis možností vyhodnotenia hrubej stavby a jadra nájdete v Prílohe D - Posúdenie projektu hrubej stavby a jadra na strane 409.
Obytné - čiastočne a úplne vybavené		
CN2	Príslušné hodnotiace kritériá - Obydlia pre jednu rodinu a obydlia pre viaceré rodiny	Obidve možnosti: Táto otázka sa nevzťahuje na bytové domy. Pozri Prílohu E – Uplatniteľnosť BREEAM New Construction na obydlia pre jednu rodinu a obydlia pre viaceré rodiny, čiastočne a úplne vybavené na str. 412, kde nájdete podrobnejší popis možností hodnotenia bytových domov.

Ref	Definície pojmov	Popis
Všeobecné		
CN3	Prístavby k existujúcim budovám	Ak sa rozširuje existujúca budova a má existujúce zariadenia a systémy technického vybavenia budovy, ktoré budú spoločné pre novú prístavbu aj existujúcu budovu, kritériá sa vzťahujú len na prístavbu. V tomto prípade sa energetické služby zásobujúce systémy spotrebúvajúce energiu z existujúcej budovy merajú minimálne na vstupných bodoch do prístavby, napr. teplá voda, chladená voda, plyn a elektrina. Najlepším postupom by však zvyčajne bolo zabezpečiť, aby meranie energie pokrývalo celú budovu.
Špecifické pre druh budovy		
CN4	Budovy nachádzajúce sa v areáli školy	Systémy budov nachádzajúcich sa v areáli školy musia byť monitorované buď pomocou vhodného systému monitorovania a riadenia energie, alebo iného automatizovaného riadiaceho systému, napr. výstupných staníc prepojených s centrálnym počítačom. Kritériá sa vzťahujú len na posudzovanú budovu. Ak sú energetické služby dodávané z existujúcej budovy v areáli školy, merajú sa na vstupných bodoch do hodnotenej budovy, napr. teplá voda, chladená voda, plyn a elektrina. Poskytnutie impulzného výstupu alebo iného komunikačného výstupu s otvoreným protokolom nestačí na udelenie kreditu pre tieto typy budov.

Metodológia

Celková stratégia merania

Celková stratégia merania by sa mala vypracovať v súlade s usmerneniami pre nové budovy, ktoré sú k dispozícii v dokumente CIBSE TM39 Meranie energie v budovách[54].

Ako sa uvádza v usmernení, spotreba energie sa nemusí nevyhnutne monitorovať osobitne, ak sa očakáva, že náklady na inštaláciu monitorovacieho zariadenia prekročia pravdepodobné prínosy a dosiahnuté úspory.

Čiastkové meranie podľa koncového použitia

Musí sa odhadnúť ročná spotreba energie každého koncového odberateľa a koncoví odberatelia, ktorí spoločne predstavujú 90 % celkovej spotreby energie (pre každé palivo alebo dodávku energie), musia byť pokrytí čiastkovými meračmi.

Ak je zrejmé, že dané koncové použitie bude predstavovať menej ako 10 % celkovej ročnej spotreby energie pre daný druh paliva, je prijateľný jednoduchý manuálny výpočet alebo použitie referenčných údajov na preukázanie tejto skutočnosti.

Ak nie je jasné, či by koncové použitie predstavovalo menej ako 10 % ročnej spotreby energie pre daný druh paliva alebo nie, mali by sa uviesť podrobnejšie výpočty a spotreba energie by sa mala odhadnúť na základe skutočnej spotreby energie. Napríklad pomocou metód popísaných v dokumente CIBSE TM54 Hodnotenie prevádzkovej energetickej hospodárnosti budov vo fáze projektovania[55]. Mali by sa použiť skutočné prevádzkové vstupy (a nie tie, ktoré sa používajú pri výpočtoch podľa stavebných predpisov) a údaje o počasí pre miestnu oblasť.

Údaje o spotrebe vody z Wat 01 Spotreba vody sa môžu použiť ako vstupy na vyhodnotenie spotreby energie na prípravu teplej vody.

Medzi typické kategórie koncového použitia energie patria nasledovné:

1. Výroba tepla na vykurovanie priestorov
2. Výroba chladenia priestorov
3. Výroba teplej vody
4. Mechanické vetranie

5. Ventilátory na distribúciu vykurovania priestorov
6. Ventilátory na distribúciu chladenia priestorov
7. Čerpadlá na vykurovanie priestorov
8. Čerpadlá na chladenie
9. Čerpadlá na teplú vodu
10. Komerčné chladenie alebo skladovanie v chlade
11. Vnútorné osvetlenie
12. Vonkajšie osvetlenie
13. Ovládacie prvky a telekomunikácie
14. Zariadenia IT a malé zásuvné zariadenia
15. Vnútorná doprava (výťahy a pohyblivé schody)
16. Iné definované používateľom

Kategórie koncovej spotreby sa môžu kombinovať na účely čiastkového merania (pozri nižšie).

Pracovný príklad určenia kategórií koncovej spotreby, ktoré sa majú podriadiť meraniu, nájdete vo všeobecnom informačnom letáku 65: Meranie spotreby energie v nových nebytových budovách[56].

Kombinácia kategórií koncového použitia

Kategórie koncového použitia sa môžu kombinovať na účely čiastkového

- Merania, ak: Samostatné meranie je technicky nerealizovateľné.
- Očakáva sa, že náklady na inštaláciu monitorovacieho zariadenia prevýšia všetky pravdepodobné prínosy a úspory, ktoré by sa mohli dosiahnuť počas prevádzky budovy.

Medzi bežné príklady koncových použití, ktoré sa môžu merať spoločne, patria:

- **Osvetlenie a malý výkon** - osvetlenie a malá energia sa môžu kombinovať, ak nie je nákladovo efektívne merať osvetlenie a malú energiu samostatne.
- **Vykurovanie a teplá voda** - vykurovanie priestorov a teplá voda sa môžu kombinovať s jedným meračom tepla alebo plynu, ak obidve koncové spotreby zabezpečuje spoločné zariadenie (napr. kotol) a nie je praktické merať koncové spotreby samostatne.
- **Vykurovanie a chladenie - vykurovanie a chladenie priestoru sa môže kombinovať, ak obe služby poskytuje jedno zariadenie (napr. reverzibilné tepelné čerpadlo).**
- **Modulárne kotlové systémy** -- Modulárne kotlové systémy možno monitorovať ako celok. Modulárny kotlový systém pozostáva zo série kotlov, ktoré sú navzájom prepojené tak, aby spĺňali rôzne požiadavky na vykurovanie. Zvyčajne sa skladajú z niekoľkých rovnakých kotlových jednotiek, niekedy uložených na sebe, hoci sa môže použiť kombinácia kondenzačných a konvenčných kotlov. Pracujú v intervaloch s približne plným výkonom a maximálnou účinnosťou, takže celková účinnosť pri čiastočnom zaťažení je vyššia ako pri jednom kotle.
- **Viacero ventilátorov** - viaceré ventilátory sa môžu monitorovať spoločne (napr. ak je v rámci vzduchotechnickej jednotky (AHU) viac ventilátorov).

Čiastkové meranie podľa funkčných alebo nájomných priestorov

Na monitorovanie spotreby energie podľa jednotlivých priestorov sa musia zabezpečiť čiastkové merače, ak má budova

- priestory s:

- Výrazne odlišným energetickým zaťažením, ovládacími prvkami, obsadením alebo spôsobmi používania.
- Rôznymi organizáciami nájomcov.
- Jednou veľkou, homogénnou funkciou, ktorú možno rozdeliť na menšie, diskrétne, logické oblasti.

Nie každá kategória konečnej spotreby energie sa musí merať podľa priestoru. Stratégia čiastkového merania by mala uprednostniť významné spôsoby využívania energie, ktoré sa riadia podľa priestoru alebo sa podľa priestoru líšia.

V prípade budovy, ktorá má len jeden funkčný priestor a nemá nájomcu ani ďalšie funkčné priestory, ktoré by sa mali podriadiť meraniu, možno udeliť obidva kredity (ak sa vzťahujú na typ budovy), ak sa dosiahol prvý kredit.

Funkčné priestory čiastkového merania

Pri určovaní stratégie čiastkového merania pre budovu sa musia zohľadniť všetky príslušné funkčné priestory (pozri Tabuľku 28 na str. 166) a všetky priestory s vysokým energetickým zaťažením.

Vo veľkých budovách s jedným používateľom/prenajímateľom, kde je len jedna homogénna funkcia (napr. hotelové izby, kancelárie), by sa malo zabezpečiť čiastkové meranie na podlahovú plochu alebo jadro (alebo iné podobné výhodné zoskupenie). Stratégia čiastkového merania, ktorá nie je založená na základe jednotlivých podlaží, je prijateľná za predpokladu, že:

- Poskytuje rovnakú alebo užitočnejšiu úroveň podrobnosti ako čiastkové meranie podľa podlahovej plochy.
- Hodnotenie je rozdelené logickým spôsobom, ktorý poskytuje manažmentu budovy užitočné informácie o spotrebe energie.
- Tento prístup nie je v rozpore s požiadavkami na čiastkové meranie iných funkčných oblastí.

Čiastkové meranie nájomných plôch

V prípade nájomných budov musia byť merače nainštalované na prívode energie do každej samostatnej nájomnej jednotky alebo priestoru. Napríklad podľa maloobchodnej jednotky (v maloobchodnej budove) alebo podľa poschodia (v kancelárskej budove).

Čiastkové meranie veľkých funkčných alebo nájomných priestorov

V prípade výstavby pozostávajúcej z jednej alebo viacerých väčších jednotiek (hrubá vnútorná podlahová plocha väčšia alebo rovná 250 m²) sa okrem merania jednotky ako celku musí špecifikovať aj dostatočné čiastkové meranie, ktoré umožní monitorovanie príslušných funkčných priestorov v rámci jednotky.

Čiastkové meranie malých funkčných alebo nájomných priestorov podľa koncového použitia

Malé prenajaté kancelárske, priemyselné alebo maloobchodné jednotky nepotrebujú dodatočné čiastkové

meranie podľa koncového použitia:

- Vykurovanie
- Elektrina
- Teplá voda (ak je to realizovateľné)

Na účely tejto otázky BREEAM je malá jednotka definovaná ako jednotka s hrubou vnútornou podlahovou plochou menšou ako 250 m².

Dôkazová dokumentácia

Kritériá	Predbežná fáza projektu	Záverečná fáza po výstavbe
Všetky	Príslušná časť alebo ustanovenia špecifikácie budovy alebo zmluvy. Projektová výkresová dokumentácia.	Správa z inšpekcie na mieste vypracovaná posudzovateľom BREEAM a fotografický dôkaz.

Dodatočné informácie

Relevantné definície

Dostupné merače

Merače energie umiestnené v časti budovy, ktorá umožňuje ľahký prístup, aby sa uľahčilo pravidelné monitorovanie a odčítanie údajov používateľmi budovy alebo správcom budov. Zvyčajne je to miestnosť s inštaláciou, hlavná rozvodňa alebo riadiaca miestnosť (kde je nainštalovaný systém riadenia energie v budove (BEMS)).

Používatelia budovy

Používatelia budovy sú tí, ktorí sú zodpovední za monitorovanie spotreby energie v budove (nájomníci, správcovia budov, vlastník budovy).

Spoločné priestory

Objekty s viacerými nájomcami, najmä veľké maloobchodné objekty, môžu mať aj spoločné zariadenia a prístup, ktoré nevlastní ani nekontroluje žiadny jednotlivý nájomca, ale využívajú ich všetci. Spoločné

priestory zvyčajne spravuje a udržiava vlastník stavby, t. j. prenajímateľ alebo jeho správca. Príkladom spoločných priestorov sú átrium, schodiská, hlavné vstupné haly alebo recepcia, prípadne vonkajšie priestory, napr. parkovisko.

Merače energie

Merače energie merajú množstvo energie spotrebovanej v obvode, v ktorom prúdi energia. Primárne merače merajú hlavnú vstupnú energiu a používajú sa na fakturáciu dodávateľom médií. Patria k nim hlavné inteligentné a pokročilé merače spotreby elektriny a plynu na danom mieste.

Čiastkové merače sú druhou úrovňou vrátane meračov tepla a pary a podružných meračov inštalovaných na meranie spotreby konkrétnych zariadení alebo vybavenia, alebo na meranie spotreby jednotlivých fyzických priestorov, napr. jednotlivých budov, poschodí vo viacpodlažnej budove, nájomných priestorov, funkčných priestorov.

Systém monitorovania a riadenia energie

Príkladom sú systémy automatického odpočtu meračov (AMR) a systémy energetického manažmentu budov (BEM). Automatické monitorovanie a cielenie (AM&T) je príkladom nástroja riadenia, ktorý zahŕňa automatický odpočet meračov a správu údajov.

Dodávka energie

Všetky druhy energie dodávané do priestoru budovy (funkčný priestor, oddelenie, nájomný priestor alebo jednotka) v rámci hranice hodnotenej stavby. Patrí sem elektrická energia, plyn, teplo alebo iné formy energie alebo paliva, ktoré sa spotrebujú v dôsledku používania a prevádzky v rámci každého relevantného priestoru.

Ďalšie informácie

Žiadne.

Ene 02b Monitorovanie energie

(len bytové priestory)

Pre nebytové budovy a rezidenčné inštitúcie pozri Ene 02a Energetický monitoring na strane 165.

Počet dostupných kreditov	Minimálne normy
2	Žiadne

Cieľ

Rozpoznať a podporovať monitorovanie spotreby energie pomocou zobrazovacích zariadení energie.

Kritériá hodnotenia

Na preukázanie súladu sa vyžaduje:

Jeden kredit

1 Aktuálne údaje o spotrebe elektrickej energie ALEBO primárneho paliva sa používateľom zobrazujú prostredníctvom kompatibilného energetického zobrazovacieho zariadenia.

Dva kredity

2 Aktuálne údaje o spotrebe elektrickej energie A primárneho paliva sa používateľom zobrazujú prostredníctvom kompatibilného energetického zobrazovacieho zariadenia.

Kontrolné zoznamy a tabuľky

Žiadne.

Poznámky o súlade

Ref	Definície pojmov	Popis
Hrubá stavba a jadro (iba nebytové a rezidenčné inštitúcie)		
CN1	Príslušné hodnotiace kritériá	Obidve možnosti: Táto otázka sa neuplatňuje. Podrobnejší popis možností vyhodnotenia hrubej stavby a jadra nájdete v Prílohe D - Posúdenie projektu hrubej stavby a jadra na strane 409.
Obytné - čiastočne a úplne vybavené		

Ref	Definície pojmov	Popis
CN2	Príslušné hodnotiace kritériá - Obydlia pre jednu rodinu	Čiastočne vybavené: Táto otázka sa neuplatňuje. Úplne vybavené: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy. Pozri Prílohu E – Uplatniteľnosť BREEAM New Construction na obydlia pre jednu rodinu a obydlia pre viaceré rodiny, čiastočne a úplne vybavené na str. 412, kde nájdete podrobnejší popis možností hodnotenia bytových domov.
CN2.1	Príslušné hodnotiace kritériá - Obydlia pre viaceré rodiny	Čiastočne vybavené: Táto otázka sa neuplatňuje. Úplne vybavené: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy. Pozri Prílohu E – Uplatniteľnosť BREEAM New Construction na obydlia pre jednu rodinu a obydlia pre viaceré rodiny, čiastočne a úplne vybavené na str. 412, kde nájdete podrobnejší popis možností hodnotenia bytových domov.
Všeobecné		
CN3	Zariadenia na monitorovanie energie spoločnosti poskytujúcej verejné služby	Túto otázku môžu spĺňať merače energie nainštalované spoločnosťou poskytujúcou energetické služby, ktoré môžu budúcemu majiteľovi domu alebo nájomníkovi poskytovať presné a pravidelné informácie o spotrebe energie v jednotlivých bytoch.
CN3.1	Elektrická energia je primárnym palivom	Ak je primárnym palivom elektrická energia a údaje o aktuálnej spotrebe elektrickej energie sa zobrazujú používateľom prostredníctvom vyhovujúceho energetického zobrazovacieho zariadenia, ktoré zahŕňa vykurovanie alebo chladenie, možno udeliť dva kredity.
CN3.2	Systémy komunálneho vykurovania, chladenia alebo systémy na tuhé palivo	Ak nie je možné merať spotrebu energie na základe vstupného sieťového napájania pomocou vyhovujúceho energetického zobrazovacieho zariadenia, je potrebné nainštalovať merač tepla na meranie tepelnej energie. Merač tepla musí vypočítať spotrebu energie v kilowatthodinách (kWh), ktorá sa potom môže preniesť do vyhovujúceho energetického zobrazovacieho zariadenia.

Dôkazová dokumentácia

Kritériá	Predbežná fáza projektu	Záverečná fáza po výstavbe
Všetky	Príslušná časť alebo ustanovenia špecifikácie budovy alebo zmluvy. Projektová výkresová dokumentácia.	Správa posudzovateľa BREEAM z inšpekcie na mieste a fotografický dôkaz nainštalovaného a funkčného merača.

Dodatočné informácie

Relevantné definície

Vyhovujúce energetické zobrazovacie zariadenie

Ide o systém pozostávajúci zo samo nabíjacieho snímača, ktorý je pripevnený na vstupný sieťový prívod alebo prívody a ktorý meria a prenáša údaje o spotrebe energie do vizuálnej zobrazovacej jednotky na prístupnom mieste. Vizuálna zobrazovacia jednotka musí byť schopná zobraziť minimálne tieto informácie:

1. Miestny čas
2. Aktuálna spotreba energie (v reálnom čase) (kilowatty a kilowatthodiny)
3. Aktuálne odhadované emisie (v reálnom čase) (g/kg CO_2)
4. Aktuálna tarifa (v reálnom čase)

5. Aktuálne náklady (v reálnom čase) (za hodinu)
6. Vizuálna prezentácia údajov (t. j. iných ako číselných), ktorá spotrebiteľom umožní ľahko identifikovať vysokú a nízku úroveň používania
7. Historické údaje o spotrebe, aby spotrebitelia mohli porovnať svoju súčasnú a predchádzajúcu spotrebu zmysluplným spôsobom. Tieto údaje by mali obsahovať kumulatívne údaje o spotrebe vo všetkých nasledujúcich formách: deň, týždeň alebo mesiac fakturačného obdobia. Údaje sa musia interne uchovávať minimálne dva roky alebo musia byť pripojené k samostatnému zariadeniu s automatickým odosielaním zo zariadenia na zobrazovanie energie.

Primárne palivo

Palivo používané na zabezpečenie väčšiny vykurovania alebo chladenia hodnoteného domu.

Samo nabíjací snímač

Snímač alebo vysielač napájaný z elektrickej siete budovy, ktorý prenáša údaje o spotrebe energie do vizuálnej zobrazovacej jednotky. Namiesto samo nabíjacieho snímača alebo vysielača sa môžu použiť batérie s dlhou životnosťou, ktorých životnosť je minimálne sedem rokov, ak posudzovateľ preukáže, že funkčnosť systému je zachovaná.

Ďalšie informácie

Žiadne.

Ene 03 Vonkajšie osvetlenie

(všetky budovy)

Počet dostupných kreditov	Minimálne normy
1	Žiadne

Cieľ

Rozpoznať a podporovať špecifikáciu energeticky účinných svietidiel pre vonkajšie oblasti výstavby.

Kritériá hodnotenia

Na preukázanie súladu sa vyžaduje:

Jeden kredit

1 Budova bola navrhnutá tak, aby fungovala bez potreby vonkajšieho osvetlenia (vrátane osvetlenia budovy, nápisov a vchodov).

ALEBO

2 Priemerná počiatočná svetelná účinnosť všetkých vonkajších svietidiel v zóne stavby najmenej 70 lúmenov na jeden watt obvodu.

3 Všetky vonkajšie svietidlá sú automaticky riadené, aby sa zabránilo ich prevádzke počas denného svetla, a vybavené detekciou prítomnosti v oblastiach s prerušovaným pohybom chodcov.

Kontrolné zoznamy a tabuľky

Žiadne.

Poznámky o súlade

Ref	Definície pojmov	Popis
Hrubá stavba a jadro (iba nebytové a rezidenčné inštitúcie)		
CN1	Príslušné hodnotiace kritériá	Obidve možnosti: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy Pozri Príloha D - Posúdenie plášťa a jadra projektu na strane 409 pre podrobnejší opis možností hodnotenia plášťa a jadra.
Obytné - čiastočne a úplne vybavené		

Ref	Definície pojmov	Popis
CN2	Príslušné hodnotiace kritériá - Obydlia pre jednu rodinu a obydlia pre viaceré rodiny	Obidve možnosti: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy. Pozri Prílohu E – Uplatniteľnosť BREEAM New Construction na obydlia pre jednu rodinu a obydlia pre viaceré rodiny, čiastočne a úplne vybavené na str. 412, kde nájdete podrobnejší popis možností hodnotenia bytových domov.
Všeobecné		
CN3	Hodnotenie jednotlivých budov vo väčších areáloch škôl (a prístavby k existujúcim budovám)	Ak je hodnotená budova súčasťou väčšej stavby (alebo je prístavbou k existujúcej budove), ktorá má spoločné priestory a iné budovy, rozsah kritérií vonkajšieho osvetlenia sa vzťahuje len na nové a existujúce vonkajšie osvetlenie v stavebnej zóne hodnotenej budovy.
CN3.1	Dočasné osvetlenie, dekoratívne osvetlenie a reflektory	Dočasné vonkajšie osvetlenie (ako sú divadelné, scénické a miestne osvetľovacie zariadenia) je z hodnotenia vylúčené. Do hodnotenia sa musia zahrnúť dekoratívne, bezpečnostné svetlá a reflektory.
CN3.2	Osvetlenie vonkajších zariadení	Manuálne aktivované osvetlenie, ktoré sa používa len pri údržbe vonkajšieho zariadenia, je z tohto hodnotenia vylúčené.
CN3.3	Núdzové osvetlenie	Udržiavané systémy s núdzovými svietidlami, ktoré sa používajú aj na bežnú prevádzku, sa hodnotia z hľadiska tohto problému. Neudržiavané osvetlenie, ktoré sa aktivuje len v núdzových situáciách, možno z hodnotenia vylúčiť. (KBCN0185)
CN3.4	Automatické ovládacie prvky - Vonkajšie osvetlenie vo vnútri širšej budovy	Ak sa hodnotená budova nachádza v inej budove, napr. v maloobchodnej jednotke v rámci nákupného centra, kritérium 3 by sa malo uplatňovať skôr na zabránenie prevádzky mimo prevádzkových hodín širšieho nákupného centra než počas denného svetla. Akékoľvek vonkajšie osvetlenie umiestnené mimo širšieho nákupného centra by malo byť hodnotené tak, ako je uvedené v kritériách. (KBCN0906)
CN3.5	Automatické ovládacie prvky - Nočná prevádzka	Projekty, ktoré sa prevádzkujú v noci, môžu prispôsobiť alebo vynechať požiadavku na zabezpečenie ovládacích prvkov alebo detekcie prítomnosti, aby sa prispôsobili prevádzkovým hodinám budovy. (KBCN1048)

Metodológia

Priemerná počiatočná svetelná účinnosť vonkajších svietidiel

Jednotlivé svetelné toky všetkých svietidiel v stavebnej zóne sa spočítajú (v lúmenoch) a potom sa vydelia celkovým výkonom obvodu pre všetky svietidlá.

V prípade iných svetelných zdrojov, ako sú LED svetelné zdroje, možno svetelný tok svietidla, ktoré používa tieto svetelné zdroje, určiť vynásobením súčtu svetelných tokov všetkých svetelných zdrojov v svietidle pomerom svetelného výkonu svietidla (potvrdeným výrobcom svietidla).

Poznámka: LED žiarovky sú zvyčajne súčasťou svietidla (LED svietidlá). Literatúra výrobcu preto zahŕňa svietidlo aj svetelný zdroj ako celok. V prípade RGB (červená, zelená, modrá) LED žiaroviek by sa mal použiť priemerný lúmen svietidla na jeden watt obvodu vo všetkých troch farbách.

Dôkazová dokumentácia

Kritériá	Predbežná fáza projektu	Záverečná fáza po výstavbe
Všetky	Príslušná časť alebo ustanovenia stavebnej špecifikácie alebo zmluvy. Projektová výkresová dokumentácia.	Správa posudzovateľa BREEAM z inšpekcie na mieste a fotografický dôkaz alebo výkresy zhotovenia. Podrobnosti o produkte výrobcu.
1	Správa o úrovni nočného osvetlenia alebo akákoľvek iná relevantná štúdia.	Správa posudzovateľa BREEAM z inšpekcie na mieste a fotografický dôkaz alebo výkresy zhotovenia. Správa o úrovni nočného osvetlenia alebo akákoľvek iná relevantná štúdia.

Dodatočné informácie

Relevantné definície

Automatické ovládanie

Automatický systém ovládania vonkajšieho osvetlenia, ktorý zabraňuje prevádzke počas denného svetla buď prostredníctvom časového spínača alebo snímača denného svetla (prípustný je aj manuálne spínaný svetelný okruh so snímačom denného svetla alebo s ovládaním časového spínača) a okrem toho zabezpečuje detekciu prítomnosti v oblastiach s prerušovanou prevádzkou.
Poznámka: v prípade vonkajšieho osvetlenia, ktoré nie je vybavené detektormi prítomnosti, musia časové spínače zabezpečiť automatické vypnutie osvetlenia po uplynutí stanovenej hodiny zákazu vychádzania, okrem prípadov, keď existuje osobitná požiadavka, aby osvetlenie zostalo zapnuté celú noc.

Stavebná zóna

Na účely tejto otázky je zóna výstavby definovaná ako pozemok, na ktorom sa realizuje stavba hodnotená podľa normy BREEAM, a jeho vonkajšie plochy, t. j. rozsah nových prác.

Snímač denného svetla

Typ snímača, ktorý deteguje denné svetlo a zapína osvetlenie za súmraku a vypína za úsvitu.

Svetelná účinnosť (v lúmenoch na jeden watt obvodu)

Pomer medzi svetelným tokom produkovaným celým svietidlom (svetelným zariadením) (v lúmenoch) a celkovým výkonom spotrebovaným svetelnými zdrojmi a ovládacím zariadením obsiahnutým v svietidle (vo wattoch).

Detektor prítomnosti

Snímač, ktorý dokáže zapnúť osvetlenie, keď sa v snímanom priestore zistí prítomnosť, a vypnúť ho po uplynutí nastaveného času, keď sa nezistí žiadna prítomnosť. Detektory prítomnosti musia byť kompatibilné s použitým typom svietidla, pretože veľmi časté prepínanie môže skrátiť životnosť niektorých typov svietidiel.

Časový spínač

Spínač so zabudovanými hodinami, ktorý umožňuje zapínanie a vypínanie osvetlenia v naprogramovaných časoch.

Ďalšie informácie

Žiadne.

Ene 04 Projekt s nízkymi emisiami uhlíka (všetky budovy)

Počet dostupných kreditov	Minimálne normy
3	Žiadne

Cieľ

Podporovať prijímanie konštrukčných opatrení, ktoré znižujú potrebu energie v budovách - a s ňou súvisiace emisie uhlíka - a maximalizujú využívanie obnoviteľných zdrojov energie na mieste.

Kritériá hodnotenia

Táto požiadavka je rozdelená do dvoch častí:

- Pasívny projekt (až 2 kredity)
- Technológie s nízkym alebo nulovým obsahom uhlíka (1 kredit)

Na preukázanie súladu sa vyžaduje:

Pasívny projekt

1 Prvý kredit v rámci otázky Hea 04 Tepelný komfort na str. 114 bol dosiahnutý s cieľom preukázať, že projekt budovy môže zabezpečiť primeranú úroveň tepelného komfortu v používaných priestoroch.

2 Projektový tím vykonáva analýzu navrhovaného staveniska počas fázy koncepčného projektovania a identifikuje príležitosti na implementáciu riešení pasívneho projektu, ktoré znižujú energetickú náročnosť budovy (pozri CN3 na str. 180).

Jeden kredit

3 V súlade so zisteniami analýzy pasívneho dizajnu sa vykonajú opatrenia pasívneho dizajnu, ktoré znížia celkovú potrebu energie budovy aspoň o 5 %.

Dva kredity

4 V súlade so zisteniami analýzy pasívneho dizajnu sa vykonajú opatrenia pasívneho dizajnu, ktoré znížia celkovú potrebu energie budovy aspoň o 10 % .

Nízkouhlíkové a bezuhlíkové technológie

Jeden kredit - Štúdia uskutočniteľnosti a realizácia technológie s nízkymi emisiami uhlíka

5 Štúdia uskutočniteľnosti bola vykonaná do ukončenia fázy koncepčného projektovania energetickým špecialistom (pozri Relevantné definície na str. 186) s cieľom stanoviť najvhodnejšie uznané miestne (na mieste alebo v blízkosti miesta) zdroje energie s nízkymi alebo nulovými emisiami uhlíka pre budovu alebo stavbu (pozri CN4 na str. 180).

6 V súlade s odporúčaniami tejto štúdie uskutočniteľnosti bola pre budovu alebo stavbu špecifikovaná jedna alebo viac miestnych technológií LZC.

Kontrolné zoznamy a tabuľky

Žiadne.

Poznámky o súlade

Ref	Definície pojmov	Popis
Hrubá stavba a jadro (iba nebytové a rezidenčné inštitúcie)		
CN1	Príslušné hodnotiace kritériá	**Analýza pasívneho projektu, kritériá 1 až 4** Len plášť: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy. Poznámka: V prípade kritéria 1, hoci sa Hea 04 nevzťahuje na hodnotenie len plášťa, na získanie kreditov Ene 04 Pasívny projekt sa musí preukázať súlad s kritériami 1, 2 a 3 Hea 04. Malo by to vychádzať z typického usporiadania a špecifikácie zariadenia pre príslušný typ budovy. Ak sa Hea 04 nevzťahuje na vybraný typ budovy a možnosti (napr. priemyselná budova bez kancelárskych priestorov), kritérium 1 Ene 04 sa neuplatňuje. **Štúdia uskutočniteľnosti LZC, kritériá 5 na 6 na predchádzajúcej strane** Len plášť: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy. Poznámka: Štúdia uskutočniteľnosti LZC sa musí dokončiť ako súčasť projektu len plášťa na základe očakávaného používania budovy a zaťaženia uvedeného v zadaní projektu, alebo ak tieto nie sú uvedené, na základe pravdepodobných scenárov. Zástavba by mala umožniť budúcu inštaláciu nákladovo efektívneho LZC a to možno dosiahnuť preukázaním, že: bol zohľadnený dostatočný priestor a voľný priestor pre inštaláciu budúcich LZC, že zástavba je vhodne umiestnená a že hmotnosť a orientácia sú optimalizované pre budúce systémy. Plášť a jadro: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy Pozri Príloha D - Posúdenie plášťa a jadra projektu na strane 409 Podrobnejší opis možností hodnotenia plášťa a jadra.
Obytné - čiastočne a úplne vybavené		
CN2	Príslušné hodnotiace kritériá - Obydlia pre jednu rodinu a obydlia pre viaceré rodiny	Obidve možnosti: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy. Pozri Prílohu E – Uplatniteľnosť BREEAM New Construction na obydlia pre jednu rodinu a obydlia pre viaceré rodiny, čiastočne a úplne vybavené na str. 412, kde nájdete podrobnejší popis možností hodnotenia bytových domov.
Analýza pasívneho projektu		

Ref	Definície pojmov	Popis
CN3	Analýza pasívneho projektu - Pokrytie	V analýze pasívneho projektu by sa malo zohľadniť minimálne: 1. Umiestnenie lokality 2. Počasie na mieste 3. Mikroklíma 4. Rozloženie budovy 5. Orientácia budovy 6. Stavebná forma 7. Štruktúra budovy 8. Tepelná hmota alebo iná štruktúra na uskladnenie tepla 9. Typ obsadenia budovy 10. Stratégia denného osvetlenia 11. Stratégia vetrania 12. Prispôsobenie sa klimatickým zmenám
CN3.1	Analýza pasívneho projektu - schválený softvér na modelovanie spotreby energie v budovách	Projektový tím musí použiť modelovací softvérový balík, ktorý bol schválený na hodnotenie tejto otázky, pozri Zoznam schválených noriem a váh (ASWL), aby ste zistili, či modelovací softvérový balík už bol schválený spoločnosťou BRE Global. Ak softvérový balík nebol schválený, posudzovateľ bude musieť predložiť žiadosť o schválenie na formulári „Ene 01 Schválenie energetického softvéru“, aby sa balík mohol použiť na preukázanie súladu s Ene 04.
CN3.2	Pasívny projekt Analýza Modelovanie štandardná budova keď existujúci prvky budovy sú zachované	V prípadoch, keď sa existujúci prvok budovy (napr. fasáda) zachované, je prijateľné ich zahrnúť do modelovania „štandardná budov“ na účely pasívneho navrhovania Analýza Všetky ostatné prvky budovy by sa mali modelovať pomocou tkaniny výkon ekvivalentný s referenčnými miestnymi stavebnými predpismi budovy a bez pasívnych konštrukčných opatrení, ak je to možné, t. j, orientácia budovy bude pravdepodobne pevná. (KBCN1270)
Štúdia uskutočniteľnosti LZC		
CN4	Štúdia uskutočniteľnosti LZC	Štúdia LZC by mala zahŕňať minimálne nasledovné: 1. Energia vyrobená zo zdroja energie LZC za rok 2. Úspora oxidu uhličitého z energetického zdroja LZC za rok 3. Náklady na životný cyklus potenciálnej špecifikácie s prihliadnutím na návratnosť 4. Miestne kritériá plánovania vrátane využitia pôdy a hluku 5. Možnosť vývozu tepla alebo elektrickej energie alebo oboch zo systému 6. Identifikácia všetkých dostupných grantov 7. Všetky technológie vhodné pre danú lokalitu a energetickú náročnosť výstavby 8. Dôvody vylúčenia iných technológií 9. V prípade potreby pripojenie budovy k existujúcemu komunitnému energetickému systému s nízkymi emisiami uhlíka.

Ref	Definície pojmov	Popis
CN4.1	Štúdia uskutočniteľnosti LZC - načasovanie	Ak sa štúdia uskutočniteľnosti vypracúva neskôr ako vo fáze koncepčného projektovania, v správe sa musia uviesť všetky miestne zdroje energie LZC, ktoré nemohli byť zahrnuté do projektu z dôvodu neskorého zohľadnenia, a dôvod ich vynechania. Ak štúdia uskutočniteľnosti vylúčila všetky miestne LZC ako nerealizovateľné z dôvodu neskorej fázy projektu, v ktorej bola štúdia zadaná, potom sa kredit za štúdiu uskutočniteľnosti musí odobrať. Ak bola štúdia uskutočniteľnosti zadaná v štádiu koncepčného návrhu alebo skôr a v nepravdepodobnom prípade sa v štúdii dospelo k záveru, že špecifikácia akejkoľvek miestnej technológie LZC je neuskutočniteľná , kredit LZC by sa mohol udeliť aj tak.
CN4.2	Štúdia uskutočniteľnosti LZC - diskontované zdroje energie LZC	Ak je možné poskytnúť dostatočné informácie, ktoré odôvodňujú, že zdroje energie LZC nie sú pre rozvoj uskutočniteľné, analýza LCC pre tieto zdroje LZC nemusí byť zahrnutá do štúdie uskutočniteľnosti. (KBCN0606)
CN4.3	Štúdia uskutočniteľnosti LZC - Podmienky a obmedzenia plánovania	Ak existuje povinná podmienka plánovania (napr. pripojenie k systému diaľkového vykurovania), jednoznačne to ovplyvní počet možností dostupných v štúdii uskutočniteľnosti. V takýchto prípadoch je možné dosiahnuť súlad, ak sa predloží dôkaz o obmedzeniach vyplývajúcich z podmienok plánovania. Štúdiu uskutočniteľnosti bude potrebné vypracovať aj na pokrytie zostávajúcich energetických potrieb budovy (napr. elektrického zaťaženia a zaťaženia osvetlenia v prípade systému diaľkového vykurovania). (KBCN0535)
CN4.4	Štúdia uskutočniteľnosti LZC - Porovnanie technológií LZC	Uznáva sa , že v prípade niektorých technológií LZC sa úroveň dostupných informácií môže líšiť a nemusí byť vždy možné vykonať podrobné porovnanie všetkých aspektov uskutočniteľnosti . V štúdii uskutočniteľnosti sa musí vykonať porovnanie všetkých LZC, ktoré sú pre stavbu uskutočniteľné (pozri vyššie uvedený bod CN4.2), na základe dostupných informácií tak, aby bolo možné s primeranou mierou istoty preukázať, že vybrané LZC sú najvhodnejšie z tých, ktoré sú k dispozícii. (KBCN0563)

Ref	Definície pojmov	Popis
CN4.5	Štúdia uskutočniteľnosti LZC - Energetické centrum alebo iné LZC pripojené neskôr	Ak projekt špecifikuje LZC, ktoré boli navrhnuté v správe o uskutočniteľnosti, budú pripojené k celoplošnému energetickému centru, ktoré bude v prevádzke v neskoršej fáze postupnej výstavby, po predložení preskúmania po začatí používania, túto otázku možno posúdiť nasledovne: V prípade postupnej výstavby, keď sa primárny vykurovací systém zmodernizuje neskôr ako posudzovaná budova , musí byť vo všeobecnej zmluvnej špecifikácii uvedený záväzok inštalovať nový zdroj vykurovania (podľa požiadaviek BREEAM). BREEAM nestanovuje konkrétny čas pre postupné zavádzanie , pretože je ťažké stanoviť parametre, ale spravidla by používatelia budov mali čakať čo najmenej času, kým budú môcť používať modernizovaný zdroj vykurovania. Na účely auditu kvality sa v záverečnej fáze musia vypracovať dva výstupy energetického modelu - jeden so skutočne nainštalovaným dočasným systémom a druhý na účely hodnotenia BREEAM, ktorý môže zahŕňať predpokladanú energiu z navrhovaného energetického centra. Okrem toho sa musí predložiť právne záväzná všeobecná zmluvná špecifikácia nového zdroja vykurovania s podrobnými údajmi o navrhovaných dobách na dokončenie druhej fázy prác. Ak sa má uplatniť tento prístup, je potrebné v každom prípade konzultovať s BREEAM, aby sa zabezpečilo, že opatrenia sú dostatočne spoľahlivé na udelenie kreditov. (KBCN0267)
CN4.6	Štúdia uskutočniteľnosti LZC - Systém diaľkového vykurovania využívajúci viacero palív	Ak sa v štúdii uskutočniteľnosti uvažuje o pripojení k systému diaľkového vykurovania a tento spaľuje zmes fosílnych a obnoviteľných palív , za zdroj tepla sa považuje len podiel výkonu vyrobeného z oprávnených obnoviteľných palív (pozri CN5 na nasledujúcej strane, uznané zdroje energie LZC) Napríklad pri systéme spaľujúcom zmes vyhovujúcich biopalív a fosílnych palív v pomere 25:75 sa za zdroj tepla z technológie LZC považuje len 25 % . Keďže palivové zmesi sa môžu časom meniť, musia sa poskytnúť informácie z minulosti aspoň za jeden rok alebo viac, aby sa vyrovnali všetky sezónne výkyvy. Ak ide o nový alebo navrhovaný systém, je potrebné predložiť spoľahlivé dôkazy o predpokladanej skladbe palív. Palivová zmes sa musí vypočítať na základe energetického obsahu vstupných palív v kWh. (KBCN0885)
CN4.7	Štúdia uskutočniteľnosti LZC - Krajiny s národnou energetickou stratégiou, ktorá je vo veľkej miere založená na obnoviteľných zdrojoch energie	Jeden kredit môže byť udelený štandardne, ak: Budova sa nachádza v krajine, kde je dodávka energie z rozvodnej siete vysoko dekarbonizovaná, pretože sa vyrába z obnoviteľných zdrojov. A V štúdii uskutočniteľnosti sa okrem všetkých ostatných druhov palív používaných v budove zohľadňuje aj využívanie energie zo siete. A Štúdia uskutočniteľnosti jasne potvrdzuje, že zavedenie miestnych technológií LZC na mieste by malo nepriaznivý vplyv na celkové súvisiace emisie.

Ref	Definície pojmov	Popis
CN4.8	Štúdia uskutočniteľnosti LZC - Technológie, ktoré sú už k dispozícii na mieste	V prípade stavieb, kde existuje existujúci zdroj energie LZC, ktorý môže dodávať vyhovujúci percentuálny podiel energie do hodnotenej budovy, sa bude musieť ešte vypracovať štúdia uskutočniteľnosti, aby sa preukázalo, že existujúca technológia je pre hodnotenú budovu alebo stavbu najvhodnejšia. Štúdia by sa tiež mala snažiť zistiť, či sú možné ďalšie zdroje energie LZC. Aby sa energia z existujúcich zdrojov energie LZC kvalifikovala, musí byť doplnková k energii, ktorá sa už dodáva iným budovám alebo subjektom infraštruktúry.
Technológie LZC		
CN5	Technológie LZC - Uznané „miestne“ technológie LZC	Technológie, ktoré môžu prispieť k dosiahnutiu požiadaviek tejto otázky, musia využívať energiu z týchto zdrojov: Vietor Slnečné žiarenie (solárne tepelné a fotovoltaické) Geotermálne a hydrotermálne zdroje energie Vodná energia Biomasa z odpadu a biopalivá získané zo surovín druhej generácie z biomasy alebo z odpadových zdrojov vrátane skládkového plynu a plynu z čističiek odpadových vôd (pozri CN5.7 a CN5.8) Odpadové teplo (pozri CN5.4) Teplo alebo elektrina zo spaľovania odpadu (pozri CN5.6) Poznámka: Tepelné čerpadlá sú v súčasnosti štandardnou technológiou a teplo z tepelných čerpadiel sa nepovažuje za technológiu LZC pre Ene 04.
CN5.1	Technológie LZC - Vhodná inštalácia	Ak má hodnotiaca krajina nezávislý národný systém certifikácie pre inštalatérov miestnych systémov obnoviteľných zdrojov energie, tieto technológie musia byť certifikované v súlade s národným systémom. Ak v krajine posudzovania neexistujú nezávislé akreditačné systémy, projektový tím musí preukázať, že preskúmal spôsobilosť montážnej firmy vybranej na inštaláciu technológie LZC a že si je istý, že montážna firma má zručnosti a spôsobilosť na vhodnú inštaláciu technológie.

Ref	Definície pojmov	Popis
CN5.2	Technológie LZC - Pripojenie k budove	Aby boli technológie LZC uznané v rámci BREEAM, musia mať priame fyzické prepojenie s hodnotenou budovou. ALEBO Kde sa nachádza technológia LZC: nachádzajúce sa na tom istom mieste je vo vlastníctve a správe tej istej organizácie ako hodnotená budova a ak nie je praktické fyzicky pripojiť hodnotenú budovu k systému je prijateľné prideliť energiu vyrobenú touto technológiou posudzovanej budove proporcionálne ako výpočet predpokladanej spotreby energie budovy v porovnaní s celkovou spotrebou energie celého objektu. Ak chcete prideliť elektrinu z obnoviteľných zdrojov podľa pomernej spotreby, postupujte podľa týchto krokov: 1. Získajte celkové množstvo ročne vyrobenej elektrickej energie z obnoviteľných zdrojov na mieste; 2. Vylúčte všetku elektrinu z obnoviteľných zdrojov, ktorá bola vyvezená do siete. 3. Určite príslušnú spotrebu elektrickej energie všetkých budov na celom mieste (predpokladanú pre novostavby, meranú pre existujúce budovy). Ak chýbajú údaje o spotrebe, elektrina z obnoviteľných zdrojov sa nesmie priradiť k hodnotenej budove. V tomto prípade sa predpokladá, že všetka spotrebovaná elektrina pochádza zo siete. (KBCN1424)
CN5.3	Technológie LZC - Iné neuvedené technológie	Iné systémy môžu byť v rámci tejto otázky prijateľné ako súčasť stratégie LZC. Prijateľnosť bude závisieť od povahy navrhovaného systému a dosiahnutých prínosov v oblasti emisií uhlíka. Posudzovateľ BREEAM musí v prípade pochybností potvrdiť prijateľnosť s BRE Global.
CN5.4	Technológie LZC - Odpadové teplo z prevádzkových procesov súvisiacich s budovou	Odpadové teplo z prevádzkového procesu, ktorý sa uskutočňuje v rámci posudzovanej budovy (alebo na posudzovanom mieste), možno na účely tejto otázky BREEAM považovať za „nízkouhlíkové“ za predpokladu, že výroba tepla z procesu je neoddeliteľnou súčasťou posudzovanej budovy. Príklady prevádzkových procesov a funkcií zahŕňajú výrobné procesy, vysokoteplotné pece alebo pece, kompresory obsluhujúce technologické zariadenia, malé pivovary, krematórium, testovanie a uvedenie do prevádzky kotlov na školenia alebo výrobu a dátové centrá. Nezahŕňa odpadové teplo z IT alebo serverových miestností, ktoré by sa mohlo využívať ako súčasť bežných opatrení na rekuperáciu tepla.
CN5.5	Technológie LZC - Komunitné schémy a schémy pre blízke okolie	„Miestne“ nemusí znamenať na mieste; komunitné systémy (v blízkosti miesta) sa môžu použiť ako prostriedok na preukázanie súladu za predpokladu, že spĺňajú požiadavky na priame (súkromné káblové) pripojenie.

Ref	Definície pojmov	Popis
CN5.6	Technológie LZC - Spaľovanie odpadu	Odpadové teplo zo spaľovne sa môže považovať za také, ktoré má nízke emisie uhlíka na účely tejto otázky BREEAM len za týchto podmienok: 1. Všetky ostatné technológie LZC boli zvážené a zamietnuté v štúdii uskutočniteľnosti; BUĎ 2. Miestny orgán alebo región, v ktorom sa spaľovňa nachádza, preukázateľne plní svoje ročné ciele v oblasti opätovného použitia a recyklácie odpadu a politiky odpadového hospodárstva; ALEBO 3. V miestnej oblasti nie sú žiadne ďalšie kapacity na opätovné použitie a recykláciu odpadu u miestneho orgánu alebo v regióne, v ktorom sa spaľovňa nachádza, ALEBO 4. V blízkosti budovy alebo na mieste sa nachádza zariadenie napojené na budovu prostredníctvom súkromného káblového rozvodu, ktoré preukázateľne odstraňuje opätovne použiteľný a recyklovateľný odpad pred spálením.
CN5.7	Technológie LZC - Prvá generácia surovín z biomasy	BREEAM nehodnotí stavebné systémy poháňané biopalivami vyrábanými zo surovín prvej generácie (potravinárskych plodín), napr. biopalivá vyrábané z cukru, semien, obilia, živočíšnych tukov atď., ak sa pestujú alebo chovajú na účely výroby biopalív. Dôvodom je neistota, pokiaľ ide o ich vplyv na biodiverzitu, globálnu produkciu potravín a úspory skleníkových plynov počas ich životného cyklu.
CN5.8	Technológie LZC - Druhá generácia surovín z biomasy a biopalív z odpadov	BREEAM *môže* uznať systémy využívajúce biopalivá vyrobené z druhej generácie (nepotravinárskych) surovín alebo biopalivá vyrobené z biologicky rozložiteľných odpadových materiálov, napr. bioplyn, odpadový rastlinný olej alebo pevné biopalivá z miestnych a udržateľných zdrojov, napr. drevná štiepka, drevené pelety. Pred potvrdením prijateľnosti by spoločnosť BRE Global musela preskúmať ďalšie podrobnosti o zdroji biomasy, dodávateľskom reťazci a inštalovanom zariadení. Poskytnuté údaje by mali zahŕňať: 1. Typ, pôvod a udržateľnosť suroviny z biomasy 2. Zamedzenie alebo minimalizácia používania pevných palív pri získavaní biopaliva 3. Minimalizácia spotreby pevných palív pri preprave biomasy alebo biopaliva 4. Existencia dohody o dodávkach a robustného dodávateľského reťazca 5. Kompatibilita biopaliva s určeným kotlom alebo zariadením a otázky záruky výrobcu. BREEAM nedefinuje pojem „z miestnych zdrojov“ ani nešpecifikuje minimálnu zmluvu o dodávke. Posudzovateľ musí určiť a preukázať, že sú pre danú aplikáciu primerané.

Metodológia

Analýza pasívneho projektu

Akékoľvek úspory vyplývajúce zo začlenenia opatrení pasívneho návrhu by sa mali preukázať porovnaním potreby energie pre budovu s prijatými navrhovanými opatreniami pasívneho projektu a bez nich, ako sa uvádza v analýze pasívneho projektu.

Aby bolo možné stanoviť východiskovú hodnotu na porovnanie, musí sa modelovať „štandardná budova“. Štandardná budova by mala mať rovnakú podlahovú plochu, mal by to byť rovnaký typ budovy a mala by mať rovnakú kombináciu funkčných oblastí ako skutočná budova. Mala by mať konštrukciu a usporiadanie typické pre daný typ budovy s parametrami štruktúry, ktoré spĺňajú miestne stavebné predpisy. Umiestnenie a orientácia štandardnej budovy na mieste a rozmiestnenie zasklenia by mali byť typické pre daný typ budovy. Služby v budove a spôsoby využívania štandardnej budovy musia byť rovnaké ako v skutočnej budove.

Prípadné úspory v spotrebe energie by sa potom mali vypočítať porovnaním príslušných výstupov z dvoch modelov budovy, ktoré predstavujú navrhovanú špecifikáciu budovy, skutočnú budovu a špecifikáciu „štandardnej budovy“.

Tieto výpočty by mal vykonať inžinier technických zariadení budov alebo akreditovaný energetický posudzovateľ (pozri Ene 01 Zníženie spotreby energie a emisií uhlíka - Príslušné definície).

Štúdia uskutočniteľnosti s nízkymi a nulovými emisiami uhlíka

Zníženie dopytu vďaka technológiám s nízkym alebo nulovým obsahom uhlíka (LZC) sa preukazuje porovnaním:

- Regulovaných emisií oxidu uhličitého (CO_2) skutočnej budovy vrátane špecifikovaných/inštalovaných technológií LZC v porovnaní verzus
- Regulovaných emisií oxidu uhličitého (CO_2) skutočnej modelovanej budovy bez LZC.

Ak sa úspory CO_2 porovnajú pre rôzne technológie, môžu sa podľa potreby odhadnúť osobitne od energetického modelu budovy, napr. pomocou údajov výrobcov, jednoduchých ručných výpočtov alebo tabuliek.

Pre uvedené technológie sa zníženie dopytu modeluje pomocou dynamického simulačného modelovania. V prípade bez použitia energie sa používa plyn zo siete a elektrická energia zo siete. Ak by na mieste nebol k dispozícii plyn, namiesto neho sa môže použiť olej. Základný prípad zahŕňa všetky opatrenia týkajúce sa pasívneho projektu alebo voľného chladenia prijaté pre prvé dva kredity.

Dôkazová dokumentácia

Kritériá	Predbežná fáza projektu	Záverečná fáza po výstavbe
1–4	Správa o analýze pasívneho projektu. Dôkazy potvrdzujúce významné zníženie energetickej náročnosti budov.	Podľa fázy projektovania A Správa o inšpekcii miesta posudzovateľom BREEAM a fotografický dôkaz ALEBO výkresy v skutočnom stave.
5–6	Výsledky dynamického simulačného modelu preukazujúceho zníženie emisií CO_2-eq v prípade špecifikovanej nízkouhlíkovej a bezuhlíkovej technológie.	Podľa predbežnej fázy návrhu.

Dodatočné informácie

Relevantné definície

Energetický špecialista

Fyzická osoba, ktorá získala významné odborné znalosti vykonávaním hodnotenia LZC počas najmenej 3 rokov, má uznanú kvalifikáciu na vykonávanie hodnotenia, navrhovania a inštalácie riešení LZC v stavebníctve a nie je profesijne spojená s jednou technológiou alebo výrobcom LZC.

NZC v blízkosti miesta

Pozri Ene 01 Zníženie spotreby energie a emisií uhlíka - NZC v blízkosti miesta na str. 162.

LZC na mieste

Pozri Ene 01 Zníženie spotreby energie a emisií uhlíka - NZC na mieste na str. 162.

Doba návratnosti

Doba potrebná na to, aby sa finančný výnos z investície rovnal sume pôvodnej investície.

Vhodne kvalifikovaný inžinier pre energetické modelovanie

Pozri Ene 01 Zníženie spotreby energie a emisií uhlíka - Vhodne kvalifikovaný inžinier pre energetické modelovanie alebo akreditovaný odborník na str. 163.

Ďalšie informácie

Cieľ pasívneho projektu

Na rozdiel od Ene 01 Zníženie spotreby energie a emisií uhlíka na str. 150 (ktoré sa zameriava na preukázateľné a spoľahlivé zlepšenie výkonu) je cieľom Ene 04 Projektu s nízkymi emisiami uhlíka podporiť projektové tímy, aby prijali pasívny prístup k navrhovaniu.

V súvislosti s kreditom za pasívny projekt sa to odráža najmä v kritériu 2; analýza pasívneho projektu, ktorej cieľom je povzbudiť projektové tímy, aby aktívne zvážili spôsoby, akými by budova mohla mať prospech z opatrení pasívneho projektu (napr. tých, ktoré sú uvedené v CN3 na str. 180).

Aby sa však zabezpečilo, že výsledkom analýzy budú konštruktívne výsledky, na získanie jedného kreditu sa vyžaduje minimálne 5 % zníženie celkovej potreby energie v budove a na získanie dvoch kreditov sa vyžaduje 10 % zníženie.

Štúdia uskutočniteľnosti LZC

Štúdia uskutočniteľnosti LZC v systéme BREEAM má podporiť vypracovanie štúdie na začiatku projektu, nie až pred začatím výstavby, aby sa mohli prijať najvhodnejšie riešenia. Tento kredit tiež nepovoľuje technológie, ktoré nie sú osvedčenými postupmi alebo udržateľné, alebo sa nedajú modelovať pomocou spoľahlivej metódy.

Ene 05 Energeticky účinné chladiarenské sklady (len pre nebytové priestory)

Počet dostupných kreditov	Minimálne normy
3	Žiadne

Cieľ

Uznávať a podporovať inštaláciu energeticky účinných chladiacich systémov, čím sa znížia prevádzkové emisie skleníkových plynov vyplývajúce zo spotreby energie v systéme.

Kritériá hodnotenia

Na preukázanie súladu sa vyžaduje:

Jeden kredit - energeticky efektívny projekt, inštalácia a uvedenie do prevádzky

1 Pokiaľ ide o chladiaci systém, jeho ovládacie prvky a komponenty:
- 1.a Stratégia návrhu a inštalácie bola vypracovaná a realizovaná vhodne kvalifikovaným inžinierom na str. 193 od fázy koncepčného projektovania. Stratégia je multidisciplinárna a zahŕňa cieľ aj metódu na dosiahnutie najnižšieho možného vplyvu na životné prostredie vrátane spotreby energie, emisií uhlíka a vplyvu chladiva.
- 1.b Projektový tím preukázal, že chladiareň a budova boli navrhnuté tak, aby sa minimalizovala tepelná záťaž prostredníctvom vysokej úrovne izolácie, zníženej infiltrácie vzduchu a minimalizácie pomocnej tepelnej záťaže, napr. ventilátorov a čerpadiel, osvetlenia, ľudí a strojov.
- 1.c Najmenej 50 % príslušných energeticky účinných projektových prvkov (uvedených v Tabuľke 29 na nasledujúcej strane) bolo špecifikovaných alebo nainštalovaných.
- 1.d Riadiace systémy boli nainštalované tak, aby sa minimalizovalo zvyšovanie teploty chladiaceho média prostredníctvom ovládacích prvkov, ktoré optimalizujú úroveň teploty výparníka a zabraňujú regulácii tlaku výparníka.
- 1.e Čiastkové meranie energie bolo nainštalované, aby sa zabezpečilo centrálne monitorovanie prevádzkových parametrov a zber údajov o výkone zariadenia, úrovni teploty a spotrebe energie. Toto si nevyhnutne nevyžaduje, aby boli udelené kredity za „monitorovanie energie“.
- 1.f Projekt minimalizoval požiadavku na manuálne ovládanie ovládacích prvkov a zariadení za normálnych prevádzkových podmienok prostredníctvom špecifikácie centrálnych automatických regulátorov, regulátorov proti neoprávnenej manipulácii, automatických regulátorov osvetlenia, pevne nastavenej teploty a mŕtvych pásiem teploty.
- 1.g V špecifikácii projektu sú podrobne uvedené príslušné postupy uvedenia do prevádzky a testov, ktoré sa majú vykonať pri dokončení.
- 1.h Inštalácia sa riadi projektovou špecifikáciou a všetky potrebné zmeny boli vykonané so súhlasom príslušného kvalifikovaného inžiniera a sú formálne zdokumentované.

2 Chladiaci systém bol uvedený do prevádzky takto:
- 2.a V súlade s kritériami 5-6 pre uvedenie do prevádzky uvedenými v dokumente BREEAM Man 04 Uvedenie do prevádzky a odovzdanie na str. 66. To si nevyhnutne nevyžaduje, aby boli kredity za uvedenie do prevádzky udelené.
- 2.b Bola predložená dokumentácia preukazujúca náležitú starostlivosť a súlad so skúškami a uvedením do prevádzky relevantné pre inštaláciu, ako sú tlakové testovanie, testovanie tesnosti a validácia podľa špecifikácie.

Jeden kredit - Kritériá energetickej účinnosti

3 Chladiaci systém využíva robustné a testované komponenty, ktoré spĺňajú zverejnené kritériá energetickej účinnosti (pozri CN3.1 na str. 191).

Jeden kredit - Zníženie emisií skleníkových plynov z využívania energie počas celého života

4 Kritériá 1 a 2 na predchádzajúcej strane sú splnené.

5 Inštalovaný chladiaci systém vykazuje úsporu emisií skleníkových plynov (kg CO_2-eq) v porovnaní so štandardnou špecifikáciou systému. Emisie skleníkových plynov boli vypočítané pomocou rovnice definovanej v Metodológii na str. 191.

Kontrolné zoznamy a tabuľky

Tabuľka 29: Energeticky účinné konštrukčné prvky

Ref.	Možnosť 2 - Energeticky účinné projektové prvky
1	Namontujte energeticky účinné osvetlenie s vhodným ovládaním a vysokoúčinné ventilátory na výparníkoch.
2	Minimalizujte straty studeného vzduchu cez prístupové dvere minimalizovaním frekvencie otvárania dverí alebo montážou vzduchových clôn, samozatváracích dverí, dverových líšt atď.
3	Optimalizujte úroveň teploty výparníka, aby ste udržali čo najvyššiu teplotu nasávania alebo odparovania.
4	Špecifikujte kompresory s vysokou účinnosťou.
5	Zabezpečte ovládanie ohrievačov proti kondenzácii na dverách, aby sa minimalizovala spotreba elektrickej energie mimo prevádzkových hodín.
6	Kondenzačné teploty, ktoré sú čo najnižšie, vrátane vyhýbania sa regulácii tlaku v hlavici.
7	Výparníky a kondenzátory navrhnite tak, aby sa dali ľahko čistiť a bol k nim bezpečný prístup.
8	Optimalizujte metódy odmrazovania, aby ste minimalizovali spotrebu energie a vyhli sa odmrazovaniu elektrickým ohrievačom.
9	Skrine s vysokou teplotou odparovania (veľké cievky) s jednotnou teplotou odparovania v celom chladiacom balíku pre vitríny supermarketov.
10	Zabezpečenie spätného získavania tepla v projekte, ako je prehriatie na teplú vodu pre domácnosti, kondenzácia na teplú vodu na vykurovanie. (Ak je to špecifikované, nesmie to viesť ku kondenzačným podmienkam, ktoré sú umelo nadsadené, aby sa dosiahlo spätné získavanie tepla.)
11	Používanie mokrých kondenzačných systémov.
12	Používanie opätovne vyrobených predmetov, ktoré sú stále energeticky účinné, ak neohrozujú optimálnu energetickú účinnosť chladiarenského zariadenia.

Poznámky o súlade

Ref	Definície pojmov	Popis
Hrubá stavba a jadro (iba nebytové a rezidenčné inštitúcie)		
CN1	Príslušné hodnotiace kritériá	Len plášť: Táto otázka sa neuplatňuje. Plášť a jadro: Ak sú špecifikované alebo nainštalované chladiarenské systémy, uplatňujú sa všetky kritériá hodnotenia relevantné pre typ a funkciu budovy. Pozri Prílohu D - Hodnotenie plášťa a jadra projektu na str. 409, kde nájdete podrobnejší popis možností hodnotenia plášťa a jadra.
Obytné - čiastočne a úplne vybavené		
CN2	Príslušné hodnotiace kritériá - samostatné a bytové domy	Obidve možnosti: Táto otázka sa nevzťahuje na obytné domy. Pozri Prílohu E – Uplatniteľnosť BREEAM New Construction na obydlia pre jednu rodinu a obydlia pre viaceré rodiny , čiastočne a úplne vybavené na str. 412, kde nájdete podrobnejší popis možností hodnotenia bytových domov.
Všeobecné		
CN3	Rozsah tejto otázky BREEAM	Táto otázka sa uplatňuje len v prípadoch, keď sú špecifikované napríklad chladiace a skladovacie systémy komerčných alebo priemyselných rozmerov, ktoré sú neoddeliteľnou súčasťou budovy: 1. Skladovanie a chladenie potravín v supermarketoch. 2. Chladiarenské zariadenia v priemyselných, laboratórnych, zdravotníckych a iných budovách. Kritériá sa nevzťahujú na nasledovné: 1. Chladenie v obytných priestoroch. 2. Komerčné chladiace zariadenia pre kuchyne a stravovacie zariadenia, ktoré pozostávajú zo samostatných, hotových jednotiek (napr. veľkých mrazničiek alebo chladničiek) a ktoré sa dodávajú a inštalujú s vlastným chladiacim systémom. Tieto typy inštalácií sú zahrnuté v otázke Ene 08 BREEAM Energeticky účinné zariadenia na str. 204. Ak budova nemá žiadne chladiace systémy (alebo len chladiace systémy, ktoré nie sú neoddeliteľnou súčasťou budovy a nie sú obsluhované technickými službami budovy), potom sa táto otázka na hodnotenie nevzťahuje.

Ref	Definície pojmov	Popis
CN3.1	Zverejnené kritériá energetickej účinnosti. Pozri kritérium 3 na str. 189.	Pozri Zoznam schválených noriem a váh (ASWL), kde nájdete príslušné zverejnené národné osvedčené postupy v krajine hodnotenia. Ak kritériá energetickej účinnosti, ktoré chcete použiť, nie sú uvedené v ASWL, musíte sa obrátiť na spoločnosť BRE Global, aby vám tieto kritériá schválila a pridala. BRE Global hodnotí kritériá energetickej účinnosti na základe týchto bodov: 1. Je stupnica/kritériá prehodnocovaná a aktualizovaná každoročne alebo každé dva roky? 2. Je autor/vlastník/posudzovateľ stupnice/kritérií nezávislý a nemá postranné úmysly? 3. Je hodnotenie produktov a následná oprávnenosť a/alebo hodnotenie nezávislé? 4. Existuje jasne definovaný súbor kritérií, podľa ktorých sa produkt testuje/posudzuje? 5. Má stupnica význam pre chladiarenské skladovanie? 6. Je schéma certifikovaná treťou stranou? Tento zoznam sa nachádza aj v dokumente ASWL. Príkladom vhodných zverejnených kritérií energetickej účinnosti je Zoznam energetických technológií (ETL): etl.beis.gov.uk.
CN3.2	Prístavby k existujúcim budovám	Ak je hodnotená budova prístavbou k existujúcej budove a v existujúcej budove sa nachádza chladiarenské zariadenie, ktoré bude slúžiť novej prístavbe, potom toto zariadenie musí spĺňať kritériá, aby sa dosiahli všetky dostupné kredity.

Metodológia

Výpočet celoživotného zníženia emisií skleníkových plynov z prevádzkového využívania energie

V tejto otázke sa zohľadňujú len emisie skleníkových plynov z prevádzkového využívania energie. Emisie skleníkových plynov z prchavých chladív sú posúdené v Pol 01 Vplyv chladív na str. 362.

Na výpočet vplyvu spotreby energie systému počas životnosti sa musí použiť nasledujúca rovnica:

$$\text{Lifetime carbon emissions} = n \times E_{annual} \times \beta$$

Kde:

Pojem	Popis (a jednotka)
Celoživotné emisie uhlíka	Celkový ekvivalentný vplyv na otepľovanie (kg CO_2-eq)
n	Prevádzkový čas systému (rok)
E_{annual}	Spotreba energie (kWh/rok)
β	Emisný faktor CO_2 pre príslušný zdroj energie (kg CO_2-eq/kWh).

Výpočty musí vykonať primerane kvalifikovaný inžinier uvedený na titulnej strane (napr. inžinier stavebných služieb), vrátane výpočtov na zdôvodnenie predpokladov a metodológií úspor emisií skleníkových plynov.

Energeticky účinné konštrukčné prvky

Ak sú prvky vylúčené z posudzovania, musí príslušne kvalifikovaný inžinier poskytnúť písomné odôvodnenie určenia, ktoré z nich sú nedosiahnuteľné.

Dôkazová dokumentácia

Kritériá	Predbežná fáza projektu	Záverečná fáza po výstavbe
1–4	Príslušná časť alebo ustanovenia stavebnej špecifikácie alebo zmluvy alebo iný listinný dôkaz, napr. list od projektového tímu. Ak nie sú pre projekt relevantné všetky energeticky účinné projektové prvky, primerane kvalifikovaný inžinier písomne zdôvodní, prečo boli vylúčené.	Ako fáza návrhu.
2–4	Dôkazy, ako je uvedené v časti BREEAM Man 01 Súhrn projektu a návrh na str. 44 pre príslušné kritériá.	Ako fáza návrhu.
3	List od výrobcu alebo dodávateľa alebo kópie ich technickej literatúry potvrdzujúce, že konkrétne komponenty spĺňajú uverejnené kritériá energetickej účinnosti, alebo výtlačok certifikátu ETL (alebo ekvivalentného dokumentu), v ktorom sú uvedené konkrétne produkty.	Ako fáza návrhu.
5	Doklady potvrdzujúce typ špecifikovanej technológie a odhadované úspory nepriamych emisií skleníkových plynov vrátane popisu spôsobu dosiahnutia týchto úspor. Výpočty by mal vykonať primerane kvalifikovaný inžinier vrátane odôvodnenia predpokladov a metodológií úspor nepriamych emisií skleníkových plynov.	Ako fáza návrhu plus potvrdenie inštalovanej technológie.

Dodatočné informácie

Relevantné definície

Zoznam energetických technológií (ETL)

Zoznam energetických technológií (ETL) je zoznam energeticky účinných zariadení, ktorý obsahuje podrobné kritériá energetickej účinnosti pre každý typ technológie a zoznam produktov v každej kategórii, ktoré ich spĺňajú. Vypracovala ju vláda Spojeného kráľovstva a každoročne ju reviduje Ministerstvo pre podnikanie, energetiku a priemyselnú stratégiu (BEIS).

Emisie skleníkových plynov z prevádzkového využívania energie

Ide o emisie skleníkových plynov, ktoré vznikajú pri výrobe energie používanej na pohon chladiaceho zariadenia chladiaceho systému. Patria sem aj emisie z výroby elektrickej energie zo siete alebo zo zdroja výroby energie na mieste (napr. z plynovej kogenerácie).

Inžinier s príslušnou kvalifikáciou

Jednotlivec, ktorý dosiahne všetky nasledujúce body, sa môže považovať za „primerane kvalifikovaného“ na účely tejto otázky BREEAM:

1. Má právomoc rozhodovať o konečnom projekte.
2. Má vysokoškolské vzdelanie alebo rovnocennú kvalifikáciu v oblasti stavebného inžinierstva alebo v príslušnom príbuznom odbore.
3. Má minimálne päťročnú prax v oblasti projektovania (za posledných sedem rokov). Tieto skúsenosti musia jasne preukazovať praktické pochopenie faktorov ovplyvňujúcich projektovanie chladiarenských skladov a zahŕňať súvisiace CPD.

Ďalšie informácie

Žiadne.

Ene 06 Energeticky účinné dopravné systémy (všetky budovy)

Počet dostupných kreditov	Minimálne normy
3	Žiadne

Cieľ

Rozpoznať a podporovať špecifikáciu energeticky účinných dopravných systémov.

Kritériá hodnotenia

Na preukázanie súladu sa vyžaduje:

Jeden kredit - Spotreba energie

1 Ak sú špecifikované výťahy, pohyblivé schody alebo pohyblivé chodníky (typy dopravy):
- 1.a Na určenie optimálneho počtu a veľkosti výťahov, pohyblivých schodov alebo pohyblivých chodníkov sa vykonala analýza požiadaviek na dopravu a spôsobov používania budovy.
- 1.b Spotreba energie bola odhadnutá v súlade s normou ISO 25745 Energetická hospodárnosť výťahov, pohyblivých schodov a pohyblivých chodníkov, Časť 2: Výpočet a klasifikácia energie pre výťahy alebo Časť 3: Výpočet a klasifikácia energie pre pohyblivé schody a pohyblivé chodníky pre jeden z týchto prípadov:
  - 1.b.i Aspoň dva typy systému (pre každý požadovaný druh prepravy) ALEBO
  - 1.b.ii Usporiadanie systémov (napr. výťahy, hydraulické, trakčné, výťahy bez strojovne (MRL)), ALEBO
  - 1.b.iii Systémová stratégia, ktorá je „vhodná na daný účel“.
- 1.c Malo by sa zvážiť použitie rekuperačných pohonov v súlade s požiadavkami uvedenými v CN6 na str. 196.
- 1.d Určí sa dopravný systém s najnižšou spotrebou energie.

Dva kredity - Energeticky účinné prvky

2 Kritérium 1 je splnené.

Výťahy

3 Pre každý výťah sú špecifikované tieto tri energeticky účinné vlastnosti:
- 3.a Výťahy pracujú v pohotovostnom režime v čase mimo špičky. Napríklad výkonová strana riadiacej jednotky výťahu a ďalšie prevádzkové zariadenia, ako je osvetlenie kabíny výťahu, používateľské displeje a ventilátory, sa vypnú, keď je výťah predpísaný čas nečinný.
- 3.b Osvetlenie kabíny výťahu a osvetlenie displeja poskytuje priemernú účinnosť svietidiel (vo všetkých svietidlách v kabíne) viac ako 70 lúmenov na jeden watt obvodu.
- 3.c Výťah využíva riadiacu jednotku pohonu, ktorá dokáže riadiť motor pohonu s premenlivou rýchlosťou, premenlivým napätím a premenlivou frekvenciou (VVVF).

4 Tam, kde sa preukáže, že použitie rekuperačných pohonov šetrí energiu, sú tieto pohony špecifikované.

Pohyblivé schody alebo pohyblivé chodníky

Každý pohyblivý schod alebo pohyblivý chodník spĺňa aspoň jednu z týchto požiadaviek:

5 Je vybavený zariadením na snímanie zaťaženia, ktoré synchronizuje výkon motora s požiadavkami cestujúcich prostredníctvom pohonu s premenlivými otáčkami.

ALEBO

6 Je vybavený zariadením na snímanie cestujúcich pre automatickú prevádzku (automatická chôdza), takže pohyblivé schody pracujú v pohotovostnom režime, keď nie je žiadny dopyt cestujúcich.

Kontrolné zoznamy a tabuľky

Žiadne.

Poznámky o súlade

Ref	Definície pojmov	Popis
Hrubá stavba a jadro (iba nebytové a rezidenčné inštitúcie)		
CN1	Príslušné hodnotiace kritériá	Len plášť: Táto otázka sa neuplatňuje. Plášť a jadro: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy Pozri Príloha D - Posúdenie plášťa a jadra projektu na strane 409 Podrobnejší opis možností hodnotenia plášťa a jadra.
Obytné - čiastočne a úplne vybavené		
CN2	Príslušné hodnotiace kritériá - Obydlia pre jednu rodinu a obydlia pre viaceré rodiny	Obidve možnosti: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy. Pozri Prílohu E – Uplatniteľnosť BREEAM New Construction na obydlia pre jednu rodinu a obydlia pre viaceré rodiny, čiastočne a úplne vybavené na str. 412, kde nájdete podrobnejší popis možností hodnotenia bytových domov.
Všeobecné		
CN3	Rozsah tejto otázky	Kritériá týkajúce sa výťahov sa vzťahujú na všetky zdvíhacie zariadenia s menovitou rýchlosťou vyššou ako 0,15 m/s vrátane nákladných výťahov, výťahov pre vozidlá a osobných výťahov. Toto znamená, že výťahy v obydliach pre jednu rodinu alebo výťahy inštalované v iných nízkopodlažných budovách, ktoré sú špeciálne určené na používanie osobami so zníženou pohyblivosťou, sú zvyčajne z hodnotenia vylúčené.
CN4	Analýza dopravy - Bezbariérový prístup a nákladné výťahy	Analýza dopravy môže mať formu písomného vyhlásenia, v ktorom sa zdôvodní výber výťahu za týchto podmienok: ak sa v nízkopodlažnej budove poskytuje jediný výťah len na účely zabezpečenia prístupu pre osoby so zdravotným postihnutím; alebo ak sa nákladný výťah vyberá na základe veľkosti tovaru, ktorý má prepravovať.
CN4.1	Analýza dopravy - Vykonáva výrobca výťahu	BREEAM uznáva, že výrobcovia/dodávatelia výťahov sú často poverení poskytovaním takéhoto odborného poradenstva. Ak je posudzovateľ presvedčený, že analýza bola vykonaná správne, môže ju predložiť ako dôkaz o súlade. (KBCN0232)
CN5	Budova nemá výťahy, pohyblivé schody ani pohyblivé chodníky	Tento problém sa odfiltruje , ak budova neobsahuje výťahy, pohyblivé schody alebo pohyblivé chodníky s menovitou rýchlosťou vyššou ako 0,15 m/s. Ak je prítomný len jeden z dopravných systémov, môžu sa udeliť dva kredity, ak je jeden systém v súlade s príslušnými kritériami.

Ref	Definície pojmov	Popis
CN6	Výťahy - rekuperačné pohony. Pozri kritériá 1.c a 4.	O rekuperačnom pohone by sa malo uvažovať len vtedy, ak prináša väčšiu úsporu energie, ako je dodatočná energia v pohotovostnom režime použitá na podporu pohonov. Rekuperačné pohony sú zvyčajne vhodné pre výťahy s veľkým počtom jázd a vysokou intenzitou používania. Ak však možno preukázať, že to nie je finančne životaschopné, pri zohľadnení návratnosti počas životnosti zariadenia možno túto možnosť zamietnuť.
CN6.1	Výťahy - Pevný pomer protiváhy	Požiadavku na analýzu vyvažovacieho pomeru možno vynechať, ak projektový tím môže predložiť vyhlásenie potvrdzujúce, že ho výrobca stanovil na základe existujúcich noriem a s cieľom maximalizovať účinnosť. Ostatné kritériá musia byť splnené. (KBCN0327)
CN6.2	Výťahy - Predĺženie výťahovej šachty	Ak rozsah prác týkajúcich sa výťahu zahŕňa len rozšírenie výťahovej šachty na ďalšie poschodia, hodnotenie tohto výťahu nie je vhodné. Ak sa na výťahovom systéme vykonajú zmeny, je potrebné ich posúdiť. V prípade zmien výťahových systémov je potrebné tieto výťahy zahrnúť do hodnotenia, aby sa podporila špecifikácia energeticky účinných dopravných systémov. (KBCN0802)
CN6.3	Výťahy - Evakuačné výťahy	Evakuačné výťahy, ktoré sa budú používať len v núdzových situáciách, sa môžu vylúčiť z príslušných kritérií BREEAM. Ak sa však tieto výťahy používajú počas bežnej prevádzky budovy, je potrebné ich hodnotiť. (KBCN0437)
CN6.4	Výťahy - Novostavba s využitím existujúcich výťahov	Ak sa hodnotí len novostavba prístavby (a nie existujúca budova), výťahy v existujúcej budove nepatria do rozsahu pôsobnosti Ene 06 a nemusia sa hodnotiť. Platí to len vtedy, keď sa výťahy neobnovujú alebo neprechádzajú rozsiahlou rekonštrukciou. (KBCN0444)

Metodológia

Žiadna.

Dôkazová dokumentácia

Kritériá	Predbežná fáza projektu	Záverečná fáza po výstavbe
1	Odborná správa alebo štúdia dopravnej analýzy alebo výpočtov.	Ako fáza návrhu.

Kritériá	Predbežná fáza projektu	Záverečná fáza po výstavbe
3 – 6	Príslušná časť alebo ustanovenia stavebnej špecifikácie alebo zmluvy A Podrobnosti o produkte od výrobcu ALEBO Formálny záväzný list od výrobcu alebo dodávateľa systému A Ak sa má rekuperačná pohonná jednotka vylúčiť ako energeticky účinný prvok, písomné potvrdenie od dodávateľa elektrickej energie a projekčného tímu s uvedením dôvodov jej vylúčenia.	Podrobnosti o produkte od výrobcu. Správa posudzovateľa BREEAM z inšpekcie na mieste a fotografický dôkaz alebo výkresy zhotovenia.

Dodatočné informácie

Relevantné definície

Stav nečinnosti

Stav, keď výťah stojí na podlahe po jazde pred prechodom do pohotovostného režimu (ISO 25745-1: 2012).

Výťah bez strojovne (MRL)

Všetky zariadenia sa nachádzajú vo výťahovej šachte, nie v samostatnej strojovni.

Pohotovostný stav - výťahy

Stav, keď výťah stojí na podlahe a môže mať zníženú spotrebu energie na nižšiu úroveň nastavenú pre daný výťah (z normy ISO 25745-1: 2012). Doba medzi posledným použitím výťahu a vstupom do pohotovostného režimu je v norme ISO 25745-1 definovaná ako 5 minút.

Pohotovostný stav - pohyblivé schody a pohyblivé chodníky

Stav, keď pohyblivé schody alebo pohyblivý chodník stoja a sú zapnuté a môže ich spustiť oprávnený personál.

Ďalšie informácie

ISO 25745 - Energetická hospodárnosť výťahov, pohyblivých schodov a pohyblivých chodníkov

Norma ISO 25745 sa skladá z troch častí pod všeobecným názvom „Energetická hospodárnosť výťahov, pohyblivých schodov a pohyblivých chodníkov“:

- Časť 1: Meranie a overovanie energie
- Časť 2: Výpočet a klasifikácia energie pre výťahy (pohyblivé schody)
- Časť 3: Výpočet a klasifikácia energie pre pohyblivé schody a pohyblivé chodníky pre jeden z týchto prípadov:

V časti 1 sa odhaduje, že približne 5 % celkovej spotreby energie v budove možno pripísať prevádzke výťahov a veľkú časť z toho možno v mnohých situáciách pripísať pohotovostnému režimu.
Časti 2 a 3 normy ISO 25745 boli pripravené ako reakcia na rýchlo rastúcu potrebu zabezpečiť a podporiť účinné a efektívne využívanie energie, pričom sa poskytuje:

1. Metóda odhadu dennej a ročnej spotreby energie pre výťahy, pohyblivé schody a pohyblivé chodníky
2. Metóda energetickej klasifikácie nových, existujúcich alebo modernizovaných výťahov, pohyblivých schodov a pohyblivých chodníkov
3. Usmernenia na zníženie spotreby energie, ktoré možno použiť na podporu systémov environmentálnej a energetickej klasifikácie budov.

Ene 07 Energeticky účinné laboratórne systémy (len pre nebytové priestory)

Počet dostupných kreditov	Minimálne normy
Závisí od typu budovy	Žiadne

Cieľ

Uznávať a podporovať laboratóriá, ktoré sú navrhnuté tak, aby boli energeticky účinné a minimalizovali emisie CO_2 spojené s ich prevádzkovou spotrebou energie.

Kritériá hodnotenia

Táto otázka je rozdelená do troch častí:

- Predpoklad
- Špecifikácia projektu (1 kredit)
- Energeticky účinné opatrenia (až 4 kredity v závislosti od veľkosti laboratória)

Na preukázanie súladu sa vyžaduje:

Predpoklad

1 Hea 03 Bezpečné zachytávanie v laboratóriách Kritérium 1 bolo splnené.

Jeden kredit - Špecifikácia projektu

2 Zapojenie klienta sa uskutočňuje prostredníctvom konzultácií počas prípravy úvodného projektového zadania s cieľom určiť požiadavky používateľov a definovať kritériá výkonnosti laboratória. Kritériá výkonnosti musia zahŕňať minimálne tieto aspekty:
- 2.a Popis účelu
- 2.b Činnosti používateľa alebo procesu
- 2.c Požiadavky a normy na ochranu pred znečistením
- 2.d Požiadavky na výmenu vzduchu
- 2.e Výkonnosť a účinnosť vetracieho systému
- 2.f Požiadavky na vykurovanie a chladenie (vrátane rekuperácie tepla)
- 2.g Interakcia medzi systémami
- 2.h Flexibilita a prispôsobivosť laboratórnych zariadení.

3 Projektový tím preukáže, že dopyt po energii laboratórnych zariadení bol minimalizovaný v dôsledku dosiahnutia stanovených kritérií projektovej výkonnosti. Na základe toho sa určila správna veľkosť (pozri Relevantné definície na str. 202) zariadení systému služieb (vrátane prívodu a odvodu vzduchu).

Laboratórne zachytávacie zariadenia a zachytávacie priestory (kritériá sa vzťahujú len na budovy, v ktorých sa nachádzajú tieto zariadenia)

4 Digestory a iné zachytávacie zariadenia majú špecifikáciu, ktorá je v súlade s kritériami 2 a 3 na str. 111 dokumentu Hea 03 Bezpečné zachytávanie v laboratóriách na str. 111, podľa špecifikácie zachytávacieho zariadenia .

5 Ak sú digestory s potrubím novo špecifikované alebo prítomné:
- 5.a Súlad s bodom A na nasledujúcej strane v Tabuľke 30 na nasledujúcej strane

5.b Meranie objemového prietoku by sa malo uskutočniť vo výfukovom potrubí (na hranici laboratória), aby sa zohľadnilo zníženie objemového prietoku (dovnútra) v dôsledku netesnosti digestora

5.c Zníženie prietoku vzduchu neohrozuje definované výkonnostné kritériá, a preto sa nezvyšuje zdravotné a bezpečnostné riziko pre budúcich používateľov budovy.

Až štyri kredity - energeticky účinné opatrenia s osvedčenými postupmi

Nasledujúce kritériá sa uplatňujú, ak plocha laboratória predstavuje aspoň 10 % celkovej podlahovej plochy budovy (pozri Relevantné definície na str. 202).

6 Kritériá 1 až 5 na predchádzajúcej strane sú splnené (alebo kritériá 1 až 4 na predchádzajúcej strane , ak nie sú špecifikované potrubné digestory).

7 Laboratórne zariadenia a systémy sú projektované, špecifikované a inštalované tak, aby podporovali energetickú účinnosť, čo sa preukazuje prostredníctvom súladu s bodmi B na nasledujúcej strane až L na str. 201 v Tabuľke 30 (spôsob udeľovania kreditov je uvedený v bodoch 7.a a 7.b):

7.a Až dva kredity: laboratórny priestor (pozri Relevantné definície na str. 202) predstavuje najmenej 10 % (ale menej ako 25 %) celkovej hrubej vnútornej podlahovej plochy budovy, ALEBO

7.b Až štyri kredity: laboratórny priestor predstavuje 25 % alebo viac z celkovej hrubej vnútornej podlahovej plochy budovy.

8 Vykonané opatrenia musia viesť k zníženiu celkovej spotreby energie v laboratóriu aspoň o 2 %. Toto sa musí preukázať výpočtami alebo modelovaním.

9 Uvedené energeticky účinné opatrenia neohrozujú stanovené kritériá energetickej hospodárnosti, a preto nezvyšujú zdravotné a bezpečnostné riziko pre budúcich užívateľov budovy .

Kontrolné zoznamy a tabuľky

Tabuľka 30: Energeticky účinné postupy v laboratóriách

Ref.	Kategória	Popis	Kredity [1]
A	Znížené objemové prietoky v digestore	Priemerný konštrukčný prietok vzduchu v digestoroch nesmie byť väčší ako 0,16 m³/s na bežný meter (vnútorná šírka) pracovného priestoru digestora.	-
Dodatočné opatrenia			

<table>
<tr><th>Ref.</th><th>Kategória</th><th>Popis</th><th>Kredity [1]</th></tr>
<tr><td>B</td><td>Výkon ventilátora</td><td>Špecifikácia a dosiahnutie najlepších výkonov ventilátorov (ako je uvedené nižšie) pre všetky vzduchotechnické jednotky (AHU), laboratórne odsávacie systémy, miestne odsávacie vetranie, odsávanie v ochranných priestoroch (ak je to vhodné) a odsávanie v digestoroch (ak je to vhodné).

<table><tr><th>Laboratórny systém</th><th>Špecifický výkon ventilátora podľa osvedčených postupov (W/(l/s))</th></tr><tr><td>Všeobecný laboratórny prívod vzduchu AHU s ohrevom a chladením</td><td>1,5</td></tr><tr><td>Všeobecné laboratórne extrakčné systémy</td><td>1,2</td></tr><tr><td>Laboratórne miestne odsávanie - potrubné</td><td>1,0</td></tr><tr><td>Odsávanie zo zachytávacieho priestoru bez vysokoúčinnej absorpcie častíc (HEPA)</td><td>1,5</td></tr><tr><td>Odsávanie zo zachytávacieho priestoru s filtráciou HEPA</td><td>2,5</td></tr></table></td><td>1</td></tr>
<tr><td>C</td><td>Objemové prietoky digestorov (ďalšie zníženie)</td><td>Priemerný konštrukčný prietok vzduchu < 0,12 m³/s na lineárny meter (vnútorná šírka) pracovného priestoru digestora.</td><td>0,5</td></tr>
<tr><td>D</td><td>Zoskupenie alebo izolácia činností s vysokou filtráciou alebo vetraním</td><td>Minimalizácia rýchlosti výmeny vzduchu v miestnosti a celkového prietoku vzduchu v zariadení zoskupením alebo izolovaním činností a zariadení s vysokými požiadavkami na filtráciu alebo vetranie.</td><td>0,5</td></tr>
<tr><td>E</td><td>Rekuperácia energie - teplo</td><td>Rekuperácia tepla z odpadového vzduchu (ak nehrozí riziko krížovej kontaminácie) alebo prostredníctvom chladiaceho systému alebo systému chladenia vodou.</td><td>0,5</td></tr>
<tr><td>F</td><td>Rekuperácia energie - chladenie</td><td>Rekuperácia chladu prostredníctvom výmenníkov tepla odvádzaného vzduchu (ak nehrozí riziko krížovej kontaminácie) alebo prostredníctvom chladiacich alebo vodných chladiacich systémov.</td><td>0,5</td></tr>
<tr><td>G</td><td>Zoskupenie chladiacich záťaží</td><td>Zoskupenie chladiacich záťaží s cieľom umožniť efektívnosť dodávky a prenos tepla.</td><td>0,5</td></tr>
</table>

Ref.	Kategória	Popis	Kredity [1]
H	Voľné chladenie	Špecifikácia voľných chladiacich cievok v chladiacich zariadeniach alebo chladičoch suchého vzduchu v súvislosti s činnosťami špecifickými pre laboratórium.	0,5
I	Reakcia na zaťaženie	Efektívne zosúladenie ponuky s dopytom prostredníctvom modulárnosti, pohonov a čerpadiel s premenlivými otáčkami a iných mechanizmov.	0,5
J	Čisté miestnosti	Špecifikácia systémov monitorovania častíc spojených s riadením prúdenia vzduchu.	0,5
K	Rozmanitosť	Dosiahnutie vysokej úrovne rozmanitosti pri dimenzovaní centrálnych zariadení a laboratórnych potrubí, ak je to zlučiteľné s bezpečnosťou.	0,5
L	Rýchlosť výmeny vzduchu v miestnosti	Zníženie rýchlosti výmeny vzduchu prispôsobením prietokov vetracieho vzduchu potrebám prostredia a požiadavkám ochranných zariadení.	0,5

Poznámky:
1. V tejto otázke je možné udeliť len celé kredity. Polovičné kredity sa musia zaokrúhliť nadol na najbližšie celé číslo. Preto, aby laboratórium získalo kredit za body C až L (uvedené vyššie), musí spĺňať aspoň dva z týchto bodov.

Poznámky o súlade

Ref	Definície pojmov	Popis
Hrubá stavba a jadro (iba nebytové a rezidenčné inštitúcie)		
CN1	Príslušné hodnotiace kritériá	Obidve možnosti: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy Pozri Príloha D - Posúdenie plášťa a jadra projektu na strane 409 Podrobnejší opis možností hodnotenia plášťa a jadra.
Obytné - čiastočne a úplne vybavené		
CN2	Príslušné hodnotiace kritériá - Obydlia pre jednu rodinu a obydlia pre viaceré rodiny	Obidve možnosti: Táto otázka sa neuplatňuje. Pozri Prílohu E – Uplatniteľnosť BREEAM New Construction na obydlia pre jednu rodinu a obydlia pre viaceré rodiny, čiastočne a úplne vybavené na str. 412, kde nájdete podrobnejší popis možností hodnotenia bytových domov.
Všeobecné		
CN3	Rozsah tejto otázky BREEAM	Táto otázka sa nevzťahuje na školské budovy (základné a stredné školy). Pri hodnotení laboratórií a ochranných zariadení v týchto typoch budov by sa mali dodržiavať kritériá pre laboratóriá v rámci otázky Hea 03 Bezpečné zachytávanie v laboratóriách na str. 111.

Metodológia

Žiadna.

Dôkazová dokumentácia

Kritériá	Predbežná fáza projektu	Záverečná fáza po výstavbe
1, 4	Dôkazy požadované na splnenie príslušných kritérií Hea 03 Bezpečné zachytávanie v laboratóriách na str. 111.	Dôkazy požadované na splnenie príslušných kritérií Hea 03 Bezpečné zachytávanie v laboratóriách na str. 111.
2–3	Program alebo zápisnice z konzultačných stretnutí s klientmi. Vhodné dôkazy preukazujúce, že projektový tím zohľadnil spätnú väzbu z konzultácií a všetky následné opatrenia. Príslušná časť alebo ustanovenia špecifikácií budovy alebo zmluva, v ktorej sú uvedené definované kritériá výkonnosti laboratórneho zariadenia.	Správa posudzovateľa BREEAM z inšpekcie na mieste a fotografický dôkaz alebo výkresy zhotovenia. Dokumentácia dodávateľa alebo výrobcu, alebo projektového tímu pre špecifikáciu v skutočnom stave.
5–9	Príslušná časť alebo ustanovenia stavebnej špecifikácie alebo zmluvy A Výsledky modelovania, výpočty alebo informácie od výrobcov. Formálna korešpondencia od projektového tímu.	Ako v štádiu návrhu, ale pre informácie v skutočnom stave. Správa o inšpekcii miesta BREEAM a fotografické dôkazy alebo výkresy v skutočnom stave. Správa o uvedení do prevádzky alebo podobná správa preukazujúca, že sa dosiahol projektovaný výkon izolácie a prúdenie vzduchu.

Dodatočné informácie

Relevantné definície

Laboratórne priestory

Laboratórne priestory sú definované ako priestory s vysokou úrovňou služieb (s riadenou teplotou, vetraním, vlhkosťou alebo izoláciou), v ktorých sa vykonáva fyzikálne, biologické alebo chemické spracovanie alebo testovanie. Takéto priestory majú prirodzene vysoké energetické nároky. Aby sa zachovali kontrolované podmienky umožňujúce experimenty a dodržiavanie zdravotných a bezpečnostných noriem, zvyčajne platí pre laboratóriá nasledovné:

1. Majú rôzne odsávacie a zachytávacie zariadenia (ako sú digestory a mikrobiologické bezpečnostné skrinky)
2. Sú veľmi využívané na cirkuláciu vzduchu a dodávku tepla, chladu, vlhkosti a čistého vzduchu.
3. Často si vyžadujú 24-hodinový prístup a bezporuchové redundantné záložné systémy a neprerušované napájanie alebo núdzové napájanie, aby bolo možné vykonávať nenahraditeľné experimenty.

Preto sa na účely hodnotenia tejto otázky BREEAM z definície laboratórnych priestorov vylučujú všetky oblasti laboratórnej podpory, ako sú:

1. Pracovné priestory alebo kancelárie
2. Zasadacie miestnosti
3. Skladovanie
4. Pomocné a iné podporné oblasti s nižšími nárokmi na obsluhu.

Výučbové a iné laboratórne dielne s obmedzeným množstvom digestorov alebo iných ochranných zariadení alebo bez špecifikovaných energeticky náročných technologických zariadení sú vylúčené, pokiaľ projektový tím nemôže poskytnúť dôkaz, že ich spotreba je aspoň o 50 % vyššia ako v bežnej kancelárii v dôsledku činností súvisiacich s laboratórnymi procesmi. Referenčné hodnoty pre všeobecné kancelárie nájdete v Tabuľke 30 na str. 199 v CIBSE

TM46[57] Energetické referenčné hodnoty. Typicky v budovách, kde 40 % podlahovej plochy pripadá na laboratóriá, len 10 % bude v skutočnosti predstavovať laboratórne priestory podľa definície BREEAM. Rôzne typy laboratórií majú rôzne požiadavky na HVAC, zaťaženie zástrčky pre malé elektrické zariadenia a prístup. Toto môže viesť k obrovským rozdielom v požiadavkách na energiu a vodu. Medzi hlavné typy laboratórií patria:

1. Mokré laboratóriá - v ktorých sa testujú a analyzujú chemikálie, drogy alebo iný materiál alebo biologické látky vyžadujúce vodu, priame vetranie a špecializované potrubné rozvody. Zvyčajne zahŕňajú chemické vedecké laboratóriá. Tieto laboratóriá si vyžadujú špeciálne navrhnuté zariadenia.
2. Suché laboratóriá - obsahujú suché skladované materiály, elektroniku alebo veľké prístroje s malým počtom rozvodov. Zvyčajne ide o technické alebo analytické laboratóriá, ktoré si môžu vyžadovať presnú reguláciu teploty a vlhkosti, kontrolu prašnosti a čistú energiu.
3. Mikrobiologické a klinické laboratóriá - často zahŕňajú prácu s infekčnými agensmi. Typicky si vyžadujú vyššiu úroveň primárnej izolácie a viacero sekundárnych bariér, vrátane špecializovaných ventilačných systémov na zabezpečenie smerového prúdenia vzduchu, systémov na úpravu vzduchu na dekontamináciu alebo odstránenie látok z odsávaného vzduchu, kontrolovaných prístupových zón, vzduchových uzáverov ako vstupov do laboratória alebo samostatných budov alebo modulov na izoláciu laboratória.
4. Laboratóriá in vivo - vyžadujú si vysoko kontrolované prostredie na starostlivosť a udržiavanie flóry a fauny. Zariadenia sú zložité a ich výstavba a prevádzka je nákladná. Je potrebná prísna kontrola prostredia v zariadení, aby sa zabránilo vnášaniu kontaminantov alebo patogénov a zabránilo sa možnosti vypuknutia infekčných ochorení a prenosu zápachu.
5. Výučbové laboratóriá - jedinečné pre akademické ústavy, vyžadujú priestor pre výučbové zariadenia, skladovací priestor pre veci študentov a menej prístrojového vybavenia ako vo výskumných laboratóriách.
6. Čisté priestory - ide o kontrolované prostredie (kvalita vzduchu, teplota a vlhkosť), ktoré zabraňuje kontaminácii a vyžaduje reguláciu podmienok prostredia, aby sa uľahčil presný výskum a výroba. Zvyčajne sa používajú na univerzitách pre nanotechnológie, lekársky a farmaceutický výskum alebo štúdie a aplikácie v mikroelektronike.

Správna nastavenie veľkosti

Zásady správneho nastavenia veľkosti podporujú používanie lepších odhadov zaťaženia zariadení, na základe ktorých sa dimenzujú servisné zariadenia, v porovnaní s tradičnými metódami odhadov založených na menovitých údajoch získaných z literatúry výrobcov alebo predpokladov návrhu z predchádzajúcich projektov. Toto môže priniesť okrem úspory nákladov počas životného cyklu aj úsporu nákladov na výstavbu, pričom sa zohľadní potreba primeranej nepredvídanej rezervy.

Ďalšie informácie

Synergia s otázkou BREEAM - Zníženie spotreby energie a emisií uhlíka

Táto otázka BREEAM bola vypracovaná s cieľom uznať zlepšenia vykonané v nových laboratórnych priestoroch alebo budovách, ktoré v súčasnosti nie sú plne uznané v národnej metodike výpočtu, ktorá sa používa na hodnotenie a udeľovanie kreditov v Ene 01 Zníženie spotreby energie a emisií uhlíka na strane 150.

Ene 08 Energeticky účinné zariadenia (všetky budovy)

Počet dostupných kreditov	Minimálne normy
2	Žiadne

Cieľ

Rozpoznať a podporovať obstarávanie energeticky účinných zariadení na zabezpečenie optimálneho výkonu a úspor energie v prevádzke.

Kritériá hodnotenia

Na preukázanie súladu sa vyžaduje:

Dva kredity

1 Identifikujte zariadenia využívajúce energiu, ktoré patria do rozsahu tejto otázky, a odhadnite ich podiel na celkovej ročnej spotrebe energie zariadení v budove za predpokladu typickej alebo štandardnej špecifikácie.

2 Identifikujte položky zariadení a systémov, ktoré spoločne predstavujú významný podiel celkovej ročnej spotreby energie zariadenia.

3 Preukážte významné zníženie pre všetky zariadenia, ktoré majú významný podiel na celkovej spotrebe energie.

Kontrolné zoznamy a tabuľky

Tabuľka 31: Riešenia, ktoré sa považujú za vyhovujúce kritériám na zníženie energetického zaťaženia zariadenia z významne prispievajúcich systémov

Ref.	Funkcia alebo zariadenie	Kritériá
A	Malé elektrické zásuvkové zariadenie	Nasledujúce zariadenia spĺňajú kritériá alebo im bolo udelené hodnotenie v rámci národného alebo medzinárodného systému energeticky účinných zariadení: 1. Kancelárske vybavenie na str. 209 2. Ostatné malé napájané zariadenia 3. Doplnkové elektrické vykurovanie. Na bielu techniku pre domácnosť sa vzťahujú kritériá uvedené v bode E na nasledujúcej strane.

Ref	Funkcia alebo vybavenie	Kritériá
B	Bazén	1. Ak sú automatické alebo poloautomatické kryty bazénov alebo „tekuté“ kryty bazénov s automatickým dávkovacím systémom namontované na VŠETKY bazény vrátane kúpeľných bazénov a víriviek (ak je to relevantné). 2. Zakrývajú celú plochu bazéna po úplnom rozložení. 3. Ak je možné regulovať teplotu vzduchu v bazénovej hale tak, aby bola o 1 °C vyššia ako teplota vody.
C	Spoločná práčovňa so spotrebičmi komerčnej veľkosti	V prípade spotrebičov komerčnej veľkosti možno preukázať aspoň jednu z nasledujúcich možností: 1. Špecifikácia rekuperácie tepla z odpadovej vody 2. Používanie úžitkovej vody na časť procesu prania. Táto sa môže recyklovať z posledného oplachovania a použiť na ďalšie predpieranie.
D	Prevádzkové oblasti náročné na IT	1. Štandardne sa používa stratégia prirodzeného vetrania a chladenia, pričom nútené vetranie sa používa len vtedy, keď vnútorná teplota prekročí 20 °C, a aktívne chladenie len vtedy, keď vnútorná teplota prekročí 22 °C. 2. Existuje mechanizmus na dosiahnutie automatického vypnutia zariadenia, keď sa nepoužíva, a to aj cez noc.
E	Domáce spotrebiče (individuálne a spoločné zariadenia) - pozriCN3.5	Domáce spotrebiče majú nasledujúce hodnotenia (alebo lepšie) podľa národného alebo medzinárodného systému energeticky účinnej bielej techniky, ktorý je rovnocenný s **aktualizovaným** systémom EÚ na označovanie energetickej účinnosti (marec 2021): Chladničky, chladničky s mrazničkou: Hodnotenie E Práčky: Hodnotenie B Umývačky riadu: Hodnotenie D Práčky a sušičky bielizne: Hodnotenie D A v prípade klimatizačných zariadení pre domácnosti nasledujúce hodnotenie (alebo lepšie) v rámci národného alebo medzinárodného systému energeticky účinnej bielej techniky, ktorý je rovnocenný s **pôvodným** systémom EÚ na označovanie energetickej účinnosti Klimatizácia: Hodnotenie B

Ref	Funkcia alebo vybavenie	Kritériá
F	Komerčná kuchyňa a stravovacie zariadenia	Projekt zahŕňa aspoň dve tretiny opatrení energetickej účinnosti uvedených v nasledujúcich častiach príručky CIBSE TM50[58] (ak sú pre zariadenie relevantné): Časť 8 (Energetické kontroly - najmä kontroly týkajúce sa spotrebičov) Časť 9 (Odtok a odstraňovanie kuchynského odpadu) Časť 10 (Teplota vody, vodovodné kohútiky, batérie a ovládacie prvky na úsporu vody) Časť 13 (Špecifikácia spotrebiča - nie výroba alebo špecifikácie náradia) Časť 14 (Chladenie) Časť 15 (Umývanie riadu: umývačky riadu a umývačky pohárov) Časť 16 (Výber kuchynských spotrebičov) Poznámka: Tu by sa malo hodnotiť chladenie pre kuchyne a stravovacie zariadenia (nie v časti Ene 05 Energeticky účinné chladiarenské zariadenia na str. 188).

Poznámky o súlade

Ref	Definície pojmov	Popis
Hrubá stavba a jadro (iba nebytové a rezidenčné inštitúcie)		
CN1	Príslušné hodnotiace kritériá	Obidve možnosti: Táto otázka sa neuplatňuje. Podrobnejší popis možností vyhodnotenia hrubej stavby a jadra nájdete v Prílohe D - Posúdenie projektu hrubej stavby a jadra na strane 409.
Obytné - čiastočne a úplne vybavené		
CN2	Príslušné hodnotiace kritériá - Obydlia pre jednu rodinu	Čiastočne vybavené: Táto otázka sa neuplatňuje. Úplne vybavené: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy. Pozri Prílohu E – Uplatniteľnosť BREEAM New Construction na obydlia pre jednu rodinu a obydlia pre viaceré rodiny, čiastočne a úplne vybavené na str. 412, kde nájdete podrobnejší popis možností hodnotenia bytových domov.
CN2.1	Príslušné hodnotiace kritériá - Viacbytové domy	Čiastočne vybavené: Táto otázka sa neuplatňuje. Úplne vybavené: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy. Pozri Prílohu E – Uplatniteľnosť BREEAM New Construction na obydlia pre jednu rodinu a obydlia pre viaceré rodiny, čiastočne a úplne vybavené na str. 412, kde nájdete podrobnejší popis možností hodnotenia bytových domov.
Všeobecné		

Ref	Definície pojmov	Popis
CN3	Chladiace zariadenia	Kritériá v časti Malé elektrické zásuvkové zariadenia na str. 204 sa vzťahujú na nasledujúce chladiace zariadenia (ak sú prítomné): 1. Vzduchom chladené kondenzačné jednotky 2. Chladenie pivnice 3. Komerčné servisné skrinky 4. Závesy alebo žalúzie pre chladiace vitríny 5. Chladiace kompresory 6. Ovládanie chladiaceho systému 7. Chladiace vitríny
CN3.1	Chladiarenské sklady	Kritériá sa vzťahujú na komerčné kuchynské chladiace systémy, ale nie na iné komerčné alebo priemyselné chladiace a chladiarenské systémy (ktoré sú zahrnuté v rozsahu Ene 05 Energeticky účinné chladiarenské sklady na str. 188).
CN3.2	Výťahy, pohyblivé schody a pohyblivé chodníky	Táto otázka sa netýka výťahov, pohyblivých schodov a pohyblivých chodníkov. Tieto systémy sú zahrnuté v rozsahu Ene 06 Energeticky účinné dopravné systémy na str. 194.
CN3.3	Laboratórne systémy	Táto otázka sa nevzťahuje na laboratórne potrubné digestory. Tieto systémy sú zahrnuté v rozsahu Ene 07 Energeticky účinné laboratórne systémy na str. 198.
CN3.4	Opätovné použitie zariadenia	Opätovné použitie elektrického zariadenia nie je štandardne v súlade, pretože nemusí byť energeticky najúčinnejšou možnosťou. Kredit by sa však mohol udeliť, ak by opätovné použitie zariadenia bolo počas jeho životnosti energeticky účinnejšie ako určenie nového zariadenia.
CN3.5	Ekvivalentné systémy hodnotenia energeticky účinnej bielej techniky	Iné certifikáty energetickej účinnosti ako systém označovania EÚ budú akceptované za predpokladu, že energetická účinnosť je rovnocenná so systémom označovania EÚ. Môže to byť akýkoľvek medzinárodne uznávaný systém označovania energetickej účinnosti bielej techniky alebo napríklad národný systém vytvorený na použitie v krajine posudzovania: Energetický štítok (v EÚ), Energy Star (v USA) alebo The Appliance Energy Rating Scheme (v Austrálii). Na použitie sa vyžaduje vyhlásenie potvrdzujúce, že schéma je uznávaná na národnej úrovni a možno ju považovať za rovnocennú so systémom označovania EÚ.
CN3.6	Zariadenie, ktoré zabezpečí nájomca/používat eľ neskôr	Účinnosť zariadenia, ktoré sa má poskytnúť ako súčasť následného vybavenia, nepatrí do rozsahu tejto otázky. Podobne v úplne vybavenej, ale špekulatívnej kancelárii, kde neznámy budúci nájomca poskytne napríklad svoje vlastné počítače, sa tieto počítače z hodnotenia vylúčia. (KBCN0609)
CN3.7	Spoločné práčovne - práčky pre domácnosti alebo komerčné práčky	Pri projektoch s viacpodlažnými budovami (alebo inými typmi budov s práčovňami) by mal posudzovateľ BREEAM na základe vlastného úsudku určiť, či ide o komerčný spotrebič alebo spotrebič pre domácnosti, a musí uviesť odôvodnenie vybranej kategórie. Komerčné práčky a práčky pre domácnosti by sa napríklad mohli definovať na základe veľkosti náplne alebo menovitého výkonu. (KBCN0613)

Ref	Definície pojmov	Popis
CN3.8	Opatrenia v CIBSE TM50 pre kuchyne a stravovacie zariadenia	Opatrenia sú uvedené v súhrnoch častiach (modré rámčeky) v príručke. V častiach, ktoré nasledujú za každým zhrnutím v príručke, sú vysvetlenia opatrení. Zľava na všetky opatrenia energetickej účinnosti, ktoré sa na projekt nevzťahujú alebo sú v kritériách výslovne vylúčené. Mnohé opatrenia v TM50 si vyžadujú hodnotenie najlepšej možnosti alebo špecifikácie, preto je potrebné preukázať, že tieto opatrenia boli zvážené príslušným odborníkom a že boli použité pri projektovaní a špecifikácii stravovacích zariadení. (KBCN0663)
CN3.9	Žiadna neregulovaná spotreba energie v budove	Ak v budove nie sú žiadne položky, ktoré by prispievali k spotrebe energie zariadenia, tieto kredity sa odfiltrujú. (KBCN00066)
CN3.10	Kancelárske zariadenia - mobilné zariadenia	Mobilné zariadenia, ako sú smartfóny a tablety, ktoré sa vo všeobecnosti používajú bez pripojenia k zdroju elektrickej energie, by sa mali vylúčiť z hodnotenia otázky energeticky účinných zariadení. (KBCN00041)
CN3.11	Opätovne použité elektrické zariadenia	Ak možno preukázať, že takéto existujúce elektrické spotrebiče spĺňajú kritériá na zaradenie do príslušných vnútroštátnych alebo medzinárodných systémov energeticky účinných zariadení, možno ich považovať za vyhovujúce. Ak sa okrem opätovného použitia starého zariadenia obstará aj nové zariadenie, existujúce zariadenie sa môže z tohto hodnotenia vylúčiť. V týchto situáciách musí byť posudzovateľ presvedčený, že nové zariadenie významne zníži celkovú neregulovanú spotrebu energie. (KBCN0325)

Metodológia

Odhad ročnej spotreby energie zariadení

Mala by sa použiť metóda, ktorá odhaduje skutočnú spotrebu energie na základe očakávaného zaťaženia zariadenia a prevádzkových hodín. Spotrebu energie možno odhadnúť pomocou jednoduchých manuálnych výpočtov, referenčných údajov alebo metód popísaných v dokumente CIBSE TM54 Hodnotenie prevádzkovej energetickej hospodárnosti budov vo fáze projektovania[59].

Odhad významnej časti ročnej spotreby energie zariadení

Táto metodológia sa používa na odhad, ktoré spôsoby využívania energie tvoria významnú časť využívania energie zariadenia, a preto sa nevyžadujú podrobné výpočty. Prístup by sa mal zamerať na identifikáciu väčších využití energie, ktoré by mali byť zahrnuté, a malých využití energie, ktoré môžu byť vylúčené. Orientačne by sa malo zahrnúť použitie energie, ktoré predstavuje aspoň 90 % odhadovanej celkovej ročnej spotreby energie.

Výpočet významného zníženia spotreby energie

V prípade zariadení, ktoré tvoria významnú časť ročnej spotreby energie zariadení, preukážte, že sa dosiahlo významné zníženie spotreby energie. Typy zariadení, ktoré splnili kritériá uvedené v Tabuľke 31 na str. 204, sa považujú za zariadenia, ktoré dosiahli významné zníženie bez ďalšieho odôvodnenia alebo výpočtu.

V prípade typov zariadení, ktoré nie sú uvedené v Tabuľke 31, alebo v prípade alternatívnych riešení pre zariadenia uvedené v Tabuľke 31, sa musia predložiť výpočty, ktoré preukážu, že ich kombinácia vedie k zníženiu spotreby energie o 5 % v porovnaní so zariadeniami s typickými alebo štandardnými špecifikáciami.

Dôkazová dokumentácia

Kritériá	Predbežná fáza projektu	Záverečná fáza po výstavbe
Všetky	V prípade potreby: Príslušná časť alebo ustanovenia stavebnej špecifikácie alebo zmluvy. Podrobnosti o produkte výrobcu. Dokumentácia potvrdzujúca súlad s príslušným systémom alebo normou uvedenou v kritériách. Projektové výkresy alebo výpočty.	V prípade potreby: Správa z inšpekcie na mieste vypracovaná posudzovateľom BREEAM a fotografický dôkaz. Podrobnosti o produkte výrobcu. Dokumentácia potvrdzujúca, že inštalované zariadenie je v súlade s príslušným systémom alebo normou uvedenou v kritériách.
3 (pre komerčné kuchyne a stravovacie zariadenia s použitím TM50)	List alebo dokument, v ktorom sa potvrdí, ako bolo každé opatrenie zohľadnené, spolu s odôvodnením, ako sa na základe toho vypracovala špecifikácia. Ak si opatrenia vyžadujú odbornú prípravu, potom by sa ako dôkaz mohli použiť príslušné materiály odbornej prípravy.	Na potvrdenie toho, že uvedené opatrenia boli implementované, postačuje akýkoľvek všeobecný dôkaz, ktorý posudzovateľ považuje za vhodný.

Dodatočné informácie

Relevantné definície

Oblasti náročné na IT

Patria sem počítačové priestory, kde je k dispozícii viac ako jeden počítač na 5 m², napr. školiace miestnosti, dizajnérske štúdiá, IT priestory knižníc a iné priestory s vysokou hustotou počítačových zariadení.

Kancelárske zariadenia

Počítačové monitory, stolové počítače, skenery, kopírovacie zariadenia, tlačiarne, pracovné stanice atď.

Ostatné energeticky účinné zariadenia

Na účely tejto otázky BREEAM sa pojem „iné energeticky účinné zariadenia“ vzťahuje na zariadenia, ktoré nie sú zahrnuté v Ene 03 (vonkajšie osvetlenie), Ene 05 (chladiarenské zariadenia), Ene 06 (dopravné systémy) a Ene 07 (laboratórne systémy).

Nižšie je uvedený neúplný zoznam niektorých typov zariadení, na ktoré sa vzťahuje táto otázka: Malé

- elektrické záťaže a zásuvkové zariadenia
- Chladiace, umývacie a sušiace zariadenia pre domácnosť
- Komerčné kuchyne
- Bazény
- Oblasti náročné na IT
- Spoločné práčovne

Biela technika a malé elektrické zariadenia

Domáce spotrebiče, napr. práčky, chladničky, mrazničky, chladničky s mrazničkou, sušičky bielizne, práčky so sušičkou, ventilátory alebo ohrievače vzduchu atď.

Ene 09 Priestor na sušenie

Nehodnotí sa ako samostatná otázka v rámci BREEAM International New Construction.

Ene 10 Flexibilná reakcia na strane dopytu (všetky budovy)

Počet dostupných kreditov	Minimálne normy
1 vzorový kredit	Žiadne

Cieľ

Uznať a podporiť flexibilnú schopnosť reakcie na strane dopytu po elektrickej energii. Zníženie emisií uhlíka umožnením lepšieho prispôsobenia profilov dopytu po elektrickej energii dostupnosti obnoviteľných zdrojov výroby elektrickej energie.

Kritériá hodnotenia

Na preukázanie súladu sa vyžaduje:

Kritériá príkladnej úrovne

V nasledujúcom texte sú uvedené kritériá vzorovej úrovne na získanie jedného vzorového kreditu pre túto otázku BREEAM:

Jeden vzorový kredit

1 Budova je vybavená aspoň jedným inteligentným spotrebičom alebo inteligentným riadiacim systémom, ktorý dokáže upraviť prevádzku spotrebiča alebo systému v reakcii na vonkajšie signály od dodávateľov elektrickej energie.

ALEBO

2 Budova má zásobníky elektrickej energie alebo teplej vody, ktoré sú schopné meniť svoje nabíjacie alebo vybíjacie cykly v reakcii na vonkajšie signály od dodávateľov elektrickej energie. Táto akumulácia energie môže byť na úrovni budovy alebo vo viacerých budovách.

Kontrolné zoznamy a tabuľky

Žiadne.

Poznámky o súlade

Ref	Definície pojmov	Popis
Plášť a jadro (len nebytové a bytové zariadenia)		
CN1	Príslušné hodnotiace kritériá	Obidve možnosti: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy Pozri Prílohu D - Hodnotenie plášťa a jadra projektu na str. 4099 v tomto dokumente schémy, kde nájdete ďalší popis vyššie uvedených možností.
Obytné - čiastočne a úplne vybavené		
CN2	Príslušné hodnotiace kritériá - Obydlia pre jednu rodinu a obydlia pre viaceré rodiny	Obidve možnosti: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy. Pozri Prílohu E – Uplatniteľnosť BREEAM New Construction na obydlia pre jednu rodinu a obydlia pre viaceré rodiny, čiastočne a úplne vybavené na str. 412, kde nájdete podrobnejší popis možností hodnotenia bytových domov.
Všeobecné		
CN3	Hodnotenie jednotlivých budov vo väčších areáloch škôl (a prístavby k existujúcim budovám)	Ak je hodnotená budova súčasťou väčšej stavby (alebo je prístavbou k existujúcej budove), ktorá má spoločné priestory a iné budovy, rozsah flexibilných kritérií reakcie na strane dopytu sa vzťahuje len na vonkajšie nové a existujúce prvky v rámci stavebnej zóny hodnotenej budovy.

Metodológia

Žiadna.

Dôkazová dokumentácia

Kritériá	Predbežná fáza projektu	Záverečná fáza po výstavbe
Všetky	Príslušná časť alebo ustanovenia stavebnej špecifikácie alebo zmluvy. Projektová výkresová dokumentácia.	Správa posudzovateľa BREEAM z inšpekcie na mieste a fotografický dôkaz alebo výkresy zhotovenia. Podrobnosti o produkte výrobcu.

Dodatočné informácie

Relevantné definície

Stavebná zóna

Na účely tejto otázky je zóna výstavby definovaná ako pozemok, na ktorom sa realizuje stavba hodnotená podľa normy BREEAM, a jeho vonkajšie plochy, t. j. rozsah nových prác.

Akumulácia energie

Na účely tejto problematiky sa akumulácia energie definuje ako systémy, ktoré akumulujú energiu v čase, keď je malý dopyt po energii alebo keď je jej nadmerná výroba, a ktorá sa potom môže použiť neskôr, keď je po energii veľký dopyt. Na to, aby sa tieto systémy mohli kvalifikovať na túto emisiu, musia byť vybavené tak, aby prijímali signály od dodávateľov energie na automatické spustenie alebo zastavenie akumulácie energie.

Medzi príklady akumulácie energie patria okrem iného:

- Nabíjacie miesta pre elektrické vozidlá
- Veľkokapacitné batériové úložisko
- Systémy skladovania skvapalneného vzduchu

Ostatné spotrebiče

Na účely tejto otázky sú inteligentné spotrebiče definované ako spotrebiče, ktoré automaticky regulujú svoju spotrebu energie na základe signálov, ktoré dostávajú od dodávateľov energie, známe aj ako reakcia na strane dopytu. Príkladom, ako to môžu dosiahnuť, je zníženie dopytu po energii v čase špičky.

Medzi príklady inteligentných spotrebičov patria okrem iného:

- Inteligentné chladiace systémy (napr. chladničky alebo mrazničky)
- Inteligentné práčky
- Inteligentné umývačky riadu

Ďalšie informácie

Žiadne.

Doprava

Zhrnutie

Táto kategória podporuje lepší prístup používateľov budov k udržateľným dopravným prostriedkom. Otázky v tejto časti sa zameriavajú na prístupnosť verejnej dopravy a ďalšie alternatívne dopravné riešenia (cyklistické zariadenia, poskytnutie miestneho vybavenia pre budovu), ktoré podporujú zníženie cestovania autom, a teda aj preťaženie a emisie CO_2 počas životnosti budovy.

Súhrnná tabuľka kategórií

Vydanie	Kredity	Zhrnutie kreditov
Tra 01 Dostupnosť verejnej dopravy	Až 5 kreditov	Uznanie výstavby v tesnej blízkosti dobrých sietí verejnej dopravy, čím sa prispeje k zníženiu znečistenia a preťaženia dopravy.
Tra 02 Blízkosť zariadení občianskej vybavenosti	Až 2 kredity	Uznanie výstavby v tesnej blízkosti miestnej občianskej vybavenosti, ktorú budú používatelia budovy pravdepodobne často potrebovať a využívať.
Tra 03a Alternatívne možnosti dopravy	Až 2 kredity	Poskytnutie zariadení na podporu cestovania spôsobmi dopravy s nízkymi emisiami uhlíka a minimalizáciu individuálnych ciest.
Tra 03b Alternatívne možnosti dopravy		
Tra 04 Maximálna kapacita parkovania	Až 2 kredity	Uznanie výstavby, ktorá obmedzuje kapacitu parkovacích miest.
Tra 05 Plán dopravy	1	Podporovať udržateľné znižovanie dopravnej záťaže vypracovaním posúdenia alebo vyhlásenia o cestovaní v konkrétnej lokalite a vypracovaním plánu cestovania na základe potrieb konkrétnej lokality.
Tra 06 Domáca kancelária	1	Poskytnúť potrebné priestory a služby, aby bolo možné pracovať z domu a znížiť potrebu dochádzať do práce.

Tra 01 Dostupnosť verejnej dopravy (všetky budovy)

Počet dostupných kreditov	Minimálne normy
Závisí od typu budovy	Nie

Cieľ

Rozpoznať a podporovať rozvoj v blízkosti dobrých sietí verejnej dopravy, a tým pomôcť znížiť znečistenie a preťaženie súvisiace s dopravou.

Kritériá hodnotenia

Táto požiadavka je rozdelená do dvoch častí:

- Index dostupnosti (až 5 kreditov - závisí od typu budovy)
- Vyhradená autobusová doprava (1 kredit)

Na preukázanie súladu sa vyžaduje:

Až päť kreditov - Index dostupnosti

1 Index dostupnosti verejnej dopravy (AI) pre hodnotenú budovu sa vypočíta a kredity BREEAM sa pridelia v súlade s typmi budov, referenčnými hodnotami AI a kreditmi BREEAM v Tabuľke 32 na nasledujúcej strane.

2 Index dostupnosti sa určí zadaním nasledujúcich informácií do kalkulačky BREEAM Tra 01:
- 2.a Vzdialenosť (m) od hlavného vchodu do budovy ku každému vyhovujúcemu uzlu verejnej dopravy
- 2.b Typy verejnej dopravy obsluhujúce vyhovujúci uzol, napr. autobusová alebo železničná doprava
- 2.c Priemerný počet zastavení služieb za hodinu v každom vyhovujúcom uzle počas prevádzkových hodín budovy počas bežného dňa (pozri poznámky o súlade a Tabuľku 33 na str. 220

ALEBO

Jeden kredit - Vyhradená autobusová doprava

3 V prípade budov s pevným režimom zmien, t. j. ak používatelia budovy prichádzajú alebo odchádzajú prevažne v stanovených časoch, možno udeliť jeden kredit, ak nájomca budovy zabezpečí alebo sa zaviaže zabezpečiť vyhradenú autobusovú dopravu k budove a od budovy na začiatku a na konci každej pracovnej zmeny alebo dňa.

Tento kredit je k dispozícii len v prípadoch, keď výstavba nemôže dosiahnuť žiadny z dostupných kreditov pomocou kritérií indexu dostupnosti (t. j. jej lokalita má nízky index dostupnosti verejnej dopravy).

Kontrolné zoznamy a tabuľky

Tabuľka 32: Kredity dostupné pre každý typ budovy týkajúce sa skóre indexu dostupnosti verejnej dopravy (AI)

Index dostupnosti	≥ 0.5	≥ 1	≥ 2	≥ 4	≥ 8	≥ 10	≥ 12	≥ 18
Typ budovy	**Dostupné kredity BREEAM**							
Kancelárie, Priemyselné budovy, Dlhodobé bytové zariadenia, Ostatné budovy - So zamestnancami	-	-	1	2	3	-	-	-
Predškolské zariadenia, Škola	-	-	1	2	3	-	-	-
Maloobchod, vyššie vzdelávanie - mimo areálu školy, hotely a krátkodobé bytové zariadenia, ostatné budovy - návštevníci	-	-	1	2	3	3	4	5
Vyššie vzdelávanie - areál školy	-	-	1	2	3	4	5	-
Citlivé budovy citlivé vo vidieckej lokalite, Ostatné budovy - vidiecke,	-	-	1	2	-	-	-	-
Bytové domy	1	2	3	4	-	-	-	-

Poznámky o súlade

Ref	Definície pojmov	Popis
Hrubá stavba a jadro (iba nebytové a rezidenčné inštitúcie)		
CN1	Príslušné hodnotiace kritériá	Obidve možnosti: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy Pozri Príloha D - Posúdenie plášťa a jadra projektu na strane 409 Podrobnejší opis možností hodnotenia plášťa a jadra.
Obytné - čiastočne a úplne vybavené		
CN2	Príslušné hodnotiace kritériá - Obydlia pre jednu rodinu a obydlia pre viaceré rodiny	Obidve možnosti: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy. Pozri Prílohu E – Uplatniteľnosť BREEAM New Construction na obydlia pre jednu rodinu a obydlia pre viaceré rodiny, čiastočne a úplne vybavené na str. 412, kde nájdete podrobnejší popis možností hodnotenia bytových domov.
Všeobecné		

Ref	Definície pojmov	Popis
CN3	Výstavby areálov škôl. Pozri kritérium 1 na str. 215.	Ak sa 80 % alebo viac budov v areáli školy, napr. v areáloch ďalšieho alebo vyššieho vzdelávania, nachádza vo vzdialenosti do 1000 m od hlavného vchodu do areálu, potom sa hlavný vchod do areálu môže použiť ako referenčný bod na posúdenie vzdialenosti k vyhovujúcim uzlom verejnej dopravy pre túto otázku. Hlavný vchod do areálu školy je ten, ku ktorému má prístup väčšina zamestnancov hodnotenej budovy alebo študentov alebo návštevníkov. Miesto môže mať viac ako jeden hlavný vchod, ktorý je pre väčšinu zamestnancov, študentov a návštevníkov, ktorí prichádzajú na dané miesto. V takomto prípade sa ako základ výpočtu môže použiť ktorýkoľvek z vchodov. Ak je menej ako 80 % budov v areáli školy do vzdialenosti 1000 m od hlavného vchodu do areálu školy, musí sa hlavný vchod hodnotenej budovy použiť ako referenčný bod pre hodnotenie vzdialenosti k vyhovujúcim uzlom verejnej dopravy pre túto otázku. Z tohto pravidla vyplýva, že v prípade veľkých areálov škôl, keď sú vzdialenosti príliš veľké na to, aby sa dali pohodlne prekonať pešo, by potreby používateľov budov lepšie uspokojilo umiestnenie uzlov verejnej dopravy vo vnútri areálu školy alebo na jeho okraji. Ak budova nie je súčasťou centrálneho areálu školy, potom jej hlavný vchod sa musí použiť ako referenčný bod pre hodnotenie tejto otázky.
CN3.1	Vyhradená autobusová doprava. Pozri kritérium 3 na str. 215.	Kredit za zabezpečenie vyhradenej autobusovej dopravy je k dispozícii pre všetky typy budov s pevným režimom zmien; príkladom môžu byť školy, kancelárie, maloobchody, továrne atď. Autobus musí zabezpečovať prepravu do miestneho centra, na prestupný uzol verejnej dopravy alebo musí poskytovať služby „od dverí k dverám“. Tento kredit sa poskytuje ako alternatíva v prípadoch, keď je umelá inteligencia budovy príliš nízka na získanie akýchkoľvek kreditov BREEAM, ale používatelia budovy budú mať možnosť využívať vyhradenú autobusovú dopravu. Vyhradená autobusová doprava však môže byť zahrnutá do výpočtu indexu dostupnosti verejnej dopravy ako prostriedok prispievajúci k získaniu kreditov prostredníctvom tejto metódy (bez ohľadu na model zmeny). V takomto prípade by sa mala použiť vzdialenosť od hlavného vchodu do budovy k miestu odovzdania alebo vyzdvihnutia služby (dopravný uzol).
CN3.2	Postupná výstavba. Pozri kritérium 3 na str. 215.	V prípade rozsiahlej postupnej výstavby, kde sa nové dopravné zariadenia vybudujú, ale v neskoršej fáze ako hodnotená budova, sa v hodnotení môžu takéto zariadenia zohľadniť za predpokladu, že bol prijatý záväzok zabezpečiť dopravné zariadenia v rámci najkratšieho z nasledujúcich období: 1. Dopravné zariadenia budú k dispozícii v čase, keď bude dokončených 25 % všetkých fáz a budú pripravené na používanie ALEBO 2. Dopravné zariadenia budú k dispozícii na používanie do 25 % celkového času výstavby etapy, ktorej súčasťou je posudzovaná budova, meraného od dátumu dokončenia tejto etapy. Musí sa použiť najvhodnejšie pravidlo pre príslušnú výstavbu, zabezpečiť, aby čas, ktorý musia používatelia budovy čakať na použitie dopravných prostriedkov, bol čo najkratší. Ak dopravné zariadenia nebudú k dispozícii na používanie do piatich rokov od začatia používania budovy, nie je možné ich zohľadniť pri určovaní súladu s kritériami BREEAM.

Metodológia

Výpočet priemerného počtu spojov

Na účely výpočtu sa frekvenciou verejnej dopravy rozumie priemerný počet spojov za hodinu. Vypočíta sa stanovením počtu zastavení spojov v uzle počas špičkových časov príchodu alebo odchodu z budovy alebo typických prevádzkových hodín budovy počas dňa (pozri definíciu „prevádzkových hodín"), vydelených počtom hodín v rámci tohto obdobia. Napríklad: priemerný počet spojov pre hodnotenie budovy, ktorá je v prevádzke od 08.00 do 19.00 (11 hodín) a nachádza sa v blízkosti autobusovej zastávky s 35 zataveniami spojov počas tohto obdobia, je 3,2 (čo zodpovedá priemernej frekvencii spojov približne 20 minút).

Viaceré spoje

Spoje, ktoré fungujú z viac ako jedného uzla v blízkosti budovy, t. j. z dvoch samostatných autobusových zastávok obsluhovaných tým istým autobusom, sa musia brať do úvahy iba raz; v uzle v najbližšom okolí budovy. Rôzne spoje v rovnakom uzle možno považovať za samostatné.

Obojsmerné trasy

Trasy budú obojsmerné, avšak na účely výpočtu indexu sa berie do úvahy len smer s najvyššou frekvenciou.

Dôkazová dokumentácia

Kritériá	Predbežná fáza projektu	Záverečná fáza po výstavbe
1, 2	Mapa v mierke zvýrazňujúcej polohu budovy a všetkých uzlov verejnej dopravy v blízkosti budovy. Cestovné poriadky pre každý spoj na každom uvažovanom uzle verejnej dopravy. Nižšie uvedený vypočítaný index prístupnosti budovy. V prípade potreby informácie o vyhradenej autobusovej doprave. Vyplnená kópia kalkulačky Tra 01.	Ako fáza návrhu. Ak sa pri preukazovaní súladu po výstavbe vychádza z výpočtu vykonaného vo fáze projektovania, ak je obdobie medzi podaním správy vo fáze projektovania a po výstavbe dlhšie ako 12 mesiacov, musí sa index dostupnosti prepočítať s použitím aktuálnych informácií o cestovných poriadkoch verejnej dopravy. Ako predbežná fáza projektovania.
3	Oficiálny list od budúceho nájomcu budovy, v ktorom sa potvrdzuje zabezpečenie a podrobnosti o vyhradenej autobusovej doprave.	Ako predbežná fáza projektovania.

Dodatočné informácie

Relevantné definície

Index dostupnosti

Opatrenie, ktoré poskytuje ukazovateľ dostupnosti a hustoty siete verejnej dopravy v bode záujmu (v prípade BREEAM je to budova). Index je ovplyvnený blízkosťou a rozmanitosťou siete verejnej dopravy a úrovňou alebo frekvenciou spojov v dostupnom uzle. Napríklad budova, ktorá má jeden uzol verejnej dopravy vzdialený 500 m od hlavného vchodu do budovy s jednou zastávkou každých 15 minút, t. j. v priemere štyri spoje za hodinu, získa index dostupnosti približne 1,90.

Prípadne ten istý uzol s jedným spojom každých 15 minút, ale 300 m od vchodu do budovy, dosiahne index dostupnosti 2,26. Ten istý uzol s dvoma spojmi, ktoré sa zastavia každých 15 minút, dosiahne index dostupnosti 2,85. Čím väčší je počet vyhovujúcich uzlov, spojov a ich blízkosť k budove, tým vyšší je index dostupnosti.

Ďalšie klasifikácie typov budov

Vyššie vzdelávanie

Vzdelávanie, ktoré pokračuje aj po skončení povinnej školskej dochádzky, napr. vysoké školy a univerzity.

Vyššie vzdelávanie - mimo areálu školy

Budovy vysokých škôl nachádzajúce sa v areáli, kde má menej ako 25 % študentov bydlisko v areáli alebo v okruhu 1 km od hlavného vchodu do areálu.

Vyššie vzdelávanie - areál školy

Budovy vysokých škôl nachádzajúce sa v areáli, kde má 25 % alebo viac študentov bydlisko v areáli alebo v okruhu 1 km od hlavného vchodu do areálu.

Iná budova - s personálom

Budova, ktorú obývajú prevažne zamestnanci alebo pracovníci s príležitostnými návštevníkmi súvisiacimi s podnikaním.

Iná budova - návštevníci

Budova, ktorú používa určitý počet hlavných zamestnancov alebo pracovníkov s väčším počtom trvalo častých návštevníkov alebo používateľov (obyvatelia alebo nie obyvatelia).

Iná budova - vidiecka

Typy budov, pri ktorých sa osobitne vyžaduje, aby boli umiestnené na vidieku v dôsledku ich funkcie, t. j. budova, ktorá by nikdy nebola umiestnená v mestskej oblasti, napr. návštevnícke centrum národného parku (pozri definíciu umiestnenia budov citlivých na vidiek a vidiecke prostredie).

BREEAM Tra 01 Nástroj kalkulačky

Tabuľková kalkulačka, ktorá sa používa na určenie indexu dostupnosti pre hodnotenú budovu a počtu dosiahnutých kreditov BREEAM.

Vyhovujúci dopravný uzol

Za vyhovujúci uzol sa považuje každý autobusový spoj so zastávkou vo vzdialenosti do 650 m a každá železničná stanica vo vzdialenosti do 1000 m od hlavného vchodu hodnotenej budovy, merané bezpečnou pešou trasou (nie „vzdušnou čiarou“). Spoj, ktorý zastavuje v každom uzle, musí zabezpečovať dopravu z mestského centra, hlavného dopravného uzla alebo kontaktného miesta v obci, napr. lekárskej ordinácie, knižnice, školy alebo centra obce, alebo cestu do nich. Mali by sa hodnotiť len miestne služby a všetky vnútroštátne spoje verejnej dopravy by sa mali z analýzy vylúčiť, pokiaľ sa nedá povedať, že takýto spoj poskytuje miestnu dochádzkovú službu.

Hlavný vchod do budovy

Hlavný vchod do budovy je vchod do posudzovanej budovy , ktorý je priamo spojený s hlavnou recepciou, komunikačnými trasami, výťahmi alebo schodiskami a je prístupný väčšine zamestnancov a návštevníkov budovy pri príchode. Nie je to vstup na pozemok (pokiaľ vstup na pozemok nie je zároveň vstupom do budovy, napr. budova s hranicou na verejnej komunikácii).

Prevádzkové hodiny

BREEAM sa snaží definovať dostupnosť budovy k sieti verejnej dopravy v období, počas ktorého bude väčšina používateľov budovy cestovať k budove a od budovy. Vo väčšine prípadov je možné využiť bežné prevádzkové hodiny budovy. Ak väčšina používateľov budovy (viac ako 80 %) prichádza alebo odchádza počas určitého obdobia , napríklad v kancelárskej budove, kde väčšina zamestnancov prichádza medzi 8.00 a 10.00, potom sa toto obdobie môže použiť ako alternatíva k prevádzkovým hodinám budovy. To zohľadňuje niektoré typy budov , ktoré pracujú 24 hodín denne a na zmeny .

Čas, ktorý by sa zvyčajne považoval za čas nevyužívaný spoločnosťou, teda čas, keď verejná doprava premáva len v malej miere, ak vôbec, sa pri posudzovaní tejto otázky nevyžaduje, aby bol zohľadňovaný. Ak je hodnotená budova v prevádzke 24 hodín denne alebo ak prevádzkové hodiny nie sú v čase hodnotenia známe, pozrite a použite tabuľku štandardných prevádzkových hodín, ktorú nájdete v časti s dodatočnými informáciami k tejto otázke.

Vidiecka lokalita (Mestská lokalita)

Vidiecka lokalita je v tomto kontexte definovaná ako lokalita , ktorá sa jednoznačne nenachádza v malej, strednej alebo veľkej mestskej zástavbe alebo na jej hranici. Mestská lokalita má 3000 alebo viac obyvateľov a nachádza sa na území súvisle zastavaného mestského územia s rozlohou 20 hektárov alebo viac. Definícia vidieka preto zahŕňa dediny, zelené lúky alebo malé mestské centrá s počtom obyvateľov nižším ako 3000 na ploche nepresahujúcej 20 hektárov. Takéto lokality budú s najväčšou pravdepodobnosťou na trase miestnej autobusovej dopravy do väčších mestských oblastí alebo iných miestnych miest a môžu mať miestne obchody a iné zariadenia.

Budovy citlivé na vidiecke lokality

Táto definícia zahŕňa všetky typy budov (uvedené nižšie), pri ktorých existuje preukázateľná sociálna alebo hospodárska potreba vidieckeho obyvateľstva po službe alebo dopyte, ktorý má nová budova uspokojiť, a preto umiestnenie budovy na alternatívnom mieste, ktoré by mohlo mať vyššiu úroveň dostupnosti verejnou dopravou, t. j. v urbanizovanej oblasti, nie je uskutočniteľné. Nasledujúce typy budov sú príkladmi budov, ktoré môžu patriť do tejto kategórie.

1. Kancelárie poskytujúce služby miestnej komunite
2. Priemyselné podniky poskytujúce služby miestnej komunite
3. Maloobchod, kde sa poskytujú služby miestnej komunite
4. Predškolské zariadenia, základné a stredné školy, ktoré poskytujú služby miestnej komunite
5. Bytové domy, v ktorých sa poskytuje ubytovanie miestnej komunite.

Typický deň

Typický deň je deň, ktorý predstavuje obdobie, keď je počet ciest používateľov a návštevníkov do budovy a z nej najvyšší. Pre väčšinu budov by to mal byť deň uprostred týždňa. Pri výbere typického dňa by mal posudzovateľ skontrolovať, či sú informácie o cestovnom poriadku pre tento deň v rámci možností reprezentatívne pre poskytovanie verejnej dopravy počas celého prevádzkového týždňa (okrem nedieľ).

Ďalšie informácie

Tabuľka 33: Predvolené prevádzkové hodiny podľa typu budovy pre bežný deň

Typ budovy	Štandardné hodiny
Obchodné	08.00 - 19.00
Predškolské zariadenia, škola	07.30 -10.00,15.00 - 17.30
Univerzita, vyššie vzdelávanie	08.00 - 19.00
Maloobchod: Nákupné centrum	09.00 - 19.00
Maloobchod: Supermarket	08.00 - 22.00
Maloobchod: Poskytovateľ služieb	08.00 - 18.00
Maloobchod: Obchod so zmiešaným tovarom	07.00 - 22.00
Maloobchod: Obchod pre domácich majstrov alebo maloobchodný park	08.00 - 20.00
Maloobchod: obchod	08.30 - 17.30
Bytové domy a bytové zariadenia	08.00 - 19.00
Hotel	08.00 - 19.00

Typ budovy	Štandardné hodiny
24-hodinové používanie budovy	07.00 - 20.00
Poznámka: Tieto hodiny sú uvedené ako usmernenie: v odôvodnených prípadoch môže posudzovateľ použiť iné hodiny, ktoré vyplývajú z regionálnej alebo národnej kultúry, zvykov alebo rutiny.	

Tra 02 Blízkosť občianskej vybavenosti (všetky budovy)

Počet dostupných kreditov	Minimálne normy
Závisí od typu budovy	Žiadne

Cieľ

Podporovať a odmeňovať umiestnenie budovy, ktoré uľahčuje prístup k miestnym službám a znižuje tak environmentálne, sociálne a hospodárske vplyvy vyplývajúce z viacnásobných alebo dlhších ciest užívateľov budovy vrátane emisií súvisiacich s dopravou a dopravných zápch.

Kritériá hodnotenia

Na preukázanie súladu sa vyžaduje:

Až dva kredity

1 Všetky typy budov okrem typu 6 sa musia nachádzať v uvedenej blízkosti aspoň dvoch prístupných hlavných zariadení občianskej vybavenosti („C“ v Tabuľke 34 nižšie).

2 Zostávajúci počet požadovaných zariadení občianskej vybavenosti uvedený v Tabuľke 34 nižšie sa musí pokryť použitím akýchkoľvek iných použiteľných zariadení občianskej vybavenosti (vrátane všetkých zostávajúcich základných zariadení občianskej vybavenosti).

Kontrolné zoznamy a tabuľky

Tabuľka 34: Kredity dostupné pre Tra 02 pre rôzne typy budov

Kritériá	Typ budovy					
	Typ 1	Typ 2	Typ 3	Typ 5 (k dispozícii sú dva kredity)		Typ 6
Počet kreditov BREEAM	1	1	1	1	1	1
Počet požadovaných zariadení občianskej vybavenosti	3	3	4	4	7	2
Blízkosť (v metroch)	500	500	500	500	1000	500
Vhodná predajňa potravín	C	C	C	C	C	✔
Prístup k hotovosti	C	C	C	C	C	✔

Kritériá	Typ budovy					
	Typ 1	Typ 2	Typ 3	Typ 5 (K dispozícii sú dva kredity)		Typ 6
Prístup do rekreačného zariadenia pre fitnes/šport	C	C	C	✔	✔	✔
Prístup k vonkajšiemu otvorenému priestoru (verejnému alebo súkromnému, vhodne veľkému a prístupnému pre používateľov budovy)	✔	✔	✔	C	C	✔
Verejne dostupná pošta	✔	✔	✔	✔	✔	✔
Komunitné zariadenie	✔	✔	✔	✔	✔	✔
Predajňa voľnopredajných liekov	✔	✔	✔	✔	✔	✔
Lekárska ordinácia vo verejnom sektore alebo všeobecné zdravotnícke centrum	-	-	✔	✔	✔	✔
Zariadenie starostlivosti o deti alebo škola	✔	-	✔	✔	✔	✔

Kľúč:
C - Základná vybavenosť pre typ budovy
✓ - Vybavenie relevantné pre typ budovy.

Typy budov:
Typ 1: Kancelárie, maloobchod, priemysel
Typ 2: Predškolské zariadenia, školy
Typ 3: Vyššie vzdelávanie a univerzita
Typ 4: Zdravotná starostlivosť (vyžaduje individuálne posúdenie)
Typ 5: Bytové domy a bytové zariadenia - dlhodobý pobyt (k dispozícii sú dva kredity a každý z nich môže byť udelený nezávisle od druhého)
Typ 6: Hotely, bytové zariadenia - krátkodobý pobyt a iné neštandardné budovy

Poznámky o súlade

Ref	Definície pojmov	Popis
Hrubá stavba a jadro (iba nebytové a rezidenčné inštitúcie)		

Ref	Definície pojmov	Popis
CN1	Príslušné hodnotiace kritériá	Obidve možnosti: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy Pozri Príloha D - Posúdenie plášťa a jadra projektu na strane 409 Podrobnejší opis možností hodnotenia plášťa a jadro.
Obytné - čiastočne a úplne vybavené		
CN2	Príslušné hodnotiace kritériá - Obydlia pre jednu rodinu a obydlia pre viaceré rodiny	Obidve možnosti: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy. Pozri Prílohu E – Uplatniteľnosť BREEAM New Construction na obydlia pre jednu rodinu a obydlia pre viaceré rodiny, čiastočne a úplne vybavené na str. 412, kde nájdete podrobnejší popis možností hodnotenia bytových domov.
Všeobecné		
CN3	Kolektívne vybavenie	Jeden typ vybavenosti môže existovať aj v rámci iných typov vybavenosti alebo ako ich súčasť, napr. obchod s potravinami na čerpacej stanici, pokladňa alebo lekáreň v supermarkete atď. V tejto otázke sa nevyžaduje, aby každá vybavenosť bola „samostatná“.
CN3.1	Vybavenie v rámci hodnotenej budovy alebo na mieste	Občianska vybavenosť v rámci budovy alebo na tom istom mieste ako navrhovaná výstavba, napr. ak je hodnotená budova súčasťou areálu, obchodného alebo podnikateľského parku alebo centra, spĺňa kritériá hodnotenia.
CN3.2	Postupný vývoj	Usmernenia uvedené v dokumente BREEAM, otázka Tra 01 Dostupnosť verejnej dopravy na str. 215, týkajúce sa fázovanej výstavby, sa vzťahujú aj na túto otázku.

Metodológia

Žiadne.

Dôkazová dokumentácia

Kritériá	Predbežná fáza projektu	Záverečná fáza po výstavbe
Všetky	Označený plán miesta alebo zvýraznená mapa: Umiestnenie posudzovanej budovy Umiestnenie a typ zariadení občianskej vybavenosti Cesta k zariadeniam občianskej vybavenosti Mierka plánu alebo mapy.	Inšpekcia budovy alebo staveniska a fotografické dôkazy potvrdzujúce nasledovné: Existencia miestnej občianskej vybavenosti Trasa a vzdialenosť k občianskej vybavenosti

Kritériá	Predbežná fáza projektu	Záverečná fáza po výstavbe
Všetky	V prípade, že zariadenia v súčasnosti neexistujú , ale majú byť vybudované, list od klienta alebo developera, ktorý to potvrdzuje: Miesto a typ vybavenia, ktoré sa má poskytnúť Časový harmonogram výstavby občianskej vybavenosti	Dôkazy uvedené vo fáze projektovania hodnotenia ALEBO Ako je uvedené vyššie, ak je občianska vybavenosť vybudovaná alebo sa buduje v čase preskúmania alebo hodnotenia po výstavbe.

Dodatočné informácie

Relevantné definície

Dostupná občianska vybavenosť

Občianska vybavenosť (uvedená v zozname), ktorá je v požadovanej blízkosti (vzdialenosť v metroch) od budovy a je prístupná bezpečnými pešími trasami, napr. chodníkmi alebo cestami a bezpečnými priechodmi pre chodcov alebo, ak sú k dispozícii, vyhradenými priechodmi pre chodcov. Vzdialenosť by sa nemala merať po priamke.

Prístup k vonkajšiemu otvorenému priestoru (verejnému alebo súkromnému, vhodne veľkému a prístupnému pre používateľov budovy)

Priestor, ktorý umožňuje používateľom budovy vhodnú prestávku od vnútorných činností v budove, napr. v kancelárskej budove by bolo vhodné vytvoriť priestor na posedenie vonku a obedy. Tieto priestory budú musieť byť vhodne dimenzované, aby sa zabezpečilo, že priestor bude slúžiť primeranému počtu používateľov budovy súvisiacich s projektom a nemal by byť súčasťou verejnej komunikácie.

Prístup do rekreačného zariadenia alebo rekreačného zariadenia

Zariadenie, ktoré umožní používateľom budovy cvičiť a udržiavať zdravý životný štýl. Môže ísť o miestne centrum voľného času, tenisové kurty, telocvičňu v areáli školy alebo miestne ihrisko.

Vhodná predajňa potravín

Spôsob prístupu k zásobovaniu potravinami, ktoré sú cenovo dostupné pre väčšinu používateľov budovy a zároveň vyhovujú ich každodenným potrebám. Napríklad malá kancelárska budova by mala prospech z malého obchodu s obloženými chlebíčkami alebo občerstvením, bytový dom a bytové zariadenie by mali prospech z reštaurácie v okolí.

Starostlivosť o deti alebo škola

Zámerom tohto zariadenia je poskytnúť podporu deťom pre potenciálnych používateľov budovy; mohlo by ísť o škôlku, zariadenie na opatrovanie detí alebo školu v okolí stavby. Škola sa nemôže považovať za objekt občianskej vybavenosti v rámci hodnotenia BREEAM tej istej školy.

Komunitné zariadenie

Vnútorný priestor, ktorý zahŕňa väčšinu používateľov budovy, ktorí budú hodnotenú budovu alebo stavbu obývať. Zariadenie bude slúžiť na uľahčenie komunitných aktivít pre hodnotenú budovu a jej používateľov. Napríklad v prípade bytového domu alebo bytového zariadenia to môže byť spoločenská sála alebo v prípade administratívnej budovy bar.

Ďalšie informácie

Žiadne.

Tra 03a Alternatívne možnosti dopravy (nebytové a bytové zariadenia)

Pre rezidenčné budovy pozri Tra 03b Alternatívne možnosti dopravy na strane 235.

Počet dostupných kreditov	Minimálne normy
2	Žiadne

Cieľ

Poskytovať zariadenia, ktoré podporujú používateľov budovy vtom, aby cestovali s použitím nízkouhlíkových spôsobov dopravy a minimalizovali jednotlivé cesty.

Kritériá hodnotenia

Na preukázanie súladu sa vyžaduje:

Až dva kredity

Bola realizovaná jedna z nasledujúcich možností:

Možnosť	Kritériá	Príslušné typy budov	Kredity
1	1 Počas prípravy prehľadu sa projektový tím poradil s miestnym úradom o stave miestnej cyklistickej siete a o tom, ako by mohol projekt prispieť k jej zlepšeniu. 2 Po dohode s miestnym úradom bol vybraný a realizovaný jeden návrh. Tento návrh musí byť doplnkom k tomu, čo by miestny úrad urobil bez podpory projektu, a musí mať významný vplyv na miestnu sieť cyklistických komunikácií.	Všetky	2
2	3 Rokovania s miestnymi autobusovými spoločnosťami viedli k zvýšeniu poskytovania miestnych služieb v oblasti rozvoja. 4 Týmto zvýšením služieb verejnej dopravy sa zlepšila existujúca miera umelej inteligencie aspoň o 1,00 (pozri Tra 01 Verejná dostupnosť dopravy na strane 215).	Všetky	2

Možnosť	Kritériá	Príslušná budova budov	Kredity
3	5 Elektrické dobíjacie stanice sú určené pre minimálne 3 % celkovej kapacity parkovacích miest v budove. 6 Projektový tím môže preukázať, že elektrické vozidlá využívajúce tieto dobíjacie body budú mať nižšie emisie CO_2 ako ich benzínové alebo naftové modely.	Všetky	2
4	7 Bola vytvorená skupina alebo zariadenie na spoločné využívanie vozidiel, ktoré uľahčuje a podporuje používateľov budovy , aby sa prihlásili do systému spoločného využívania vozidiel. 8 Boli vypracované marketingové materiály, ktoré pomôžu zvýšiť povedomie o systéme a v prípade potreby budú oznámené nájomcom. 9 Prednostné miesta pre zdieľané vozidlá predstavujú najmenej 5 % celkovej parkovacej kapacity budovy. 10 Prioritné miesta sa nachádzajú na najbližších voľných miestach na najbližšom dostupnom parkovisku k hlavnému vchodu do budovy na mieste.	Všetky	2
5	11 Sú nainštalované vyhovujúce miesta na uskladnenie bicyklov, ktoré spĺňajú minimálne úrovne stanovené v tabuľke 35 na nasledujúcej strane (pozri kontrolné zoznamy a tabuľky na nasledujúcej strane).	Všetky	1
	12 Uvedené kritérium 11 je splnené. 13 Používatelia budovy musia mať k dispozícii aspoň dve z nasledujúcich vyhovujúcich zariadení: 13.a Sprchy v súlade s predpismi 13.b Vyhovujúce šatne a skrinky na oblečenie 13.c Vyhovujúci priestor na sušenie mokrého oblečenia	Kancelárie, priemyselné budovy , predškolské zariadenia, školy, vysoké školy, univerzity, ostatné budovy typu 1 a 2, maloobchod, hotel, ostatné budovy typu 3	1

Kritériá prikladnej úrovne

Nasleduje prehľad príkladných kritérií úrovne na získanie inovačných kreditov pre túto oblasť BREEAM:

6. Dve z uvedených možností boli plne realizované.

Kontrolné zoznamy a tabuľky

Tabuľka 35 Kritériá uskladnenia bicyklov pre každý typ budovy

Typ budovy	Počet priestorov na mernú jednotku	Merná jednotka	Poznámky
Obchodná			
Kancelárie, Priemyselné objekty	1	10 zamestnancov	
Maloobchod			
Veľké maloobchodné objekty	1	10 zamestnancov	Počet zamestnancov sa vzťahuje na maximálny počet zamestnancov pracujúcich v budove v ktoromkoľvek čase alebo zmene. Aby boli splnené kritériá, musia byť k dispozícii priestory na odkladanie bicyklov pre zamestnancov aj zákazníkov. Hoci nemusia byť oddelené, odporúča sa to. Vyžaduje sa minimálne 10 miest pre bicykle pre zákazníkov. Ak je k dispozícii aspoň 50 miest na odkladanie bicyklov pre zákazníkov, spĺňa to kritériá pre miesta na odkladanie bicyklov pre zákazníkov.
	1	20 verejných parkovacích miest	
Malé maloobchodné objekty	10	Celkom	Priestory musia byť verejne prístupné v blízkosti hlavného vchodu do budovy. Vyhovujúce zariadenia pre cyklistov sú určené len pre zamestnancov, t. j. zabezpečenie zariadení pre zákazníkov nie je požiadavkou pre splnenie podmienok.
Vzdelávanie			
Predškolské zariadenia	1	10 zamestnancov	
Základná škola	5	Na triedu v ročníku	Napríklad: ak bola základná škola navrhnutá tak, aby sa do nej zmestili tri triedy v ročníku, pre celú školu je k dispozícii celkovo 15 vyhovujúcich miest na uskladnenie bicyklov. Ak je počet tried alebo ročníkov rôzny, výpočet musí vychádzať z ročníka s najväčším počtom tried alebo ročníkov.
Stredné a vysoké školy	1	10 zamestnancov a žiakov alebo študentov spolu	Počet študentov musí zahŕňať študentov bakalárskeho aj magisterského štúdia, ako aj doktorandov a postdoktorandov.
Rezidenčné inštitúcie			

Študentské domovy	1	10 zamestnancov	Táto požiadavka je podmienená poskytnutím minimálne jedného vyhovujúceho miesta.
	1	2 obyvatelia	
Sociálna ubytovňa, opatrovateľské domy a zariadenia podporovaného bývania*	1	10 zamestnancov	* Alebo priestory špecifikované v súlade s požadovaným počtom podľa pravdepodobného profilu obyvateľa. V prípade, že profil obyvateľov nepredstavuje staršie osoby alebo osoby s telesným postihnutím alebo zdravotným oslabením, mala by sa požiadavka na miesta pre invalidné vozíky alebo elektrické kočíky prípadne zmeniť na miesta pre bicykle.
	1 vyhovujúci úložný priestor pre invalidný vozík alebo elektrický kočík	10 obyvateľov*	
Iné budovy			
Iná budova - s personálom*	Použite kritériá stanovené pre kancelárske budovy.		
Iná budova - návštevníci*	1	10 zamestnancov	
	1	10 návštevníkov alebo postelí	
Ostatné budovy - vidiek*	1	20 zamestnancov	Jeden kredit možno udeliť, ak sú k dispozícii miesta len pre zamestnancov, ako aj príslušné vyhovujúce zariadenia pre cyklistov. Poznámka o súlade, ktorá umožňuje zníženie počtu cyklistov vo vidieckych lokalitách, bola zohľadnená v mernej jednotke pre tento druh dopravy. Nemala by sa preto opätovne uplatňovať.
	1	20 návštevníkov budovy alebo postelí	

*Podľa príslušných definícií v dokumente BREEAM oblasť Tra 01 Dostupnosť verejnej dopravy na strane 215 pre klasifikáciu ostatných budov - Personál, Návštevníci a Vidiek.

Poznámky o súlade

Ref	Definície pojmov	Popis
Hrubá stavba a jadro (iba nebytové a rezidenčné inštitúcie)		
CN1	Príslušné hodnotiace možnosti	Obidve možnosti: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy Pozri Príloha D - Posúdenie plášťa a jadra projektu na strane 409 Podrobnejší opis možností hodnotenia plášťa a jadra.
Obytné - čiastočne a úplne vybavené		

Ref	Definície pojmov	Popis
CN2	Príslušné hodnotiace kritériá - Obydlia pre jednu rodinu a obydlia pre viaceré rodiny	Obidve možnosti: Táto otázka sa nevzťahuje na obytné domy. Pozri Prílohu E – Uplatniteľnosť BREEAM New Construction na obydlia pre jednu rodinu a obydlia pre viaceré rodiny, čiastočne a úplne vybavené na str. 412, kde nájdete podrobnejší popis možností hodnotenia bytových domov.
Všeobecné		
CN3	Počet obyvateľov budovy neznámy	Ak nie je možné potvrdiť počet obyvateľov budovy, ktorí dochádzajú do zamestnania, pravdepodobne z dôvodu špekulatívnej povahy budovy, potom predvolené miery obsadenia uvedené v tabuľke v časti Doplňujúce informácie vo vydaní BREEAM Tra 04 Maximálna kapacita parkovania na str. 240 sa môže použiť na určenie predvoleného počtu používateľov. Alternatívne sa môže použiť počet obyvateľov budovy v existujúcej zástavbe podobného typu a veľkosti (posudzovateľ musí odôvodniť alebo potvrdiť použitý počet vo svojej certifikačnej správe).
CN3.1	Typ budovy	Pre určenie typu budovy pozri BREEAM oblasť Tra 01 Dostupnosť verejnej dopravy na strane 215. Ak posudzujete budovu na mieru, pre potvrdenie pozri prílohu Kritériá na mieru.
CN3.2	Prísnejšie požiadavky	Ak miestne úrady vyžadujú prísnejšie požiadavky ako BREEAM (napr. počet elektrických dobíjacích staníc alebo miest pre bicykle), musia byť splnené, aby sa mohli udeliť kredity.
CN3.3	Existujúce vyhovujúce zariadenia a prístavby k existujúcim budovám	V prípade posudzovania nových budov na existujúcom mieste, kde existujú vyhovujúce zariadenia, možno tieto zariadenia posúdiť podľa požiadaviek tejto problematiky. Počet existujúcich vyhovujúcich zariadení musí byť dostatočne veľký na to, aby dokázal uspokojiť používateľov posudzovanej budovy, ako aj používateľov všetkých existujúcich budov.
CN3.4	Budovanie lokalít s vysokou úrovňou dostupnosti verejnou dopravou	V prípade lokalít, kde bolo udelených aspoň 50 % dostupných kreditov za BREEAM oblasť Tra 01 Dostupnosť verejnej dopravy na strane 215 (zaokrúhlené na najbližší celý kredit), sa počet vyhovujúcich miest pre bicykle môže znížiť o 50 %. Týmto znížením sa o rovnaké rozpätie zníži aj požiadavka na vyhovujúce sprchy alebo skrinky.

Ref	Definície pojmov	Popis
CN3.5	Verejné systémy zdieľania bicyklov	Systémy spoločného využívania bicyklov sú čoraz populárnejšie a rozmanitejšie systémy, ktoré sa v posledných rokoch objavili vo veľkých mestách a v rámci ktorých sa určitý počet bicyklov poskytuje na spoločné využívanie ľuďom, ktorí nevlastnia bicykel. Hlavnou myšlienkou mnohých systémov je bezplatný alebo cenovo dostupný prístup k bicyklom pre mestskú dopravu s cieľom znížiť používanie automobilov na krátke cesty v meste, a tým znížiť dopravné zápchy, hluk a znečistenie ovzdušia. Až 50 % požiadaviek BREEAM na miesta pre bicykle môže byť zabezpečených verejným systémom zdieľania bicyklov, ak spĺňa tieto podmienky: 1. Program realizuje obec alebo prostredníctvom verejno-súkromného partnerstva 2. Systém musí byť otvorený pre príležitostných používateľov, ktorí ich chcú využívať na jednosmerné jazdy do práce, za vzdelaním alebo do nákupných centier. 3. Bicykle sú k dispozícii na neobsluhovaných mestských miestach a fungujú spôsobom, ktorý možno považovať za „cyklistický tranzit“. 4. Servisné terminály musia byť k dispozícii v celom meste 5. Priemerná vzdialenosť medzi terminálmi služieb je maximálne 500 m v mestských oblastiach 6. Servisný terminál je k dispozícii do 500 m od hlavného vchodu do budovy 7. Terminály na bicykle nemusia spĺňať požiadavky na konštrukciu uvedené v definícii pojmu Vyhovujúcich miest na uskladnenie bicyklov na strane 234. Počet vyhovujúcich zariadení sa vypočíta na základe celkového počtu požadovaných miest pre bicykle. V prípade maloobchodných projektov sa do počtu požadovaných miest pre bicykle zákazníkov môžu započítať aj verejné miesta pre bicykle.
CN3.6	Vidiecke lokality	V prípade lokalít vo vidieckych lokalitách, kde je pravdepodobné, že priemerná dochádzková vzdialenosť používateľa budovy bude väčšia ako 16 km, sa počet vyhovujúcich miest pre bicykle môže znížiť o 50 %. Týmto znížením sa o rovnaké rozpätie zníži aj požiadavka na vyhovujúce sprchy a skrinky. Zníženie o 50 % sa v tomto kontexte nemôže uplatniť ako doplnok k zníženiu o 50 % v dôsledku úrovne dostupnosti budovy pre verejnú dopravu (ako je popísané v bode CN3.4 na predchádzajúcej strane). Vidiecka lokalita je definovaná v dokumente BREEAM oblasť Tra 01 Dostupnosť verejnej dopravy na strane 215.
CN3.7	Minimálny počet zariadení	Ak je k dispozícii viac ako minimálny počet vyhovujúcich miest pre bicykle, nie je potrebné zabezpečiť aj viac ako minimálny počet spŕch, skriniek alebo zariadení na prezliekanie.
Špecifické pre druh budovy		
CN4	Hotel	Ak sa používa pojem „návštevníci budovy“, nezahŕňa hostí ubytovaných v hoteli. Zahŕňalo by to však aj návštevníkov konferenčných priestorov, reštaurácie alebo posilňovne atď., ktorí nie sú ubytovaní v hoteli (ak sú také zariadenia k dispozícii).

Metodológia

Pohyblivá stupnica súladu

S cieľom uznať zvýšenú dôveru v dostupnosť, ku ktorej dochádza pri rozsiahlejšom poskytovaní zariadení, je prijateľné znížiť požiadavku na poskytovanie pre používateľov budov zvýšením štandardnej mernej jednotky (definovanej v tabuľke 35 na strane 228

1. V prípade budov s viac ako 200 používateľmi, ale menej ako 300, sa môže merná jednotka zvýšiť o pomer 1.5.
2. V prípade budov s viac ako 300 používateľmi, ale menej ako 400, sa môže merná jednotka zvýšiť o pomer 2.
3. V prípade budov s viac ako 400 používateľmi sa môže merná jednotka zvýšiť o pomer 2,5.

Výpočet sa začína od prvých 200 používateľov budovy bez pomeru a pokračuje s ohľadom na pomer len pre ostatných používateľov budovy.

Napríklad kancelárska budova s 800 používateľmi by mala mať k dispozícii nasledujúci počet miest na uskladnenie bicyklov:

- 1-200 používateľov pri počte 1 miesto na 10 používateľov = 20 miest PLUS
- 201-300 používateľov pri počte 1 miesto na 15 používateľov (štandardná merná jednotka x 1,5) = 7 miest PLUS
- 301-400 používateľov pri počte 1 miesto na 20 používateľov (štandardná merná jednotka x 2) = 5 miest PLUS
- 401+ používateľov pri počte 1 miesto na 25 používateľov (štandardná merná jednotka x 2,5) = 16 miest
- Celkový počet požadovaných vyhovujúcich miest na uskladnenie bicyklov = 48 miest.

Pohyblivá stupnica súladu sa nevzťahuje na tieto typy budov: malé a veľké maloobchody, základné školy a rezidenčné inštitúcie.

Minimálny počet miest na uskladnenie bicyklov

Ak je vypočítaný počet požadovaných miest na uskladnenie bicyklov menší ako štyri, celková rezerva by mala vychádzať z nižšej z nasledujúcich hodnôt:

1. Musia byť k dispozícii minimálne štyri vyhovujúce priestory na uskladnenie ALEBO
2. Jedno miesto na používateľa (zamestnanci a prípadne iné skupiny používateľov).

Zabezpečenie uskladnenia bicyklov a zariadení na mieste s viacerými budovami

Ak sa na existujúcom pozemku stavia nová budova alebo sa na tom istom pozemku má postaviť viacero nových budov , súlad s touto otázkou sa môže posudzovať na základe samostatnej budovy alebo na základe celej lokality. Spôsob určenia závisí od konfigurácie navrhovaného skladu bicyklov, cyklistických zariadení a od interpretácie a odôvodnenia posudzovateľa.

Samostatný prístup

Ak sa uskladnenie bicyklov a súvisiace zariadenia poskytujú len pre posudzovanú budovu, platí nasledovné:

Skladovanie bicyklov:

- Počet miest na uskladnenie bicyklov je v súlade s počtom používateľov v posudzovanej budove. Všetky
- skladovacie priestory musia byť v súlade s BREEAM a musia sa nachádzať v hodnotenej budove alebo v jej tesnej blízkosti. Z prístupových opatrení, vymedzenia a umiestnenia je zrejmé, že poskytnutý sklad bicyklov je jednoznačne spojený len s posudzovanou budovou.
- Pri určovaní počtu potrebných skladovacích priestorov sa môže použiť pohyblivá stupnica súladu.

Zariadenia pre cyklistov:

- Všetky nové a existujúce zariadenia môžu byť zahrnuté pod podmienkou, že sú v súlade s BREEAM.
- Zariadenia by sa mali nachádzať v hodnotenej budove alebo v prístupnej priľahlej budove a mali by slúžiť výlučne používateľom hodnotenej budovy.

Prístup v rámci celej lokality

Ak sú k dispozícii miesta pre uskladnenie bicyklov a súvisiace zariadenia, ktoré by boli prístupné všetkým používateľom celej lokality, alebo ak v rámci lokality existuje samostatná skupina miestnych budov, ktoré by mali spoločné zariadenia, platia nasledovné pravidlá:

Skladovanie bicyklov:

- Počet miest na uskladnenie bicyklov je v súlade s počtom používateľov na mieste alebo v rámci skupiny miestnych budov.
- Všetky nové skladovacie priestory musia spĺňať požiadavky BREEAM. Započítavať sa môžu aj existujúce uskladňovacie priestory za predpokladu, že umožňujú ľahké uskladnenie a vybratie bicyklov s možnosťou ich bezpečného uzamknutia na vyhovujúcom cyklistickom mieste (pozri bod 2 o vyhovujúcom uskladnení bicyklov v časti Relevantné definície na nasledujúcej strane).
- Pri určovaní počtu potrebných skladovacích priestorov sa môže použiť pohyblivá stupnica súladu.

Zariadenia pre cyklistov:

- Počet zariadení pre cyklistov je vyhovujúci na základe počtu používateľov na mieste, ktorí by mohli tieto zariadenia využívať.
- Zariadenia pre cyklistov môžu byť umiestnené kdekoľvek na mieste. Celková trasa, ktorú musia cyklisti prejsť, aby sa dostali k najbližšiemu uskladneniu bicyklov, zariadeniam pre cyklistov a vstupom do budov, však nesmie byť dlhšia ako 200 m po bezpečnej a pohodlnej trase, meranej od prvého po posledný bod na trase. Ak je to možné, rôzne typy zariadení pre cyklistov by mali byť zoskupené v určených oblastiach, aby sa uľahčil prístup a používanie.
- Všetky nové a existujúce zariadenia môžu byť zahrnuté pod podmienkou, že sú v súlade s BREEAM a spĺňajú vyššie uvedenú požiadavku 200 m.

Kombinácia oboch dvoch prístupov

Kombinácia týchto dvoch prístupov sa môže uplatniť v prípade, že sa uskladnenie bicyklov realizuje v rámci celej lokality a zariadenia sú určené len pre posudzovanú budovu. Kombináciu prístupov však nemožno uplatniť v prípade, že sa zariadenia dodávajú v rámci celej lokality a uskladňovacie priestory sa zabezpečujú len pre posudzovanú budovu.

Dôkazová dokumentácia

Kritériá	Predbežná fáza projektu	Záverečná fáza po výstavbe
Všetky	Projektové výkresy alebo príslušné časti alebo ustanovenia špecifikácie stavby alebo zmluvy. Zároveň aj nasledujúce, ak je to relevantné pre vybrané možnosti: Predpoklady a výpočty použité na určenie počtu verejných používateľov Konzultačná dokumentácia Odpovede alebo opatrenia na spätnú väzbu z konzultácií Marketingový materiál Dôkazy alebo výpočty potvrdzujúce, že emisie CO_2 z elektrických vozidiel sú nižšie ako z benzínových alebo naftových vozidiel.	Dôkaz z fázy návrhu. Inšpekcia budovy alebo miesta posudzovateľom a fotografický dôkaz potvrdzujúci inštaláciu vyhovujúcich zariadení. Zároveň aj harmonogramy, ak je to relevantné pre vybrané možnosti: Ak od fázy návrhu došlo k zmenám, ktoré by mohli ovplyvniť súlad, na preukázanie súladu sa vyžadujú úplné podrobnosti o zmenách.

Dodatočné informácie

Relevantné definície

Ďalšie klasifikácie typov budov

Pozri BREEAM oblasť Tra 01 Dostupnosť verejnej dopravy na strane 215.

Vyhovujúce uskladnenie bicyklov

Vyhovujúce miesta na uskladnenie bicyklov spĺňajú nasledovné:

1. Bicykle sa dajú upevniť v priestore pomocou upevnení pre jeden alebo viac bicyklov. Upevnenie by malo umožniť bezpečné zaistenie kolesa aj rámu. Priestory sú kryté zhora a miesta pre bicykle sú osadené alebo pripevnené k trvalej konštrukcii (budove alebo spevnenej ploche). Prípadne môže byť uskladnenie bicyklov umiestnené v uzamknutej konštrukcii, ktorá je pripevnená k trvalej konštrukcii alebo je jej súčasťou, s príslušným dohľadom.
2. Vzdialenosť medzi jednotlivými miestami na bicykle a miestami na bicykle a inými prekážkami, napr. stenou, umožňuje vhodný prístup k miestu na uskladnenie bicyklov, aby bolo možné bicykle ľahko uskladniť a dostať sa k nim.
3. Zariadenia sa nachádzajú na nápadnom mieste, ktoré je viditeľné alebo na ktoré je výhľad buď z obývanej budovy, alebo z hlavného prístupu do budovy. V prípade, že sa priestory na odkladanie bicyklov nachádzajú v budove ,malo by sa zabezpečiť viditeľné označenie, ktoré by informovalo používateľov budovy a cyklistov o ich umiestnení.
4. Úschovňa bicyklov má primerané osvetlenie; to by sa mohlo preukázať pomocou kritérií osvetlenia definovaných v dokumente BREEAM oblasť Hea 01 Vizuálny komfort na strane 83. Osvetlenie musí byť riadené tak, aby sa zabránilo používaniu mimo pracovného času a prevádzke počas denného svetla, ak je v zariadení alebo v jeho okolí dostatok denného svetla.

Vyhovujúce sprchy

Za vyhovujúce sprchy sa považujú tie, ktoré spĺňajú nasledovné požiadavky:

1. Poskytnutie jednej sprchy na každých 10 miest na odkladanie bicyklov, s podmienkou poskytnutia minimálne jednej sprchy pre zamestnancov. V prípade stredných škôl sa tiež vyžadujú minimálne dve miesta pre študentov, jedno mužské a jedno ženské.
2. Každá budova, v ktorej sa nachádza osem alebo viac spŕch, musí spĺňať požiadavky bez ohľadu na počet miest na uskladnenie bicyklov.
3. Musia byť zabezpečené podmienky pre mužov aj ženy, t. j. buď samostatné sprchy v rámci spoločných priestorov určených pre obe pohlavia (požadované rozdelenie 50:50), alebo samostatné sprchové kabíny a priestor na prezliekanie pre zmiešané použitie.
4. Sprchy nemusia byť vyhradené pre cyklistov a môžu byť spoločné s inými používateľmi alebo spôsobmi využitia.

Zariadenia na prezliekanie v súlade s predpismi

Za vyhovujúce šatne sa považujú tie, ktoré spĺňajú nasledovné požiadavky:

1. Vhodná veľkosť pre pravdepodobný alebo požadovaný počet používateľov. Posudzovateľ by mal na základe vlastného úsudku určiť, či je priestor na prezliekanie primerane veľký vzhľadom na počet miest na odkladanie bicyklov alebo sprchy.
2. Priestory na prezliekanie musia obsahovať primeraný priestor a zariadenia na zavesenie alebo uloženie oblečenia a vybavenia počas prezliekania alebo sprchovania, napr. lavičky alebo háčiky.
3. Toaletné alebo sprchové kabíny sa nemôžu považovať za šatne.

Vyhovujúce skrinky

Za vyhovujúce skrinky sa považujú tie, ktoré spĺňajú nasledovné požiadavky:

1. Počet skriniek sa rovná minimálne počtu potrebných miest pre bicykle
2. Šatňové skrinky sú buď vo vyhovujúcich šatniach, alebo v ich tesnej blízkosti, ak sú k dispozícii.
3. Skrinky majú vhodnú veľkosť na uloženie vybavenia cyklistu.

Vyhovujúce priestory na sušenie

Vyhovujúci priestor na sušenie je definovaný ako priestor, ktorý je špeciálne navrhnutý a určený s primeraným vykurovaním alebo vetraním na sušenie mokrého oblečenia. Napríklad miestnosť pre rastliny nie je vyhovujúci priestor na sušenie.

Tra 03b Alternatívne možnosti dopravy

(len bytové priestory)

Pre nebytové budovy a rezidenčné inštitúcie pozri Tra 03a Alternatívne spôsoby dopravy na strane 226.

Počet dostupných kreditov	Minimálne normy
2	Žiadne

Cieľ

Poskytovať zariadenia, ktoré podporujú používateľov budovy vtom, aby cestovali s použitím nízkouhlíkových spôsobov dopravy a minimalizovali jednotlivé cesty.

Kritériá hodnotenia

Na preukázanie súladu sa vyžaduje:

Až dva kredity

Bola realizovaná jedna z nasledujúcich možností:

Možnosť	Kritériá	Kredity
1	1 Počas prípravy prehľadu sa projektový tím poradil s miestnym úradom o poskytnutí alebo stave miestnej cyklistickej siete a o tom, ako by mohol projekt prispieť k jej zlepšeniu. 2 Po dohode s miestnym úradom bol vybraný a realizovaný jeden návrh. Tento návrh musí byť doplnkom k tomu, čo by miestny úrad urobil bez podpory projektu a musí mať významný vplyv na miestnu sieť cyklistických komunikácií.	2
2	3 Rokovania s miestnymi autobusovými spoločnosťami viedli k zvýšeniu poskytovania miestnych služieb v oblasti rozvoja. 4 Toto zlepšenie v oblasti verejnej dopravy zvýšilo AI pred výstavbou minimálne o 1,00 (pozri Tra 01 Verejná Dostupnosť dopravy na strane 215).	2
3	5 Obyvatelia obydlí majú k dispozícii elektrické dobíjacie stanice. Tabuľka 37 na strane 237 ukazuje ako je možné získať kredity. 6 Projektový tím môže preukázať, že elektrické vozidlá využívajúce tieto dobíjacie body budú mať nižšie emisie CO_2 ako ich benzínové alebo naftové modely.	Maximálne 2 (pozri Tabuľku 37 na strane 237)

Možnosť	Kritériá		Kredity
4	7	Vytvorí sa spoločný „automobilový klub“, ktorého členovia spoločne využívajú miestny vozový park. 7.a Používanie vozidiel by malo byť spoplatnené na základe „pay-as-you-drive“ (podľa počtu najazdených kilometrov). 7.b Klub by mal byť obyvateľom predstavený v predajných materiáloch a počas predaja alebo dní otvorených dverí. 7.c Každé obydlie by malo dostať podrobné informácie o schéme vrátane nákladov a spôsobu zapojenia.	2
5	8	Bicykle sa ukladajú do vyhovujúceho individuálneho alebo spoločného priestoru na uskladnenie bicyklov. Musí byť bezpečný, chránený, pohodlný, odolný voči poveternostným vplyvom a s jednoduchým a priamym prístupom.	Maximálne 2 (pozri Tabuľku 36 nižšie
	9	Tabuľka 36 nižšie znázorňuje, ako sa dosahujú kredity.	
Poznámka: Ak možnosť 3 aj možnosť 5 spĺňajú požiadavku na jeden kredit, možno v rámci tohto hodnotenia získať celkovo dva kredity.			

Kritériá príkladnej úrovne

Nasleduje prehľad príkladných kritérií úrovne na získanie inovačných kreditov pre túto oblasť BREEAM:

6. Dve z uvedených možností boli plne realizované.

Kontrolné zoznamy a tabuľky

Tabuľka 36: Počet miest pre bicykle na jedno obydlie a počet dostupných kreditov

Veľkosť obydlia	1 miesto pre bicykle na každé 2 obydlia	1 miesto pre bicykle na každé obydlie	2 miesta pre bicykle na každé obydlie	4 miesta pre bicykle na každé obydlie
	Dostupné kredity			
Štúdio alebo jednoizbové	1	2	2	2
2-3-izbové	0	1	2	2
4 a viac izbové	0	0	1	2

Tabuľka 37: Počet elektrických dobíjacích staníc na jedno obydlie a počet dostupných kreditov

Veľkosť obydlia	1 elektrická dobíjacia stanica na každé 2 obydlia	1 elektrická dobíjacia stanica na každé obydlie	2 elektrické dobíjacie stanice na každé obydlie
	Dostupné kredity		
Štúdio alebo jednoizbové	1	2	2
2 a viac izbové	0	1	2

Poznámky o súlade

Ref	Definície pojmov	Popis
Hrubá stavba a jadro (iba nebytové a rezidenčné inštitúcie)		
CN1	Príslušné hodnotiace kritériá	Obe možnosti: Táto otázka sa nevzťahuje na nebytové a rezidenčné inštitúcie. Pozri Prílohu D - Hodnotenie plášťa a jadra projektu na str. 409, kde nájdete podrobnejší popis možností posúdenia plášťa a jadra.
Obytné - čiastočne a úplne vybavené		
CN2	Príslušné hodnotiace kritériá - Obydlia pre jednu rodinu a obydlia pre viaceré rodiny	Obidve možnosti: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy. Pozri Prílohu E – Uplatniteľnosť BREEAM New Construction na obydlia pre jednu rodinu a obydlia pre viaceré rodiny, čiastočne a úplne vybavené na str. 412, kde nájdete podrobnejší popis možností hodnotenia bytových domov.
Všeobecné		
CN2.1	Existujúce vyhovujúce zariadenia a prístavby k existujúcim budovám	Pozri oblasť Tra 03a Alternatívne spôsoby dopravy na strane 226.
CN2.2	Typ budovy	Pozri oblasť Tra 03a Alternatívne spôsoby dopravy na strane 226.
CN2.3	Prístup do skladu bicyklov	Prístup z úschovne bicyklov na verejnú cestu nesmie viesť cez obydlie, t. j. ak sú bicykle uskladnené v prístrešku v zadnej záhrade rodinného domu a nie je tam zadná záhradná brána, nie je to vyhovujúce. V bytových domoch a v obydliach pre viaceré rodiny so spoločnými priestormi musia byť spoločné úschovne bicyklov umiestnené do 100 m od vchodových dverí alebo hlavného vchodu. Ak zo strategických dôvodov (mimo kontroly investora) nie je možné umiestniť úschovňu v požadovanej vzdialenosti, je možné povoliť výnimky z tohto pravidla. Pred udelením kreditov je potrebné poskytnúť všetky podrobnosti a konzultovať ich so spoločnosťou BRE Global.

Ref	Definície pojmov	Popis
CN2.4	Úložný priestor v obydlí	Ak sa majú bicykle skladovať vo vnútri obydlia, nie je možné dosiahnuť kredit (pokiaľ sa nenachádzajú vo verande s primeraným priestorom, ako je definované v minimálnych priestorových požiadavkách).
CN2.5	Skladacie bicykle	Poskytnutie priestoru na skladacie bicykle uskladnené v obydlí by neumožnilo získať úver. Skladacie bicykle by boli dočasným opatrením, zatiaľ čo uskladnenie bicyklov je trvalým prvkom.

Metodológia

Minimálny počet miest na uskladnenie bicyklov

Ak je vypočítaný počet požadovaných miest na uskladnenie bicyklov menší ako štyri, celková rezerva by mala vychádzať z nižšej z nasledujúcich hodnôt:

1. Musia byť k dispozícii minimálne štyri vyhovujúce priestory na uskladnenie ALEBO
2. Jedno miesto na používateľa.

Zabezpečenie uskladnenia bicyklov na mieste s viacerými budovami

Ak sa na existujúcom pozemku stavia nová budova alebo sa na tom istom pozemku má postaviť viacero nových budov , súlad s touto otázkou sa môže posudzovať na základe samostatnej budovy alebo na základe celej lokality. Spôsob určenia závisí od konfigurácie navrhovaného skladu bicyklov, cyklistických zariadení a od interpretácie a odôvodnenia posudzovateľa.

Samostatný prístup

Ak sa uskladnenie bicyklov poskytuje len pre posudzovanú budovu, platí nasledovné:

Skladovanie bicyklov:

- Počet miest na uskladnenie bicyklov je v súlade s počtom používateľov v posudzovanej budove. Všetky úložné
- priestory musia byť v súlade s BREEAM a musia sa nachádzať v posudzovanej budove alebo v jej tesnej blízkosti. Z prístupových opatrení, vymedzenia a umiestnenia je zrejmé, že poskytnutá úschovňa bicyklov je jednoznačne spojená len s posudzovanou budovou.

Prístup v rámci celej lokality

Ak sú k dispozícii miesta pre uskladnenie bicyklov, ktoré by boli prístupné všetkým používateľom celej lokality, alebo ak v rámci lokality existuje samostatná skupina miestnych budov, ktoré by mali spoločné zariadenia, platia nasledovné pravidlá:

Skladovanie bicyklov:

- Počet miest na uskladnenie bicyklov je v súlade s počtom používateľov na mieste alebo v rámci skupiny miestnych budov.
- Všetky nové skladovacie priestory musia spĺňať požiadavky BREEAM. Započítavať sa môžu aj existujúce uskladňovacie priestory za predpokladu, že umožňujú ľahké uskladnenie a vybratie bicyklov s možnosťou ich bezpečného uzamknutia na vyhovujúcom cyklistickom mieste (pozri bod 2 o vyhovujúcom uskladnení bicyklov v časti Relevantné definície).

Kombinácia oboch dvoch prístupov

Kombinácia týchto dvoch prístupov sa môže uplatniť v prípade, že sa uskladnenie bicyklov realizuje v rámci celej lokality a zariadenia sú určené len pre posudzovanú budovu. Kombináciu prístupov však nemožno uplatniť v prípade, že sa zariadenia dodávajú v rámci celej lokality a uskladňovacie priestory sa zabezpečujú len pre posudzovanú budovu.

Dôkazová dokumentácia

Kritériá	Predbežná fáza projektu	Záverečná fáza po výstavbe
Všetky	Projektové výkresy a príslušné časti alebo ustanovenia špecifikácie stavby alebo zmluvy. Zároveň aj nasledujúce, ak je to relevantné pre vybrané možnosti: Predpoklady a výpočty použité na určenie počtu verejných používateľov Konzultačná dokumentácia Odpovede a opatrenia na spätnú väzbu z konzultácií Marketingový materiál Dôkazy alebo výpočty potvrdzujúce, že emisie CO_2 z elektrických vozidiel sú nižšie ako z benzínových alebo naftových vozidiel.	Dôkaz z fázy návrhu. Inšpekcia budovy a miesta posudzovateľom a fotografický dôkaz potvrdzujúci inštaláciu vyhovujúcich zariadení. Zároveň aj harmonogramy, ak je to relevantné pre zvolené možnosti. V prípade zmien, ktoré nastali od fázy návrhu , ktoré by mohli ovplyvniť súlad, na preukázanie súladu sa vyžadujú úplné podrobnosti o zmenách.

Dodatočné informácie

Relevantné definície

Vyhovujúce miesta na uskladnenie bicyklov

Vyhovujúce miesta na uskladnenie bicyklov spĺňajú nasledovné:

1. Bicykle sa dajú upevniť v priestore pomocou upevnení pre jeden alebo viac bicyklov. Upevnenie by malo umožniť bezpečné zaistenie kolesa aj rámu. Priestory sú kryté zhora a miesta pre bicykle sú osadené alebo pripevnené k trvalej konštrukcii (budove alebo spevnenej ploche). Prípadne môže byť uskladnenie bicyklov umiestnené v uzamknutej konštrukcii, ktorá je pripevnená k trvalej konštrukcii alebo je jej súčasťou, s príslušným dohľadom.
2. Vzdialenosť medzi jednotlivými miestami na bicykle a miestami na bicykle a inými prekážkami, napr. stenou, umožňuje vhodný prístup k miestu na uskladnenie bicyklov, aby bolo možné bicykle ľahko uskladniť a dostať sa k nim.
3. Zariadenia sa nachádzajú na nápadnom mieste, ktoré je viditeľné alebo na ktoré je výhľad buď z obývanej budovy, alebo z hlavného prístupu do budovy. V prípade, že sa priestory na odkladanie bicyklov nachádzajú v budove ,malo by sa zabezpečiť viditeľné označenie, ktoré by informovalo používateľov budovy a cyklistov o ich umiestnení.
4. Úschovňa bicyklov má primerané osvetlenie ;to by sa mohlo preukázať pomocou kritérií osvetlenia definovaných v dokumente BREEAM oblasť Hea 01 Vizuálny komfort na strane 83. Osvetlenie musí byť riadené tak, aby sa zabránilo používaniu mimo pracovného času a prevádzke počas denného svetla, ak je v zariadení alebo v jeho okolí dostatok denného svetla.

Ďalšie informácie

Žiadne.

Tra 04 Maximálna kapacita parkovania

(iba nebytové a rezidenčné inštitúcie)

Počet dostupných kreditov	Minimálne normy
2	Žiadne

Cieľ

Podporovať používanie iných alternatívnych dopravných prostriedkov ako súkromné autá do budovy a z budovy, a tým pomáhať znižovať emisie súvisiace s dopravou a dopravné zápchy spojené s prevádzkou budovy.

Kritériá hodnotenia

Na preukázanie súladu sa vyžaduje:

Maximálne dva kredity - kapacita parkovania

1. Kapacita parkovacích miest v budove sa porovná s referenčnými hodnotami maximálnej kapacity parkovacích miest uvedenými v tabuľke 38 nižšie a pridelí sa príslušný počet kreditov.
   Pre väčšinu typov budov, s výnimkou tých, kde je to uvedené, sa referenčné hodnoty líšia podľa indexu dostupnosti budovy pre verejnú dopravu (AI; stanovený v súlade s BREEAM oblasť Tra 01 Dostupnosť verejnej dopravy na strane 215). Preto sa pre tieto typy budov musí pred posúdením tejto otázky určiť AI. To sa vyžaduje, aby sa zabezpečilo, že parkovacia kapacita budovy je v pomere k dostupnosti stavby k sieti verejnej dopravy.

Kontrolné zoznamy a tabuľky

Tabuľka 38: Kredity dostupné v Tra 04 Maximálna kapacita parkovacích miest pre rôzne typy budov

Index prístupnosti budov	Kritériá			Kredity
	< 4	≥ 4 - < 8	≥ 8	
Typ budovy	Maximálna kapacita parkovania 1 miesto na x používateľov budovy, kde x je:			
Kancelárie, priemyselné objekty, študentské objekty	3	4	5	1
	4	5	6	2

Index prístupnosti budov	Kritériá < 4	Kritériá ≥ 4 8	Kritériá ≥ 8	Kredity
Sociálna ubytovňa, opatrovateľské domy a zariadenia podporovaného bývania	4	5	6	1
	5	6	7	2
Univerzita a vysokoškolské vzdelávanie	15	20	25	1
	20	25	30	2
Iná budova - obsadená a návštevníci	3	4	5	1
	4	5	6	2
Predškolské zariadenia, školy, maloobchod, iné budovy - vidiek	Otázka sa v prípade týchto typov budov neposudzuje.			

Plnenie požiadaviek

Ref	Definície pojmov	Popis
Príslušné hodnotiace kritériá		
Plášť a jadro (iba nebytové a rezidenčné inštitúcie)		
CN1	Príslušné hodnotiace kritériá	Obe možnosti: Platia všetky hodnotiace kritériá týkajúce sa typu a funkcie budovy. Pozri Prílohu D - Hodnotenie plášťa a jadra projektu na str. 409, kde nájdete podrobnejší popis možností posúdenia plášťa a jadra.
Bytové - čiastočne a úplne vybavené		
CN2	Príslušné hodnotiace kritériá - Obydlia pre jednu rodinu a obydlia pre viaceré rodiny	Obidve možnosti: Táto otázka sa neuplatňuje. Pozri Prílohu E – Uplatniteľnosť BREEAM New Construction na obydlia pre jednu rodinu a obydlia pre viaceré rodiny, čiastočne a úplne vybavené na str. 412, kde nájdete podrobnejší popis možností hodnotenia bytových domov.
Všeobecné		

Ref	Definície pojmov	Popis
CN3	Výnimky	Parkovacie miesta vyhradené pre týchto používateľov budovy môžu byť vylúčené za predpokladu, že tieto miesta sú vyhradené na toto použitie, t. j. majú príslušnú veľkosť a príslušné značenie alebo označenie: 1. Zdravotne postihnutí 2. Rodičia a dieťa 3. Motorka 4. Spoločné využívanie vozidiel. V prípade vylúčenia miest na zdieľanie áut bude musieť budúci užívateľ budovy potvrdiť, že má vynútiteľnú politiku zdieľania áut.
CN3.1	Parkovanie spoločné s inými budovami	Ak je posudzovaná budova súčasťou širšieho areálu, napr. univerzitného areálu, obchodného parku, nemocnice a parkovisko nie je určené pre jednotlivé budovy, posudzovateľ má dve možnosti: 1. Posúdiť súlad na základe parkovacej kapacity pre celú výstavbu, pričom sa zohľadnia všetci existujúci a noví používatelia a parkovacie miesta 2. Posúdiť súlad pomocou pomerného podielu parkovacej kapacity k používateľom budovy, napr. ak posudzovanú budovu obýva 20 % všetkých používateľov budovy, potom na účely posúdenia priraďte 20 % všetkých parkovacích miest k posudzovanej budove.

Metodológia

Žiadne.

Dôkazová dokumentácia

Kritériá	Predbežná fáza projektu	Záverečná fáza po výstavbe
Všetky	Plán lokality alebo kópia špecifikácie. Príslušná dokumentácia alebo korešpondencia od projektového tímu alebo klienta potvrdzujúca počet používateľov budovy. Potvrdenie o AI budovy (podľa Tra 01 Dostupnosť verejnej dopravy na strane 215).	Ako fáza návrhu. Inšpekcia budovy alebo lokality a fotografický dôkaz.

Dodatočné informácie

Relevantné definície

Index dostupnosti

Pozri Tra 01 Dostupnosť verejnej dopravy - Index dostupnosti na strane 218.

Používatelia budovy

Tam, kde sa v tomto dokumente BREEAM uvádza pojem používatelia budovy, ide o nasledujúce údaje, ak sú relevantné pre daný typ budovy:

1. Zamestnanci (ktorí budú pracovať v budove)
2. Študenti (ktorí budú mať prístup do budovy za účelom práce alebo štúdia počas bežného akademického semestra alebo semestrálneho dňa)
3. Obyvatelia (ktorí budú mať v budove trvalý alebo krátkodobý pobyt).

Ak sú známe konkrétne údaje o obsadenosti projektu alebo sa dajú primerane odhadnúť, mali by sa použiť. Ak to nie je možné , napríklad ak ide o špekulatívny projekt , použite štandardné miery obsadenosti uvedené v Tabuľka 39 nižšie na určenie počtu používateľov. Ak je počet používateľov budovy premenlivý, malo by sa pri poskytovaní parkovacích miest vychádzať z maximálneho počtu používateľov budovy, ktorí ju budú pravdepodobne používať v ktoromkoľvek čase počas bežného dňa.

Opatrovateľské domy

Na účely BREEAM sú opatrovateľské domy definované ako budovy s obytnými priestormi a stravou, v ktorých žijú obyvatelia vyžadujúci určitú úroveň osobnej starostlivosti, ako je stravovanie, upratovanie a určitá úroveň zdravotnej starostlivosti.

Chránené bývanie

Chránené bývanie možno definovať ako samostatné bývanie, zvyčajne s núdzovým poplašným systémom, spoločným sociálnym zariadením a správcom.

Iné druhy budov

Definíciu pojmov Ostatných budov - Personál, Návštevníci a Vidiek nájdete v dokumente BREEAM oblasť Tra 01 Dostupnosť verejnej dopravy na strane 215.

Ďalšie informácie

Tabuľka 39: Predvolené miery obsadenosti podľa typu budovy

Typ a funkcia budovy	Hustota obyvateľov (osoba/m²)	Typ a funkcia budovy	Hustota obyvateľov (osoba/m²)
Činnosť		**Univerzita a vysokoškolské vzdelávanie**	
Kancelárske priestory (vrátane recepcie)	0,111	Spálňa obyvateľov	0,120
Priestor na prípravu jedla (s personálom)	0,108	Učebne	0,203
Malá dielňa alebo laboratórium	0,068	Príprava potravín	0,096
Priemyselné		Sála, prednášková sála, priestor na zhromaždenie	0,202
Príprava potravín	0,213	Počítačové laboratórium	0,231
Oblasť priemyselného spracovania	0,022	Laboratórium	0,106
Laboratórium	0,107	Práčovne a pranie	0,105
Recepcia	0,110	Recepcia	0,112
Skladovanie	0,009	Dielňa (malá)	0,068
Všeobecný kancelársky priestor	0,108	Kancelárske a poradenské priestory	0,098

Typ a funkcia budovy hustotou obyvateľov	Hustota obyvateľov (osoba/m²)	Typ a funkcia budovy	Plocha s (osoba/m²)
Opatrovateľské domy		**Hotely a iné krátkodobé ubytovanie**	
Recepcia	0,152	Spálňa	0,094
Príprava potravín	0,161	Príprava potravín	0,108
Fyzioterapeutická ambulancia	0,200	Recepcia	0,105
Jednotka spálne	0,105	Všeobecný kancelársky priestor	0,106
Práčovne a pranie	0,117	**Ostatné priestory alebo budovy**	
Priestory na zhromažďovanie a haly	1,000	Dátové centrum alebo serverovňa	0,096
Bazénová hala s vodoliečbou	0,100		
Kancelárske a poradenské priestory	0,195		

Poznámky k tabuľke 39 na predchádzajúcej strane o štandardnej miere obsadenosti:

1. Čistá podlahová plocha pre každú funkciu sa musí vynásobiť ekvivalentnou hustotou obyvateľov, aby sa určila celková obsadenosť funkčnej plochy.
2. Neuvádzajú sa všetky potenciálne stavebné plochy, iba tie, ktoré sú potrebné na zohľadnenie odhadovaného obsadenia budovy pre daný typ budovy. Napríklad kancelárska budova môže mať jedáleň, ktorú však využívajú prevažne zamestnanci. Počet zamestnancov kancelárií sa odhaduje na základe štandardnej miery obsadenosti kancelárskych priestorov, preto by zahrnutie jedálne viedlo k dvojitému započítaniu obsadenosti.
3. Ak typ budovy nie je uvedený, môžu sa použiť miery obsadenosti pre podobný typ budovy alebo funkčnú oblasť.
4. Uvedené miery obsadenosti boli získané z databázy činností zjednodušeného energetického modelu budov Spojeného kráľovstva (SBEM).

Tra 05 Plán dopravy

(len nebytové priestory, bytové zariadenia a bytové domy)

Počet dostupných kreditov	Minimálne normy
1	Žiadne

Cieľ

Rozpoznať, aké úvahy sa venujú prispôsobeniu rôznych možností cestovania pre používateľov budovy, a tým podporiť zníženie závislosti od spôsobov cestovania, ktoré majú najväčší vplyv na životné prostredie.

Kritériá hodnotenia

Na preukázanie súladu sa vyžaduje:

Jeden kredit

1 Plán dopravy bol vypracovaný ako súčasť fázy uskutočniteľnosti a návrhu.

2 Vykonalo sa posúdenie alebo vyhlásenie o cestovnom pláne pre konkrétnu lokalitu, aby sa zabezpečilo, že cestovný plán je štruktúrovaný tak, aby spĺňal potreby konkrétnej lokality a zahŕňal (minimálne) tieto aspekty:
- 2.a V prípade potreby existujúce spôsoby cestovania a názory súčasných používateľov budov alebo lokality na cyklistickú a pešiu dopravu, aby bolo možné identifikovať obmedzenia a príležitosti
- 2.b Cestovné zvyklosti a vplyv dopravy budúcich používateľov budov
- 2.c Súčasné miestne prostredie pre peších a cyklistov (s ohľadom na návštevníkov, ktorých môžu sprevádzať malé deti)
- 2.d Bezbariérový prístup (zohľadňujúci rôzne stupne postihnutia a zrakového postihnutia)
- 2.e Spoje verejnej dopravy obsluhujúce lokalitu
- 2.f Súčasné zariadenia pre cyklistov.

3 Plán dopravy obsahuje súbor opatrení na podporu využívania udržateľných spôsobov dopravy a pohybu osôb a tovaru počas prevádzky a používania budovy.

4 Ak je užívateľ známy, musí sa podieľať na vypracovaní plánu dopravy a musí potvrdiť, že plán dopravy sa bude realizovať po ukončení výstavby a bude podporovaný vedením budovy počas jej prevádzky.

Kontrolné zoznamy a tabuľky

Žiadne.

Poznámky o súlade

Ref	Definície pojmov	Popis
Hrubá stavba a jadro (iba nebytové a rezidenčné inštitúcie)		
CN1	Príslušné hodnotiace kritériá	Obe možnosti: Platia všetky hodnotiace kritériá týkajúce sa typu a funkcie budovy. Pozri Prílohu D - Hodnotenie plášťa a jadra projektu na str. 409, kde nájdete podrobnejší popis možností posúdenia plášťa a jadra.
Bytové - čiastočne a úplne vybavené		
CN2	Príslušné hodnotiace kritériá - Obydlia pre jednu rodinu	Obidve možnosti: Táto otázka sa neuplatňuje. Pozri Prílohu E – Uplatniteľnosť BREEAM New Construction na obydlia pre jednu rodinu a obydlia pre viaceré rodiny, čiastočne a úplne vybavené na str. 412, kde nájdete podrobnejší popis možností hodnotenia bytových domov.
CN2.1	Príslušné hodnotiace kritériá - Viacbytov é domy	Obidve možnosti: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy. Pozri Prílohu E – Uplatniteľnosť BREEAM New Construction na obydlia pre jednu rodinu a obydlia pre viaceré rodiny, čiastočne a úplne vybavené na str. 412, kde nájdete podrobnejší popis možností hodnotenia bytových domov.
Všeobecné		
CN3	Existujúci plán dopravy. Pozri kritérium 3 na predchádzajúcej strane	Kredit možno udeliť, ak je posudzovaná budova súčasťou areálu, ktorý má existujúci aktualizovaný organizačný plán dopravy, ktorý je v súlade so štandardom BREEAM, vzťahuje sa na všetkých používateľov budovy (v existujúcich a posudzovaných nových budovách) a zohľadňuje dodatočné cestovanie spôsobené používateľmi novej budovy.
CN3.1	Posúdenia cestovania alebo stanovisko k cestovaniu. Pozri kritérium 2 na predchádzajúcej strane.	Posúdenie cestovania (označované aj ako dopravné posúdenie) sa bude vyžadovať, ak je pravdepodobné, že navrhovaný rozvoj bude mať významný vplyv na dopravu a súvisiace životné prostredie. Oblasť štúdie pre dopravné posúdenie v súvislosti s navrhovaným rozvojom by sa mala určiť v rámci rokovaní medzi investorom a príslušnými orgánmi. Dopravné posúdenie sa vyžaduje v prípade, že navrhovaný rozvoj pravdepodobne nebude mať významný vplyv na dopravu. Vyhlásenie o doprave je vhodné na preukázanie súladu s BREEAM, ak sa očakáva, že navrhovaný projekt bude generovať relatívne nízky počet ciest alebo dopravných tokov s malými vplyvmi na dopravu. Ďalšie usmernenia nájdete na stránke plánovania na portal.gov.uk

Ref	Definície pojmov	Popis
CN3.2	Opatrenia plánu dopravy. Pozri kritérium 3 na strane 245	V rámci pánu dopravy pre rozvoj by sa mohli zvážiť tieto opatrenia: Poskytovanie prioritných parkovacích miest pre zdieľanie vozidiel Zabezpečenie vyhradených a pohodlných priestorov na uskladnenie bicyklov a šatní Osvetlenie, terénne úpravy a prístrešky na spríjemnenie čakární pre chodcov a verejnú dopravu Vyjednávanie o zlepšení autobusových služieb, t. j. zmena autobusových liniek alebo ponuka zliav. Obmedzenie alebo spoplatnenie parkovania Kritériá pre vstupné haly, v ktorých sa môžu sprístupniť informácie o verejnej doprave alebo zdieľaní automobilov Vhodné pre chodcov a cyklistov (pre všetky typy používateľov bez ohľadu na úroveň mobility alebo zrakového postihnutia) prostredníctvom cyklistických pruhov, bezpečných priechodov pre chodcov, priamych trás, vhodných hmatových povrchov, dobre osvetlených a označených smerom k ostatným zariadeniam občianskej vybavenosti, uzlom verejnej dopravy a priľahlým peším a cyklistickým trasám mimo areálu. Zabezpečenie vhodných priestorov na vysadenie alebo čakanie taxíkov Zabezpečenie umiestnenia vidieckych budov s vhodnou dopravnou dostupnosťou s cieľom zabezpečiť, aby primerane slúžili miestnej komunite (ak sú na to obstarané, napr. komunitné centrum).
CN3.3	Ak konečný používateľ alebo užívateľ nie je známy	Cestovný plán sa vyžaduje aj v prípade, že konečný používateľ alebo užívateľ nie je známy, hoci môže ísť len o dočasný cestovný plán alebo plán, ktorý sa vo všeobecnosti zaoberá všetkými otázkami zahrnutými v kritériách posudzovania. Developer musí potvrdiť, že odovzdá kópiu plánu dopravy budúcim nájomníkom, majiteľom alebo užívateľom budovy, aby z neho mohli čerpať informácie pre svoj vlastný plán dopravy alebo stratégiu.

Metodológia

Žiadne.

Dôkazová dokumentácia

Kritériá	Predbežná fáza projektu	Záverečná fáza po výstavbe
1–4	Kópia plánu dopravy. Kópia dopravného prieskumu alebo posúdenia špecifického pre danú lokalitu.	Ako fáza návrhu.

Kritériá	Predbežná fáza projektu	Záverečná fáza po výstavbe
3 na strane 245	Označenú kópiu plánu lokality s príkladmi projektových opatrení, ktoré boli vykonané na podporu zistení plánu dopravy ALEBO Ak nie je k dispozícii podrobný plán lokality, formálny list od klienta potvrdzujúci, že do konečného návrhu budú implementované opatrenia na podporu zistení plánu dopravy.	Inšpekcia budovy alebo lokality vykonaná posudzovateľom a fotografický dôkaz potvrdzujúci inštaláciu opatrení, ktoré podporujú plán dopravy.
4 na strane 245	Potvrdenie od užívateľa budovy alebo v prípade špekulatívnej výstavby od developera.	Ako fáza návrhu.

Dodatočné informácie

Relevantné definície

Používatelia budovy

Ak sa používa pojem „používatelia budovy“, vzťahuje sa na tieto osoby podľa typu budovy:

1. Zamestnanci (cesty do zamestnania a služobné cesty)
2. Žiaci a študenti
3. Návštevníci
4. Zákazníci
5. Používatelia v spoločenstve
6. Osoby, ktoré doručujú alebo vyberajú zásielky na stavbu a z nej
7. Dodávatelia a poskytovatelia služieb, ktorí pravidelne pracujú v budove alebo na stavbe a majú do nej prístup.
8. Obyvatelia obytných domov a rezidenčných inštitúcií.

Plán dopravy

Plán dopravy je stratégia riadenia všetkých druhov cestovania a dopravy v rámci organizácie, ktorej hlavným cieľom je zvýšiť výber a znížiť závislosť na aute tým, že sa snaží zlepšiť prístup k lokalite alebo rozvoju pomocou udržateľných druhov dopravy. Cestovný plán obsahuje fyzické aj behaviorálne opatrenia na zvýšenie možností cestovania a zníženie závislosti na cestovaní jedným osobným automobilom.

Ďalšie informácie

Usmernenia k vypracovaniu cestovného plánu nájdete na týchto miestach:

1. Základný sprievodca pre plánovanie dopravy
2. Usmernenia k plánovaniu cestovania TfL

Hoci tieto dokumenty boli napísané pre rozvoj nehnuteľností v Spojenom kráľovstve, ich zásady možno uplatniť na medzinárodnej úrovni.

Tra 06 Domáca kancelária (len obytné priestory)

Počet dostupných kreditov	Minimálne normy
1	Žiadne

Cieľ

Znížiť potrebu dochádzania do práce tým, že sa obyvateľom poskytnú potrebné priestory a služby, aby mohli pracovať z domu.

Kritériá hodnotenia

Na preukázanie súladu sa vyžaduje:

Jeden kredit

1 V každom obydlí je k dispozícii domáca kancelária s primeraným priestorom a službami:
- 1.a V prípade obydlí s jednou alebo dvoma spálňami alebo garsónok sa priestor poskytuje v obývacej izbe, v jednej zo spální alebo v akomkoľvek inom vhodnom priestore v dome, ako je veľká hala alebo jedáleň
- 1.b V prípade obydlí s tromi alebo viacerými spálňami je dostatočný pracovný priestor v inej miestnosti, ako je kuchyňa, obývacia izba alebo hlavná spálňa alebo kúpeľňa.
- 1.c Vo všetkých prípadoch je miestnosť dostatočne veľká, aby nebránila zamýšľanému využitiu tejto miestnosti, t. j. domáca kancelária zriadená v hlavnej spálni neohrozuje možnosť umiestnenia manželskej postele a ďalšieho potrebného nábytku v tejto miestnosti.

2 Dostatočné služby musia zahŕňať minimálne:
- 2.a Dve dvojité elektrické zásuvky
- 2.b Dva telefónne body (alebo dvojitý telefónny bod) alebo jeden telefónny bod, ak je obydlie pripojené na káblovú alebo širokopásmovú službu dostupnú na danej adrese
- 2.c Primerané denné svetlo, miestnosť vybraná ako domáca kancelária musí mať vyhovujúci priemerný činiteľ denného svetla, pozri Hea 01 Vizuálny komfort: Tabuľka 10 na strane 84
- 2.d Primerané vetranie, buď prostredníctvom otvárateľného okna, alebo alternatívneho vetrania, ako je pasívny komín, mechanické vetranie atď.

Kontrolné zoznamy a tabuľky

Žiadne.

Poznámky o súlade

Ref	Definície pojmov	Popis
Hrubá stavba a jadro (iba nebytové a rezidenčné inštitúcie)		
CN1	Príslušné hodnotiace kritériá	Obe možnosti: Táto otázka sa nevzťahuje na nebytové a rezidenčné inštitúcie. Pozri Prílohu D - Hodnotenie plášťa a jadra projektu na str. 409, kde nájdete podrobnejší popis možností posúdenia plášťa a jadra.
Bytové - čiastočne a úplne vybavené		
CN2	Príslušné hodnotiace kritériá - Obydlia pre jednu rodinu a obydlia pre viaceré rodiny	Čiastočne vybavené: Táto otázka sa neuplatňuje. Úplne vybavené: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy. Pozri Prílohu E – Uplatniteľnosť BREEAM New Construction na obydlia pre jednu rodinu a obydlia pre viaceré rodiny, čiastočne a úplne vybavené na str. 412, kde nájdete podrobnejší popis možností hodnotenia bytových domov.
Všeobecné		
CN3	Postačujúc priestor	Tento rozmer je definovaný ako minimálna veľkosť (dĺžka steny 1,8 m) pre: 1. Umožnenie umiestnenia stola, stoličky a skrine na dokumenty alebo police na knihy 2. Dostatočný priestor na pohyb po prednej a bočnej strane stola 3. Vhodné používanie stoličky a bezpečnú obsluhu kartotéky. Požiadavku na veľkosť steny 1,8 m možno za určitých okolností zmeniť, ak sa na výkresoch preukáže, že stôl možno umiestniť do akéhokoľvek iného typu usporiadania, t. j. do výklenku alebo podobného priestoru, ktorý spĺňa všetky uvedené kritériá.
CN3.1	Primerané vetranie	Miestnosti určené na používanie ako domáca kancelária musia spĺňať požiadavky uvedené v Hea 02 Kvalita vnútorného vzduchu: Kritérium 6

Metodológia

Žiadne.

Dôkazová dokumentácia

Kritériá	Predbežná fáza projektu	Záverečná fáza po výstavbe
Všetky	Výkresy v mierke alebo kópia špecifikácie.	Výkresy zhotovenia alebo správa posudzovateľa z kontroly na mieste, ktorá potvrdzuje podrobnosti požadované vo fáze návrhu.

Dodatočné informácie

Relevantné definície

Žiadne.

Ďalšie informácie

Žiadne.

Voda

Zhrnutie

Táto kategória podporuje udržateľné využívanie vody pri prevádzke budovy a jej areálu. Otázky v tejto časti sa zameriavajú na identifikáciu prostriedkov na zníženie spotreby pitnej vody (vnútornej a vonkajšej) počas životnosti budovy a minimalizáciu strát spôsobených únikmi.

Sumárna tabuľka kategórie

Vydanie	Kredity	Zhrnutie kreditov
Wat 01 Spotreba vody	5	Zníženie dopytu po pitnej vode prostredníctvom účinných sanitárnych zariadení, zberu dažďovej vody a systémov recyklácie vody.
Wat 02 Sledovanie vody	1	Špecifikácia vodomerov na vodovodnej sieti na podporu riadenia a monitorovania spotreby vody s cieľom znížiť vplyv neefektívnosti a únikov.
Wat 03 Zisťovanie a prevencia únikov vody	3	Rozpoznanie systémov na zisťovanie úniku vody, ktoré dokážu odhaliť veľký únik vody z vodovodnej siete Zariadenia na reguláciu prietoku, ktoré regulujú prívod vody do každej oblasti WC alebo zariadenia s cieľom znížiť plytvanie vodou Ľahko prístupné uzatváracie ventily, ktoré umožňujú zastaviť únik a následne ho rýchlo a s minimálnymi stratami vody odstrániť.
Ene 04 Energeticky účinné zariadenia	1	Identifikujte spotrebu vody v budove na iné účely ako na pitie a hygienické účely a zmiernite alebo znížte ich spotrebu.

Wat 01 Spotreba vody (všetky budovy)

Počet dostupných kreditov	Minimálne normy
5	Áno

Cieľ

Znížiť spotrebu pitnej vody na sanitárne účely v nových budovách zo všetkých zdrojov pomocou využívania prvkov a systémov na recykláciu vody.

Kritériá hodnotenia

Na preukázanie súladu sa vyžaduje:

Maximálne päť kreditov

1 Posúdenie účinnosti komponentov budovy, ktoré spotrebúvajú vodu v domácnosti, sa vykonáva pomocou kalkulačky BREEAM Wat 01.

2 Spotreba vody (l/osoba/deň) pre hodnotenú budovu sa porovnáva so základným ukazovateľom a pridelenými kreditmi BREEAM na základe tabuľky 40 na nasledujúcej strane.

3 Do hodnotenia sa musí zahrnúť účinnosť týchto komponentov „domácej spotreby vody“ (ak je to uvedené):
- 3.a WC
- 3.b Pisoáre
- 3.c Vodovodné batérie (umývadlá a v prípade potreby kuchynské vodovodné batérie a odpadová jednotka)
- 3.d Sprchy
- 3.e Vane
- 3.f Umývačky riadu (domáce a komerčné)
- 3.g Práčky (domáce a komerčné alebo priemyselné).

V kalkulačke BREEAM Wat 01 sú definované typy budov a oblasti činností, pre ktoré sa musia hodnotiť uvedené komponenty.

4 Ak je špecifikovaný systém na odvod sivej alebo dažďovej vody, jeho výdatnosť (l/osoba/deň) sa použije na kompenzáciu potreby nepitnej vody z komponentov, ktoré by sa inak zásobovali pitnou vodou.

5 Všetky systémy na odvod sivej vody musia byť špecifikované a inštalované v súlade s národnou normou osvedčených postupov.

Kontrolné zoznamy a tabuľky

Tabuľka 40: Kredity BREEAM sú k dispozícii za percentuálne zlepšenie oproti základnej spotrebe vody v budove

Počet kreditov BREEAM	Percentuálne zlepšenie t		
	Zóna zrážok 1	Zóna zrážok 2	Zóna zrážok 3
1	12,5%	12,5%	12,5%
2	25%	25%	25%
3	40%	35%	35%
4	50%	45 %	40%
5	55 %	55 %	50%
Prikladné	65%	65%	60%

Informácie o klasifikácii zón zrážok BREEAM nájdete v poznámke o zhode CN3.1 a na obrázku 5 na strane 263. Upozorňujeme tiež, že pri niektorých typoch budov sa na udelenie kreditov musí použiť alternatívny prístup (ďalšie informácie nájdete v časti Metodika na strane 256 a v kalkulačke BREEAM Wat 01).

Poznámky o súlade

Ref	Definície pojmov	Popis
Hrubá stavba a jadro (iba nebytové a rezidenčné inštitúcie)		
CN1	Príslušné hodnotiace kritériá	**Všetky kritériá** Iba plášť: Táto otázka sa neuplatňuje. Plášť a jadro: Táto otázka je uplatniteľná podľa bodu CN1.1 nižšie Podrobnejší popis možností vyhodnotenia hrubej stavby a jadra nájdete v Prílohe D - Posúdenie projektu hrubej stavby a jadra na strane 409.
CN1.1	Posúdenie plášťa a jadra	**Plášť a jadro** Súlad v tejto otázke sa musí posudzovať na základe všetkých komponentov spotrebúvajúcich vodu a systémov na odvod sivej alebo dažďovej vody, ktoré určil a nainštaloval investor. Komponenty alebo systémy uvedené v kritériách a umiestnené v priestoroch nájomcu, ktoré nie sú špecifikované investorom, ale budú špecifikované nájomcom, sa nemusia posudzovať v prípade projektu plášťa a jadra.
Obytné - čiastočne a úplne vybavené		

Ref	Definície pojmov	Popis
CN2	Príslušné hodnotiace kritériá - Rodinné obydlie a bytové domov	Čiastočne vybavené: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy podľa bodu CN2.1 nižšie. Plne vybavené: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy. Pozri Prílohu E – Uplatniteľnosť BREEAM New Construction na obydlia pre jednu rodinu a obydlia pre viaceré rodiny, čiastočne a úplne vybavené na str. 412, kde nájdete podrobnejší popis možností hodnotenia bytových domov.
CN2.1	Účinné využívanie vody a čiastočne vybavené obydlia	Súlad v tejto otázke sa musí posudzovať na základe všetkých komponentov spotrebúvajúcich vodu a systémov na odvod sivej alebo dažďovej vody, ktoré určil a nainštaloval investor. Komponenty alebo systémy uvedené v kritériách, ktoré nie sú špecifikované a inštalované investorom, ale budú špecifikované novým majiteľom domu, sa nemusia posudzovať. Minimálna norma je stále platná. Ak bude majiteľ domu zodpovedný za inštaláciu všetkých vlastných vodovodných armatúr a komponentov, nie je možné udeliť žiadne kredity a minimálna norma sa neuplatňuje.
Všeobecné		
CN3	Nie sú prítomné žiadne armatúry	Ak posudzovaný projekt neobsahuje žiadny z uvedených komponentov, pri výpočte sa musí použiť špecifikácia parametrov pre komponenty poskytované v zariadeniach v priľahlej a prístupnej budove, t. j. v tých zariadeniach, ktoré budú obyvatelia a návštevníci posudzovanej budovy s najväčšou pravdepodobnosťou používať. Toto pravidlo sa uplatňuje aj v prípade, že posudzovaný projekt pozostáva len z prístavby k existujúcej budove, t. j. ak rozšírená budova neobsahuje žiadne nové hygienické zariadenia, pretože v existujúcej budove sa nachádzajú zariadenia.
CN3.1	Zrážkové oblasti (podľa Köppenova klasifikácia)	Informácie o klasifikácii zón zrážok BREEAM nájdete na obrázku 263 na strane 263. 1. Zrážková oblasť 1: zodpovedá Köppenovým zrážkovým oblastiam f (úplne vlhká) a m (monzúnová). 2. Zrážková oblasť 2: zodpovedá Köppenovým zrážkovým oblastiam s (letná suchá) a w (zimná suchá) 3. Zrážková oblasť 3: zodpovedá Köppenovým zrážkovým oblastiam S (step) a W (púšť). Viac informácií a usmernení o Köppenovej klimatickej klasifikácii nájdete v časti Rozsah BREEAM International New Construction na strane 23.
Špecifické podľa krajiny		

Ref	Definície pojmov	Popis
CN4	Národná norma osvedčených postupov pre špecifikáciu a inštaláciu systémov na odvod sivej a dažďovej vody	V referenčnom liste pre danú krajinu nájdete príslušné vnútroštátne normy osvedčených postupov v hodnotenej krajine. Prípadne preukážte uplatniteľnosť nasledovne: Minimálne požiadavky stanovené v zozname schválených noriem a váhových koeficientov sú zahrnuté v navrhovaných dokumentoch ALEBO Ak pre danú krajinu neexistujú vhodné normy, projektový tím by mal preukázať zhodu s britskými alebo európskymi normami uvedenými v každom príslušnom referenčnom liste krajiny.
Špecifické pre budovu		
CN5	Typ hotela	V nástroji kalkulačky Wat 01 použite kartu „Kalkulačka iných typov budov“. Na posúdenie hotela by sa mala použiť alternatívna metóda Wat 01 (pozri metodiku nižšie).

Metodológia

Efektívnosť budovy z hľadiska spotreby vody sa určuje pomocou Wat 01 kalkulačky BREEAM jedným z dvoch spôsobov, a to buď štandardným prístupom (bežné typy budov), alebo alternatívnym prístupom (iné typy budov). Tento proces je zhrnutý nižšie.

Štandardná metóda Wat 01

Štandardná metóda BREEAM určuje účinnosť vody (meranú v l/osoba/deň a m^3/osoba/rok) pre budovu na základe skutočnej špecifikácie komponentov budovy a predvolených vzorcov použitia pre typ budovy a jej prevádzkové oblasti. Tento modelový výstup sa porovnáva s rovnakým výstupom pre špecifikáciu základnej zložky s percentuálnym zlepšením použitým na určenie počtu dosiahnutých kreditov BREEAM.

Základná špecifikácia komponentov zodpovedá vodnej účinnosti štandardných priemyselných komponentov (pozri tabuľku 41 na strane 258), pričom sa riadi minimálnymi úrovňami požadovanými predpismi o dodávke vody (vodovodné armatúry). Percentuálne referenčné hodnoty zlepšenia BREEAM boli potom stanovené na základe postupne účinnejších noriem pre komponenty spotrebúvajúce vodu a pre vyššie úrovne výkonnosti na základe špecifikácie systémov na odvod sivej a dažďovej vody.

Štandardný prístup predstavuje predvolenú metódu výpočtu účinnosti vody budovy hodnotenej podľa BREEAM, ktorý sa používa pre väčšinu bežných typov budov s dostupnými údajmi o použití. Pri typoch budov, pri ktorých nie sú k dispozícii údaje o používaní, a preto nie je možné použiť štandardný prístup na určenie výkonu, sa musí použiť alternatívny prístup k súladu (popísaný nižšie). Aktuálny zoznam typov budov, ktoré možno posudzovať pomocou štandardného prístupu, nájdete v kalkulačke BREEAM Wat 01.

Alternatívna metóda Wat 01

Ak nie je možné použiť štandardný prístup na určenie celkovej spotreby vody v budove (l/osoba/deň), posúdenie sa môže vykonať na základe prvkov nasledovne.

1. Pomocou zoznamu použiteľných komponentov spotrebúvajúcich vodu v domácnosti (pozri kritérium 3 na strane 253) určte tie, ktoré sú špecifikované alebo prítomné v posudzovanej budove.
2. Porovnajte skutočnú špecifikáciu pre každý typ komponentu s tabuľkou úrovní efektívnej spotreby vody podľa typu komponentu (tabuľka 41 na strane 258), aby ste určili úroveň výkonu pre každý typ. Upozorňujeme, že uvedené objemy sú maximálnymi hodnotami pre danú úroveň a % potreby splachovania WC alebo pisoára je minimálna hodnota pre danú úroveň.

3. Definujte úroveň výkonu každého komponentu v pracovnom liste „Kalkulačka iných typov budov“ v kalkulačke BREEAM Wat 01.
   a. Pri alternatívnom prístupe kalkulačka aplikuje na úroveň každého komponentu váhu špecifickú pre daný typ budovy, aby sa zohľadnila jeho spotreba „počas používania“ v porovnaní s ostatnými prítomnými komponentmi. Komponent s vysokou spotrebou vody v prevádzke má preto väčšiu váhu ako komponent s nižšou spotrebou v prevádzke a prispieva relatívne viac k celkovej úrovni výkonu budovy v rámci tejto oblasti BREEAM.
   b. Tieto váhy sa odvodzujú od údajov o skutočnej spotrebe vody za deň v neobytných budovách, zdroj čerpaný Nájdete ich v kalkulačke BREEAM Wat 01.
4. Na základe kategorizácie výkonnosti každého typu komponentu a váhy komponentu kalkulačka určí celkovú úroveň výkonnosti a pridelí príslušný počet kreditov BREEAM nasledovne:

	Dosiahnutá hladina sivej alebo dažďovej vody			
		Zóny zrážok 1 a 2		Zóna zrážok 3
Celková úroveň komponentov	_	4	5	5
Východisková úroveň	0 kreditov	1 kredit	2 kredity	1 kredit
Úroveň 1	1 kredit	2 kredity	3 kredity	2 kredity
Úroveň 2	2 kredity	3 kredity	4 kredity	3 kredity
Úroveň 3 alebo 4	3 kredity	4 kredity	5 kreditov	4 kredity
Úroveň 5	4 kredity	5 kreditov	5 kreditov	5 kreditov

Poznámka:

1. Inovačný kredit za príkladnú úroveň výkonu sa môže udeliť, ak špecifikácia komponentu dosiahne úroveň 5 a > 95 % potreby splachovania WC alebo pisoárov sa uspokojí použitím recyklovanej nepitnej vody.
2. Vzhľadom na použitie váhových koeficientov nemusí byť celková dosiahnutá úroveň zložky celočíselná, napr. úroveň zložky 4. V takomto prípade sa podľa metodiky vždy zaokrúhli nadol na najbližšiu úroveň komponentu, a teda na úroveň kreditov BREEAM, napr. ak je dosiahnutá špecifikácia komponentu 3,6 kreditu, skutočný počet udelených kreditov je 3 kredity (podľa metodiky sa nezaokrúhli na 4 kredity, pretože nebola dosiahnutá špecifikácia výkonu na 4 kredity).
3. Ak má posudzovaný stavebný projekt viacero špecifikácií pre ten istý typ komponentu spotrebúvajúceho vodu, počet armatúr a dosiahnutú úroveň komponentu pre každú špecifikáciu možno zadať do „Kalkulačky iného typu budovy“. Na základe týchto informácií kalkulačka určí súhrnnú úroveň výkonu budovy pre daný typ komponentu.

Upozornenie: hoci sme sa snažili zosúladiť porovnávanie oboch vyššie popísaných metodík, výkonnosť sa v nich určuje rôznymi spôsobmi. Počet kreditov BREEAM udelených jednotlivými metódami sa preto môže líšiť pri rovnakej špecifikácii vodného komponentu. To by mohlo viesť k rozdielom v dosiahnutých kreditoch pri uplatnení BREEAM New Construction na niekoľko rôznych typov budov, ktoré sú súčasťou toho istého celkového projektu.

Typu komponentu

V tabuľke 41 na nasledujúcej strane sú uvedené normy podľa typu komponentov, ktoré sa používajú na definovanie úrovní výkonnosti stanovených v rámci BREEAM. Tieto definované úrovne účinnosti sa riadili celým radom publikovaných zdrojov informácií (pozri odkazy [61]), a preto odrážajú spoľahlivé úrovne typických, dobrých, najlepších a príkladných postupov.

Tabuľka 41: Úrovne efektívnej spotreby vody podľa typu komponentov

Komponent		Úrovne výkonu (uvedené čísla predstavujú minimálny výkon potrebný na dosiahnutie úrovne)						
		Základná úroveň	1	2	3	4	5	Jednotka
WC		6	5	4,5	4	3,75	3	Efektívny splachovací objem (litre)
Umývadlové batérie na ruky		12	9	7,50	4,50	3,75	3	litrov/min
Sprchy		14	10	8	6	4	3,50	litrov/min
Vane		200	180	160	140	120	100	litrov
Pisoár (2 alebo viac pisoárov)		7,50	6	3	1,50	0,75	0	litre/misa/hodina
Pisoár (len 1 pisoár)		10	8	4	2	1	0	litre/misa/hodina
Systém na odvod sivej alebo dažďovej vody	Zóna zrážok 1	*0.- ./.*	*0.- ./.*	*0.- ./.*	25%	50%	75 %	% potreby splachovania WC alebo pisoárov pomocou recyklovanej nepitnej vody
	Zóna zrážok 2	*0.- ./.*	*0.- ./.*	*0.- ./.*	*0.- ./.*	25%	50 %	
	Zóna zrážok 3	*0.- ./.*	*0.- ./.*	*0.- ./.*	*0.- ./.*	*0.- ./.*	15%	
Kuchynská batéria: kuchynský kút		12	10	7,50	5	5	5	litrov/min
Kuchynské batérie: reštaurácie (iba preplachovacie trysky)		10,30	9	8,30	7,30	6,30	6	litrov/min
Umývačky riadu pre domácnosti		17	13	13	12	11	10	litrov/cyklus
Práčky pre domácnosti		90	60	50	40	35	30	litrov/použitie
Likvidácia odpadu		17	17	0	0	0	0	litrov/min
Umývačky riadu pre komerčné využitie		8	7	6	5	4	3	litrov/jednotka
Práčky pre komerčné využitie		14	12	10	7,50	5	4,50	litrov/kg

Upozorňujeme, že špecifikácia komponentov pre budovu v súlade s vyššie uvedenými úrovňami bude mať vo väčšine prípadov za následok dosiahnutie príslušného počtu kreditov BREEAM. Majte však na pamäti, že vyššie uvedené špecifikácie komponentov sa podobajú hraničným hodnotám medzi jednotlivými úrovňami. Pri definovaní špecifikácie komponentov pre budovu hodnotenú podľa BREEAM s použitím presne tých istých úrovní ako prahové úrovne je preto potrebné postupovať opatrne.

Odporúča sa, aby sa v prípade, že sa usilujete získať kredity BREEAM Wat 01, overila výkonnosť špecifikácie komponentov konkrétnej budovy pomocou kalkulačky BREEAM Wat 01 ešte pred tým, ako sa rozhodnete pre konkrétnu špecifikáciu a objednáte alebo nainštalujete komponenty. To poskytne väčšiu istotu, že špecifikácia komponentu dosiahne cieľový počet kreditov BREEAM.

Prvky, ktoré spotrebúvajú vodu - požiadavky na údaje

Tabuľka 42: V tejto tabuľke sú pre každý typ komponentu definované príslušné údaje, ktoré bude potrebné získať z informácií o výrobku od výrobcu na dokončenie posúdenia.

Domáci komponent	Požiadavky na údaje
WC	Skutočný maximálny alebo v prípade dvojitého splachovania účinný objem splachovania v litroch na jedno použitie.
Pisoáre	Objem splachovania v litroch/použitie pre jednorazové splachovacie pisoáre. Pri systémoch napájaných z cisterny uveďte frekvenciu splachovania za hodinu a objem cisterny v litroch.
Vodovodné kohútiky	Prietok každého kohútika pri plnom prietoku v litroch za minútu meraný pri dynamickom tlaku: Pre vysokotlakové kohútiky (typ 1): 3 - 0,2 bar (0,3 - 0,02 MPa) ALEBO Pre nízkotlakové kohútiky (typ 2): 0,1 - 0,02 bar (0,01 - 0,002 MPa). (EN 200:2008, Sanitárne vodovodné batérie, jednotlivé batérie a kombinované batérie pre vodovodné systémy typu 1 a 2. Všeobecné technické podmienky). To zahŕňa všetky zníženia dosiahnuté pomocou obmedzení prietoku.
Sprchy	Prietok každej sprchy na výstupe pri použití studenej vody (T 30°C) v litroch za minútu meraný pri dynamickom tlaku: Pre vysokotlakové (typ 1) zásobovacie systémy: 3 - 0,2 bar (0,3- 0,02 MPa) ALEBO Pre nízkotlakové (typ 2) zásobovacie systémy: 0,1 - 0,05 bar (0,01 - 0,005 MPa) (EN 1112:2008, Sanitárne armatúry. Sprchy na sanitárne armatúry v systémoch zásobovania vodou typu 1 a typu 2. Všeobecné technické podmienky).
Kuchynské batérie	Maximálny prietok litrov za minútu.
Vane	Prepadová kapacita v litroch. Do výpočtu by sa nemali zahrnúť vodovodné kohútiky na vaniach, pretože spotreba vody z vodovodných kohútikov na vaniach sa zohľadňuje vo faktore využitia vane. Pri výpočte spotreby vody pre vane sa predpokladá 40 % kapacity prepadu. To by malo zohľadňovať nasledovné: 1. Používatelia majú tendenciu nenapĺňať vaňu až po okraj a 2. Vplyv výtlaku používateľa na skutočný objem vody potrebnej na kúpeľ.
Umývačka riadu	Litre/cyklus pre domáce aplikácie alebo spotrebiče alebo litre/sklad pre komerčné aplikácie alebo spotrebiče.
Práčka	Litre/použitie pre domáce aplikácie (pre typický prací cyklus) alebo spotrebiče, alebo litre/kg pre komerčné aplikácie alebo spotrebiče, napr. v hoteloch.
Likvidácia odpadu	Prietok v litroch za minútu.

Nešpecifikované komponenty spotrebúvajúce vodu

Keďže metodika a kredity BREEAM za efektívnosť využívania vody porovnávajú modelovanú spotrebu vody v budove s výkonnosťou východiskovej špecifikácie pre rovnaké typy komponentov, ak typ komponentu nie je špecifikovaný, v metodike sa nezohľadňuje, t. j. tento komponent je vylúčený z navrhovanej aj východiskovej budovy. Rozhodnutím o neuvedení konkrétneho komponentu sa preto nezíska žiadna výhoda z hľadiska výkonnosti BREEAM. Metodika však bude odrážať zníženie celkovej spotreby vody (litre/osoba/deň) v budove v dôsledku neuvedenia konkrétneho komponentu.

Budovy so systémami na odvod sivej a dažďovej vody

Nasledujúce informácie sa vyžadujú v prípade, že je špecifikovaný systém na odvod sivej alebo dažďovej vody:

Dažďová voda:

1. Zberná plocha (m²).
2. Koeficient výdatnosti (koeficient (%), ktorý zohľadňuje, že časť dažďovej vody sa stráca v dôsledku postriekania, odparovania, úniku a pretečenia atď. Tento koeficient sa líši v závislosti od povrchu, z ktorého sa dažďová voda zbiera.)
3. Účinnosť hydraulického filtra (koeficient (%) na rozpoznanie účinnosti hydraulického filtra).
4. Zrážky (v priemere mm/rok).

ALEBO

5. Denný zber zrážok (v litroch) vypočítaný v súlade s dôveryhodnými a overiteľnými národnými alebo miestnymi údajmi, napr. regionálnou, národnou alebo medzinárodnou meteorologickou organizáciou, zdrojom údajov alebo ekvivalentom.

Sivá voda:

1. Údaje o výrobcovi alebo konštruktérovi systému.
2. Percentuálny objem odpadovej vody zozbieranej (a opätovne použitej) z týchto zdrojov (ak je to relevantné): umývadlá, sprchy, kuchynské umývadlá, umývačky riadu, vane, práčky a zdroje odpadovej vody z iných ako domácich zdrojov.

V prípade, že sú systémy zberu sivej alebo dažďovej vody stanovené, musí byť dosiahnutá minimálna úroveň účinnosti komponentov, aby bolo možné udeliť 4 alebo 5 kreditov BREEAM a kredity vzorovej úrovne. Tým sa zabráni udeleniu väčšieho počtu kreditov BREEAM, ak je výkonnosť z menej efektívnych zariadení kompenzovaná špecifikáciou systému zberu sivej alebo dažďovej vody.

Zámerom je zabezpečiť zníženie dopytu má prednosť pred započítaním spotreby. Ak je stanovený alebo zriadený systém zberu sivej alebo dažďovej vody, musí špecifikácia komponentov dosiahnuť percentuálne zníženie spotreby vody (nad základnou špecifikáciou) rovné zníženiu požadovanému pre 2 kredity, t.j. 25% zlepšenie. Ak sa táto úroveň dosiahne, všetok celkový dopyt po vode, ktorý je uspokojený z zo zdrojov sivej alebo dažďovej vody, môže prispieť k celkovému percentuálnemu zlepšeniu potrebnému na získanie kreditov BREEAM. Ak sa táto úroveň nedosiahne, percento povolenej sivej alebo dažďovej vody sa bude rovnať percentuálnemu zlepšeniu spotreby vody dosiahnutému pre danú špecifikáciu komponentu (t.j. percentuálne zlepšenie oproti základnému výkonu).

Napríklad, ak sa dosiahne len 20% zlepšenie, kedy budova nespĺňa 25% požiadavku, bude možné len 20% dopytu po vode získaných zo zdrojov sivej alebo dažďovej vody použiť na kompenzáciu spotreby vody mikrokomponentov. Táto minimálna požiadavka sa neuplatňuje, ak sa požadujú iba kredity 1, 2 a 3 alebo ak nie je stanovený žiaden systém zberu sivej alebo dažďovej vody, t.j. percentuálne zlepšenie je založené výlučne na vodnej účinnosti mikrokomponentov.

Spoločnosť BRE Global môže povoliť určité výnimky z tohto pravidla v prípadoch, keď si konkrétny typ armatúry vyžaduje vysoký prietok z dôvodu špecializovaných požiadaviek konečného používateľa a jeho špecifikácia bráni dodržaniu 25 % zlepšenia.

Budovy s kombináciou rôznych funkčných oblastí

Pre väčšinu budov, ktoré používajú štandardnú metódu Wat 01, kalkulačka BREEAM Wat 01 definuje typ budovy a rozsah rôznych oblastí činností, ktoré spotrebúvajú vodu v rámci danej budovy; napríklad maloobchodný objekt s predajnou plochou a skladom tovaru alebo kancelária, ktorá zahŕňa jedáleň a posilňovňu. Ak sa však vykonáva jedno posúdenie budovy alebo stavby, ktorá pozostáva z rôznorodého mixu oblastí činností alebo typov budov, z ktorých všetky možno v rámci kalkulačky posúdiť samostatne, platí nasledovné:

Určite celkovú spotrebu vody v budove vykonaním samostatného posúdenia pre každú príslušnú oblasť činnosti alebo typ budovy. Po ukončení každého hodnotenia musí posudzovateľ určiť percentuálne zlepšenie nasledovne:

$$I = 100 \times \left[1 - \frac{(T_{1Act} \times T_{1Occ}) + \ldots + (T_{nAct} \times T_{nOcc})}{(T_{1Base} \times T_{1Occ}) + \ldots + (T_{nBase} \times T_{nOcc})}\right]$$

Kde:

I = Celkové zlepšenie (%)$T_{n\ Act}$ = modelovaná čistá spotreba vody (l/osoba/deň) pre každý typ budovy $T_{n\ Base}$ = modelovaná východisková spotreba vody pre príslušný typ budovy $T_{n\ Occ}$ = celková štandardná miera obsadenosti pre príslušný typ budovy.

Ak sú špecifikované systémy na odvod sivej alebo dažďovej vody, posudzovateľ by mal dbať na to, aby sa zabránilo neúmyselnému dvojitému započítaniu výnosov z takýchto systémov a ich použitiu na kompenzáciu dopytu pre každú oblasť činnosti alebo typ budovy.

Pevná spotreba vody

Výpočet efektívnosti využitia vody podľa BREEAM zahŕňa príspevok na pevnú spotrebu vody. Patrí sem spotreba vody na plnenie nádob (pitná voda pre užívateľov budovy), čistenie v kuchyniach a príprava jedál v budovách so stravovacím zariadením. Pevné použitia sú zahrnuté s cieľom zabezpečiť väčšiu presnosť pri vykazovaní celkovej odhadovanej spotreby vody v budove. Keďže tieto použitia sú fixné pre skutočné aj východiskové modely budov, ich súčty nemajú vplyv na dosiahnutie kreditov BREEAM.

Iné prípustné požiadavky na zložky nepitnej vody

Táto oblasť BREEAM sa zameriava na výkonnosť komponentov budovy, ktoré trvalo spotrebúvajú vodu v domácnosti. Ak je stanovený systém úžitkovej vody alebo dažďovej vody, výťažky z tohto systému by sa u takýchto inštalácií mali uprednostňovať, t.j. na splachovanie WC alebo pisoárov. Ak však budova preukáže, že má inú trvalú (t.j. dennú) rovnocennú úroveň spotreby dennej vody a takéto požiadavky sú neoddeliteľnou súčasťou prevádzky budovy, potom je možné započítať dopyt pre tieto úžitkové použitia, t.j. môže sa použiť dopyt po výťažkoch sivej alebo dažďovej vody z takýchto systémov alebo komponentov spoločne alebo namiesto dopytu po nepitnej vode pre WC alebo pisoáre budovy. Príkladom trvalých a prirodzených požiadaviek môže byť používanie práčovne v hoteloch alebo ubytovacích zariadeniach alebo záhradnícke použitie v záhradných centrách, botanických záhradách a golfových ihriskách. Dopyt po všeobecných terénnych úpravách a zavlažovaní okrasnej výsadby sa podľa BREEAM nepovažuje za rovnocenný alebo vlastný.

Iné prípustné zdroje nepitnej vody

Metodika umožňuje zber a recykláciu nepitnej vody z príslušných zložiek uvedených v kritériách, t. j. z vodovodných kohútikov, spŕch, vaní a umývačiek riadu alebo práčok. Okrem toho, ak sa nepitná voda zhromažďuje z iného ako domového komponentu alebo zdroja, ktorý je vlastný budove, potom možno v metodike zohľadniť zhromaždené množstvo. Môže ísť napríklad o odpadovú vodu z aktívneho hygienického preplachovania, t. j. pravidelného programu hygienického preplachovania s cieľom minimalizovať zlú kvalitu vody v systéme pitnej studenej alebo teplej vody. Aby metóda zohľadňovala tento celkový objem, projektový tím bude musieť posudzovateľovi potvrdiť výťažok z komponentu alebo systému (v litroch) a frekvenciu tohto výťažku (v dňoch), t. j. ak je to raz týždenne, frekvencia bude sedem dní.

Dôkazová dokumentácia

Kritériá	Predbežná fáza projektu	Záverečná fáza po výstavbe
Všetky	Vyplnená kópia kalkulačky BREEAM Wat 01. Príslušné časti alebo články špecifikácie budovy alebo projektových výkresov, ktoré potvrdzujú technické podrobnosti: 1. Sanitárne komponenty 2. Systém zberu dažďovej a sivej vody ALEBO Ak v tejto fáze nie sú k dispozícii podrobné listinné dôkazy; Pokyn pre zhotoviteľa alebo dodávateľa alebo oficiálny list od investora, v ktorom sa konkrétne zaväzuje poskytnúť dostatočné informácie na dokončenie výpočtov vody.	Ako fáza návrhu pre informácie po výstavbe ALEBO Písomné potvrdenie od investora, že spotrebiče alebo vybavenie boli nainštalované tak, ako bolo stanovené pre etapu návrhu, ALEBO Správa o kontrole posudzovateľa na mieste a fotografický dôkaz potvrdzujúci inštaláciu prvkov v súlade so zhodnou sa špecifikáciou.

Dodatočné informácie

Relevantné definície

Kalkulačka BREEAM Wat 01

Kalkulačka BREEAM Wat 01 je metóda na hodnotenie efektívnosti využitia vody vo väčšine bežných typov nových budov. Kalkulačka hodnotí, aký podiel má každý vnútorný komponent spotrebúvajúci vodu v domácnosti (uvedený v kritériách) na spotrebe vody v celej budove. Kalkulačka a sprievodné usmernenie k jej použitiu sú k dispozícii oddelene od tohto dokumentu schémy. Upozorňujeme, že kalkulačka je nástrojom na dodržiavanie predpisov a nie nástrojom na navrhovanie systémov spotreby vody a odvodnenia. Nástroj využíva štandardnú spotrebu a mieru obsadenosti, aby poskytol referenčnú hodnotu typickej spotreby vzhľadom na zadané príslušenstvo (v l/osoba/deň a m^3/osoba/rok) a ich vplyv na celkovú efektívnosť využitia vody v budove. Vzhľadom na vplyvy a rozdiely skutočného správania používateľov a miery obsadenosti nebudú výsledky metódy priamo odrážať skutočnú spotrebu vody počas prevádzky budovy. Výsledky metodiky by sa preto nemali používať na účely porovnania alebo predpovedania skutočnej spotreby vody v budove, ktorá nie je obytnou budovou.

Komponenty domáceho rozsahu

Komponenty v domácnostiach zahŕňajú vodu (pitnú a nepitnú) spotrebovanú vnútornými komponentmi budovy vrátane kuchynských batérií, umývadlových batérií, vaní, spŕch a umývačiek riadu, WC, pisoárov, práčok a zariadení na likvidáciu odpadu.

Efektívny splachovací objem

Efektívny objem vody pre jedno spláchnutie WC je objem vody použitý na jedno spláchnutie. Efektívny objem splachovania pri WC s dvojitým splachovaním je pomer medzi plným a zníženým splachovaním. V prípade nebytových budov sa za toto číslo považuje jedno plné spláchnutie na každé tri znížené spláchnutia a jedno plné spláchnutie na každé dve znížené spláchnutia v bytových budovách alebo oblastiach. Efektívny objem splachovania sa preto môže vypočítať takto, pričom ako príklad sa použije WC s objemom dvojitého splachovania 6/4 litra:

- Mimo domácností: {(6 litrov x 1) + (4 litre x 3)}/4 = 4,5 litra efektívneho splachovacieho objemu (pre WC s dvojitým splachovaním s objemom 6/4)
- V domácností: {(6 litrov x 1) + (4 litre x 2)}/3 = 4,67 litra efektívneho splachovacieho objemu (pre WC s dvojitým splachovaním s objemom 6/4).

Rozdielny pomer medzi nebytovými a obytnými budovami odráža odlišné vzorce správania používateľov týchto typov budov.

Recyklácia sivej vody

Vhodný zber, čistenie a skladovanie odpadových vôd z domácností (ktoré sú definované ako odpadové vody vypúšťané z kuchýň, vaní alebo sprch, práčovní a podobne) na uspokojenie potreby nepitnej vody v budove, napr. splachovanie WC alebo iné prípustné nepitné použitie na mieste posudzovanej budovy.

Pitná voda

Kvalitná pitná voda, ktorá sa odoberá z prípojky na hlavný prívod vody do budovy, ktorý môže byť z verejného vodovodu alebo zo súkromného zdroja, napríklad z podzemnej vody prostredníctvom vrtu.

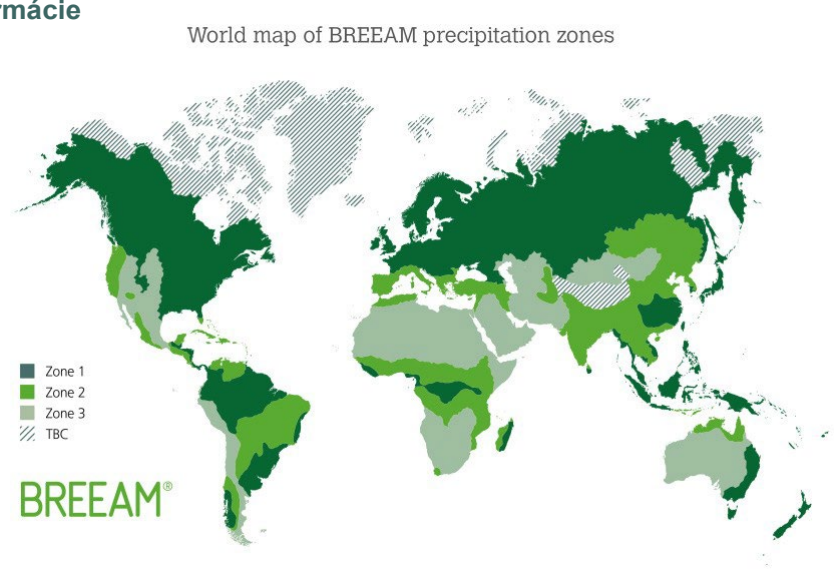
Nepitná voda

Akákoľvek iná ako pitná voda, označovaná aj ako nezávadná voda.

Recyklácia dažďovej vody

Vhodný zber a uskladnenie dažďovej vody odtekajúcej zo spevnených vonkajších plôch na pokrytie potreby nepitnej vody v budove, napr. na splachovanie WC alebo iné prípustné nepitné využitie na mieste posudzovanej budovy.

Ďalšie informácie



Obrázok 5 Svetová mapa zrážkových zón BREEAM

Wat 02 Monitorovanie vody

(všetky budovy)

Počet dostupných kreditov	Minimálne normy
1	Áno (iba kritérium 1 nižšie)

Cieľ

Aby sa zabezpečila kontrola a riadenie spotreby vody, a preto sa podporilo zníženie spotreby.

Kritériá hodnotenia

Na preukázanie súladu sa vyžaduje:

Jeden kredit

1 Špecifikácia vodomeru na prívode vody do každej budovy; to zahŕňa prípady, keď je voda dodávaná z vrtu alebo iného súkromného zdroja.

2 Zariadenia alebo priestory budov, ktoré spotrebúvajú 10 % alebo viac z celkovej spotreby vody v budove, sú vybavené ľahko prístupnými podružnými meračmi alebo majú zariadenie na monitorovanie vody, ktoré je súčasťou zariadenia alebo priestoru (pozri Plnenie požiadaviek).

3 Každý merač (hlavný a podružný) má impulzný alebo iný komunikačný výstup s otvoreným protokolom, ktorý umožňuje pripojenie k príslušnému systému monitorovania a riadenia verejných služieb, napr. k systému riadenia budov (BMS), na monitorovanie spotreby vody (pozri Relevantné definície na strane 267).

4 Ak na pozemku, na ktorom sa budova nachádza, existuje BMS, ktorú spravuje ten istý užívateľ alebo vlastník (ako novú budovu), impulzné alebo digitálne vodomery pre novú budovu musia byť pripojené k existujúcej BMS (pozri Relevantné definície na strane 267).

Kontrolné zoznamy a tabuľky

Žiadne.

Poznámky o súlade

Ref	Definície pojmov	Popis
Hrubá stavba a jadro (iba nebytové a rezidenčné inštitúcie)		
CN1	Príslušné hodnotiace kritériá	**Kritériá 1 na predchádzajúcej strane, 3 a 4 na predchádzajúcej strane** Obidve možnosti: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy. **Kritérium 2 na predchádzajúcej strane** Iba plášť: Toto kritérium sa neuplatňuje Plášť a jadro: Toto kritérium sa uplatňuje. Podrobnejší popis možností vyhodnotenia hrubej stavby a jadra nájdete v Prílohe D - Posúdenie projektu hrubej stavby a jadra na strane 409.
CN1.1	Posúdenie plášťa a jadra	Plášť a jadro Súlad s kritériom 2 na predchádzajúcej strane sa musí preukázať v prípade zariadení alebo stavebných plôch spotrebúvajúcich vodu, ktoré môže identifikovať investor (pozri Relevantné definície na strane 267). Zariadenia alebo stavebné plochy, ktoré spotrebúvajú vodu a ktoré má nájomca pridať alebo nainštalovať, sa nemusia posudzovať z tohto hľadiska.
Obytné - čiastočne a úplne vybavené		
CN2	Príslušné hodnotiace kritériá - Obydlia pre jednu rodinu	Obidve možnosti: Vzťahuje sa len kritérium 1 na predchádzajúcej strane Pozri Prílohu E – Uplatniteľnosť BREEAM New Construction na obydlia pre jednu rodinu a obydlia pre viaceré rodiny, čiastočne a úplne vybavené na str. 412, kde nájdete podrobnejší popis možností hodnotenia bytových domov.
CN2.1	Príslušné hodnotiace kritériá - Obydlia pre viaceré rodiny	Obidve možnosti: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy. Pozri Prílohu E – Uplatniteľnosť BREEAM New Construction na obydlia pre jednu rodinu a obydlia pre viaceré rodiny, čiastočne a úplne vybavené na str. 412, kde nájdete podrobnejší popis možností hodnotenia bytových domov.
CN2.2	Zariadenia na monitorovanie vody spoločnosti poskytujúcej služby	Vodomery nainštalované vodárenskou spoločnosťou, ktoré budúcemu majiteľovi domu alebo nájomcovi poskytujú presné a pravidelné informácie o spotrebe vody na byt, budú v súlade s touto otázkou.
Všeobecné		

Ref	Definície pojmov	Popis
CN3	Oblasť zariadenia alebo budovy, ktorá spotrebúva vodu. Pozri kritérium 2 na strana 264.	Minimálne to zahŕňa tieto údaje (ak sú k dispozícii): 1. Budovy s plaveckým bazénom a šatňami (toalety, sprchy atď.) 2. Na miestach s viacerými jednotkami alebo budovami, napr. v nákupných centrách, bytových domoch, priemyselných jednotkách, obchodných parkoch atď., sa na prívod vody do týchto oblastí (ak existujú) montujú samostatné podružné merače: Každá jednotlivá jednotka zásobovaná vodou (v prípade obytných inštitúcií so samostatnými bytmi každý byt) Spoločné priestory (zahŕňajúce zásobovanie záchodových blokov) Obslužné priestory (zahŕňajúce zásobovanie odbočiek v rámci skladov, dodávok, priestorov na likvidáciu odpadu atď.) Vedľajšie alebo samostatné budovy k hlavnej stavbe so zásobovaním vodou 3. Laboratórium: v každej budove s laboratóriom (alebo v ktorej sa nachádzajú laboratóriá) sa na prívode vody do každej technologickej alebo chladiacej slučky pre zapojené laboratórne technologické zariadenia inštaluje samostatný vodomer.
CN3.1	10 % spotreby vody. Pozri kritérium 2 na strana 264.	Požiadavka na podružné merače sa nemusí nevyhnutne uplatňovať v nasledujúcich prípadoch, keď posudzovateľ potvrdí, že ich inštalácia neprinesie žiadny dodatočný prínos pre monitorovanie: 1. Ak má budova len jeden alebo dva malé zdroje potreby vody (napr. kancelária so sanitárnymi zariadeniami a malá kuchyňa) 2. Ak má budova dva zdroje spotreby vody, z ktorých jeden je výrazne väčší ako druhý, a spotreba vody pre väčšiu potrebu pravdepodobne zakrýva menšiu potrebu.
CN3.2	Prístavby k existujúcim budovám Pozri kritérium 4 na strane 264.	Ak sa neinštaluje nový prívod vody, pretože obyvatelia rozšírenej budovy budú využívať zariadenia v existujúcej budove, a teda aj prívod vody do existujúcej budovy, potom sa v existujúcej budove musí zabezpečiť nasledovné: 1. Vodomer pre vodovodnú sieť 2. Podružné merače pre zariadenia alebo objekty s veľkou spotrebou vody, napr. odparovacie chladenie, bazén atď. (ak existujú). Dodané merače musia mať impulzný výstup alebo pripojenie k existujúcej BMS v súlade s kritériami hodnotenia.
CN3.3	Žiadny prívod vody do budovy alebo jednotky.	Ak v posudzovanej budove nie je inštalovaný prívod vody, pretože v budove nie sú žiadne armatúry spotrebúvajúce vodu, potom sa v takýchto prípadoch uplatňujú usmernenia uvedené vo vyššie uvedenej poznámke o zhode pre prístavby existujúcich budov.

Metodológia

Žiadna.

Dôkazová dokumentácia

Kritériá	Predbežná fáza projektu	Záverečná fáza po výstavbe
Všetky	Príslušné časti alebo ustanovenia stavebnej špecifikácie alebo zmluvy. Projektová výkresová dokumentácia.	Správa o inšpekcii miesta BREEAM a fotografický dôkaz ALEBO Výkresy v skutočnom stave

Dodatočné informácie

Relevantné definície

Priestory pre zamestnancov

Pozri BREEAM oblasť Hea 01 Vizuálny komfort - Relevantné definície na strane 95.

Výstupy z meračov

Príkladom sú impulzné výstupy a iné výstupy s otvoreným komunikačným protokolom, napríklad Modbus.

Systém monitorovania a riadenia verejných služieb

Príkladom sú systémy automatického odpočtu meračov (AMR) a systémy energetického manažmentu budov (BEM). Automatické monitorovanie a cielenie (AM&T) je príkladom nástroja riadenia, ktorý zahŕňa automatický odpočet meračov a správu údajov.

Ďalšie informácie

Žiadne.

Wat 03 Zisťovanie a prevencia únikov vody (všetky budovy)

Počet dostupných kreditov	Minimálne normy
Závisí od typu budovy	Žiadne

Cieľ

Zníženie vplyvu úniku vody, ktorý by inak mohol zostať nezistený.

Kritériá hodnotenia

Na preukázanie súladu sa vyžaduje:

Jeden kredit - Systém detekcie úniku

1 Inštaluje sa systém na zisťovanie úniku vody, ktorý je schopný odhaliť veľký únik vody z vodovodnej siete v budove a medzi budovou a vodomerom inžinierskych sietí. Systém detekcie úniku musí byť:
- 1.a Stály automatizovaný systém na zisťovanie úniku vody, ktorý upozorňuje obyvateľov budovy na únik, ALEBO zabudovaný automatizovaný diagnostický postup na zisťovanie únikov
- 1.b Aktivovaný, keď je prietok vody prechádzajúci vodomerom alebo záznamníkom údajov vyšší ako nastavené maximum počas nastaveného časového obdobia.
- 1.c Schopný identifikovať rôzne prietoky, a teda aj úniky, napr. nepretržité, s vysokou alebo nízkou úrovňou, počas prednastavených časových pásiem
- 1.d Programovateľný podľa kritérií spotreby vody vlastníka alebo užívateľa
- 1.e V prípade potreby navrhnutý tak, aby sa zabránilo falošným poplachom spôsobeným bežnou prevádzkou veľkých zariadení spotrebúvajúcich vodu, ako sú chladiace zariadenia.

Jeden kredit - Zariadenia na reguláciu prietoku (všetky budovy okrem obytných)

2 Inštalujú sa zariadenia na reguláciu prietoku, ktoré regulujú prívod vody do každého priestoru WC alebo zariadenia podľa potreby (a tým minimalizujú úniky a plytvanie vodou zo sanitárnych armatúr).

Jeden kredit - izolácia proti únikom (len obytné priestory)

3 Izolačné ventily sú umiestnené na prístupnom mieste, ktoré umožňuje ručné oddelenie teplej a studenej vody (zapnutie alebo vypnutie) pre tieto prívody:
- 3.a Prívod do obydlia
- 3.b Vodovodné kohútiky
- 3.c Sprchy
- 3.d Vykurovacie systémy alebo systémy teplej vody
- 3.e Spotrebiče (napr. umývačka riadu, práčka atď.).

Kontrolné zoznamy a tabuľky

Žiadne.

Poznámky o súlade

Ref	Definície pojmov	Popis
Hrubá stavba a jadro (iba nebytové a rezidenčné inštitúcie)		
CN1	Príslušné hodnotiace kritériá	**Systém detekcie úniku, kritérium 1 na predchádzajúcej strane** Obe možnosti: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy. **Zariadenia na reguláciu prietoku, kritérium 2 na predchádzajúcej strane** Iba plášť: Toto kritérium sa nevzťahuje. Plášť a jadro: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy. **Izolácia proti úniku, kritérium 3 na predchádzajúcej strane** Obe možnosti: Toto kritérium sa neuplatňuje. Podrobnejší popis možností vyhodnotenia hrubej stavby a jadra nájdete v Prílohe D - Posúdenie projektu hrubej stavby a jadra na strane 409.
CN1.1	Priestory alebo zariadenia WC	Plášť a jadro: Prívod vody do priestorov alebo zariadení WC sa musí posúdiť podľa kritéria 2 na predchádzajúcej strane bez ohľadu na to, či sú priestory alebo zariadenia WC vybavené alebo nie.
Obytné - čiastočne a úplne vybavené		
CN2	Príslušné hodnotiace kritériá - Obydlia pre jednu rodinu	Obidve možnosti: Uplatňuje sa len kritérium 3 na predchádzajúcej strane. Pozri Prílohu E – Uplatniteľnosť BREEAM New Construction na obydlia pre jednu rodinu a obydlia pre viaceré rodiny, čiastočne a úplne vybavené na str. 412, kde nájdete podrobnejší popis možností hodnotenia bytových domov.
CN2.1	Príslušné hodnotiace kritériá - Obydlia pre viaceré rodiny	Čiastočne vybavené: Uplatňuje sa len kritérium 3 na predchádzajúcej strane. Úplne vybavené: Uplatňujú sa kritériá 1 a 3 na predchádzajúcej strane. Pozri Prílohu E – Uplatniteľnosť BREEAM New Construction na obydlia pre jednu rodinu a obydlia pre viaceré rodiny, čiastočne a úplne vybavené na str. 412, kde nájdete podrobnejší popis možností hodnotenia bytových domov.
Všeobecné		
CN3	Miery úniku. Pozri kritérium 1 na predchádzajúcej strane	Tento problém nešpecifikuje, aká by mala byť vysoká a nízka miera úniku; nainštalované zariadenie na zisťovanie úniku však musí byť flexibilné, aby dokázalo rozlišovať medzi rôznymi rýchlosťami prietoku, aby sa dalo naprogramovať tak, aby vyhovovalo typu budovy a spôsobu používania majiteľom alebo používateľom.
CN3.1	Systémové kritériá. Pozri kritérium 1 na predchádzajúcej strane	Predpokladá sa , že kredit na detekciu úniku sa zvyčajne dosiahne inštaláciou systému, ktorý na meračoch alebo podružných meračoch zistí vyššie prietoky, než je bežné. Nevyžaduje sa nevyhnutne systém, ktorý priamo zisťuje únik vody na časti alebo na celej dĺžke vodovodného systému.

Ref	Definície pojmov	Popis
CN3.2	Vodomer vodárenskej spoločnosti Pozri kritérium 1 na strane 268.	Ak sa na hranici pozemku alebo budovy nachádza vodomer vodárenskej spoločnosti, môže byť potrebné nainštalovať samostatný prietokomer (alebo alternatívny merací systém) hneď za vodomerom vodárenskej spoločnosti, aby sa zistili úniky; ak však vodárenská spoločnosť súhlasí s určitou formou detekcie únikov, ktorá sa nainštaluje na jej vodomer, bude to tiež prijateľné.
CN3.3	Zariadenia na reguláciu prietoku. Pozri kritérium 2 na strane 268.	Za typy zariadení na reguláciu prietoku možno považovať nasledovné: Časový regulátor, t. j. automatické časové spínacie zariadenie na vypnutie prívodu vody po vopred stanovenom intervale Naprogramovaný časový regulátor, t. j. automatické časové spínacie zariadenie na zapínanie alebo vypínanie vody vo vopred určených časoch Regulátor objemu, t. j. automatické riadiace zariadenie na vypnutie prívodu vody po dosiahnutí maximálneho nastaveného objemu Detektor a regulátor prítomnosti, t. j. automatické zariadenie na detekciu prítomnosti alebo pohybu v priestore, ktoré zapína vodu a vypína ju po jej odplavení Centrálna riadiaca jednotka, t. j. špecializovaná počítačová riadiaca jednotka pre celkový riadený systém kontroly vody, ktorá využíva niektoré alebo všetky vyššie uvedené typy riadiacich prvkov.
CN3.4	Systémy riadenia prietoku	Systémy regulácie prietoku môžu regulovať kombinované priestory WC, ako sú mužské a ženské toalety v rámci jadra; nevyžadujú sa pre každé jednotlivé sanitárne zariadenie. Kritériá sú stanovené tak, aby podporovali izoláciu prívodu vody do každého WC bloku, keď sa nepoužíva.
CN3.5	Prístupné miesto. Pozri kritérium 3 na strane 268.	Izolačné ventily musia byť umiestnené na prístupnom mieste. Môže to byť v skrinke alebo v prístupovom poklope, kde je ventil prístupný bez zbytočného nebezpečenstva alebo ťažkostí. Ventil by mal byť v tesnej blízkosti spotrebiča alebo armatúry a mal by byť jasne označený. Príkladom neprístupných miest sú miesta za kuchynskou linkou alebo pod podlahovými doskami.
CN3.6	Jednotlivé toalety. Pozri kritérium 2 na strane 268.	Kritériá regulácie prietoku v tejto otázke sa vzťahujú na zariadenia, ktoré majú len jedno WC (prípadne v menších budovách alebo budovách s nízkym počtom osôb). V týchto prípadoch by sa vypínanie mohlo zabezpečiť prostredníctvom toho istého spínača, ktorý ovláda osvetlenie (bez ohľadu na to, či ide o detekciu priblíženia alebo manuálny spínač).
CN3.7	Žiadny prívod vody do budovy alebo jednotky. Pozri kritériá 1 a 2 na strane 268.	Tieto kredity sa posudzujú aj v prípade, že nie sú nainštalované žiadne armatúry, a teda ani prívod vody do budovy. V týchto prípadoch musia zariadenia spĺňať kritériá, ktoré budú pravdepodobne využívať budúci užívatelia posudzovanej budovy, napr. zariadenia v najbližšej prístupnej budove.
CN3.8	Prístavby k existujúcim budovám Pozri kritériá 1 a 2 na strane 268.	Ak je prívod vody do novej prístavby vedený cez existujúcu budovu, potom sa musí prívod vody do existujúcej budovy posúdiť podľa kritérií tejto oblasti.
Špecifické pre druh budovy		

Ref	Definície pojmov	Popis
CN4	Rezidenčné inštitúcie a ubytovanie pre hostí: Špecifikácia regulácie prietoku. Pozri kritérium 2 na strane 268.	Kredit za špecifikáciu zariadení na reguláciu prietoku v priestoroch alebo zariadeniach WC sa nevzťahuje na sociálne zariadenia v obytných priestoroch, napr. sociálne zariadenia v jednotlivých súkromných izbách a jedna kúpeľňa pre súbor jednotlivých súkromných izieb v internátoch, ubytovacích zariadeniach pre kľúčových pracovníkov alebo sociálnych ubytovniach. Kredit a kritériá sa však vzťahujú na budovy, ktoré majú izby pre hostí s vlastným sociálnym zariadením, napr. hotelové izby a spoločné WC priestory alebo zariadenia, napr. spoločné WC v hoteloch alebo ubytovniach a opatrovateľských domoch.

Metodológia

Žiadne.

Dôkazová dokumentácia

Kritériá	Predbežná fáza projektu	Záverečná fáza po výstavbe
Všetky	Príslušné časti alebo ustanovenia stavebnej špecifikácie alebo zmluvy. Projektová výkresová dokumentácia. Podrobnosti o výrobku od výrobcu.	Správa z inšpekcie na mieste vypracovaná posudzovateľom BREEAM a fotografický dôkaz. Podrobnosti o výrobku od výrobcu.

Dodatočné informácie

Relevantné definície

Izolačný ventil

Izolačný ventil je ventil vo vodovodnom systéme, ktorý zastavuje prietok vody do daného miesta na účely údržby. To umožňuje odpojiť prívod vody do koncovej armatúry, spotrebiča alebo celého systému (napr. vodovodného kohútika, práčky, vykurovacieho systému alebo celého domu), čo umožňuje údržbu alebo výmenu komponentov alebo systémov.

Ďalšie informácie

Žiadne.

Wat 04 Zariadenia na efektívne využívanie vody (všetky budovy)

Počet dostupných kreditov	Minimálne normy
1	Žiadne

Cieľ

Znížiť spotrebu vody podporovaním špecifikácie zariadení, ktoré efektívne využívajú vodu.

Kritériá hodnotenia

Na preukázanie súladu sa vyžaduje:

Jeden kredit

1 Projektový tím identifikoval všetky požiadavky na vodu z iných spôsobov využitia, ako sú pitné a hygienické zložky v domácnostiach, napr. bazény, umývanie vozidiel a zavlažovacie zariadenia (pozri Relevantné definície na strane 274).

2 Boli identifikované systémy alebo procesy na zníženie spotreby vody, ktoré prostredníctvom osvedčených postupov navrhovania alebo špecifikácie preukazujú významné zníženie celkovej spotreby vody v budove.

Kontrolné zoznamy a tabuľky

Žiadne.

Poznámky o súlade

Ref	Definície pojmov	Popis
Hrubá stavba a jadro (iba nebytové a rezidenčné inštitúcie)		
CN1	Príslušné hodnotiace kritériá	Obidve možnosti: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy Pozri Príloha D - Posúdenie plášťa a jadra projektu na strane 409 Podrobnejší opis možností hodnotenia plášťa a jadra.
Obytné - čiastočne a úplne vybavené		

Ref	Definície pojmov	Popis
CN2	Príslušné hodnotiace kritériá - Obydlia pre jednu rodinu a obydlia pre viaceré rodiny	Obidve možnosti: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy. Pozri Prílohu E – Uplatniteľnosť BREEAM New Construction na obydlia pre jednu rodinu a obydlia pre viaceré rodiny, čiastočne a úplne vybavené na str. 412, kde nájdete podrobnejší popis možností hodnotenia bytových domov.
Všeobecné		
CN3	Žiadna potreba vody na iné účely ako na pitie a hygienické účely v domácnostiach	Ak v budove nie je potrebná voda na iné účely ako na pitie a hygienické účely, táto otázka sa neuplatňuje a nevyžaduje si posúdenie.
CN3.1	Zníženie spotreby vody. Pozri kritérium 2 na predchádzajúcej strane	BREEAM nedefinuje všetky možné prostriedky alebo riešenia na zníženie spotreby vody. Projektový tím musí posudzovateľovi preukázať, že identifikoval kľúčové oblasti spotreby vody v budove a že zníženie spotreby vody sa dosiahlo použitím existujúcich „osvedčených“ riešení alebo nových inovatívnych riešení relevantných pre budovu a jej funkčné požiadavky. Nižšie sú uvedené niektoré príklady riešení, ktoré sa považujú za vyhovujúce pre niekoľko rôznych typov budov alebo funkcií (ak je potreba vody pre danú funkciu jedným z významných prispievateľov v budove). 1. Podpovrchové kvapkové zavlažovanie so snímačmi pôdnej vlhkosti. Ovládanie zavlažovania by malo byť zónové, aby umožňovalo variabilné zavlažovanie rôznych skupín výsadieb. 2. Regenerovaná alebo spätne získaná voda zo systému zberu dažďovej alebo odpadovej vody s vhodnou akumuláciou, t. j. zber sivej vody z funkcií budovy alebo procesov, pri ktorých sa používa pitná voda, napr. umývanie vozidiel, hygienické zariadenia, zavlažovanie atď. 3. Vonkajšie terénne úpravy a výsadba, ktoré sú závislé výlučne od zrážok počas všetkých ročných období. 4. Všetky uvedené výsadby sa obmedzujú na druhy vhodné pre daný kontext, ktorým sa darí bez zavlažovania a ktoré budú prosperovať aj v podmienkach, ktoré sú pravdepodobným dôsledkom zmeny klímy, t. j. v typicky teplejších a suchších podmienkach.
CN3.2	Mikrobiálna kontaminácia	Ak sú špecifikované systémy umývania vozidiel, projektový tím má objasniť, že inštalované systémy sú navrhnuté tak, aby sa minimalizovalo riziko baktérie Legionela (pozri BREEAM oblasť Hea 09 Kvalita vody na strane 144).
Špecifické pre budovu		
CN4	Rodinné obydlia - Zber dažďovej vody	V prípade rodinných obydlí so záhradou postačuje na preukázanie splnenia kritérií umiestnenie zásobníka na vodu. Nie sú stanovené žiadne požiadavky na typ zásobníka na vodu ani na požadovanú kapacitu zásobníka. Posudzovateľ by sa mal presvedčiť, že zariadenie je v rámci možností primerané veľkosti zástavby a klimatickým podmienkam regiónu.

Metodológia

Žiadne.

Dôkazová dokumentácia

Kritériá	Predbežná fáza projektu	Záverečná fáza po výstavbe
Všetky	Dokumentácia s podrobnými údajmi o všetkých požiadavkách na vodu na iné účely ako na pitné a hygienické účely. Príslušné časti alebo články špecifikácie budovy alebo zmluvy ALEBO Projektové výkresy (ak je to potrebné). Podrobnosti o výrobku od výrobcu.	Správa z inšpekcie na mieste vypracovaná posudzovateľom BREEAM a fotografický dôkaz. Podrobnosti o výrobku od výrobcu.

Dodatočné informácie

Relevantné definície

Spotreba vody

Na účely tohto dokumentu BREEAM zahŕňa spotreba vody okrem iného bazény, rekreačné vírivky a hydroterapeutické bazény, zariadenia používané na zavlažovanie a zariadenia na umývanie vozidiel. Spotreba vody z domácich sanitárnych zariadení sa v tejto oblasti nehodnotí, ale hodnotí sa v rámci oblasti Wat 01 Spotreba vody na strane 253.

Umývanie vozidiel

Automatický, poloautomatický alebo manuálny systém na umývanie vozidiel v komerčnom meradle. Patria sem systémy na umývanie kolies a podvozkov, pevné portálové systémy a systémy na umývanie obrazoviek pomocou kief, striekania alebo ručných prúdových hadíc.

Ďalšie informácie

Žiadne.

Materiály

Zhrnutie

Táto kategória podporuje opatrenia prijaté na zníženie vplyvu stavebných materiálov prostredníctvom návrhu, výstavby, údržby a opráv. Otázky v tejto časti sa zameriavajú na obstarávanie materiálov, ktoré sú získavané zodpovedným spôsobom a majú nízky vplyv počas svojej životnosti vrátane ťažby, spracovania a výroby a recyklácie.

Sumárna tabuľka kategórie

Vydanie	Kredity	Zhrnutie kreditov
Mat 01 Vplyvy životného cyklu	Až 6 kreditov	Zníženie vplyvov životného cyklu budovy na životné prostredie prostredníctvom posúdenia hlavných prvkov budovy.
Mat 02 Pevné terénne úpravy a ochrana hraníc	Nie je k dispozícii	
Mat 03 Zodpovedné získavanie stavebných výrobkov	4	Materiály získané v súlade s plánom udržateľného obstarávania. Kľúčové stavebné materiály sa získavajú zodpovedne, aby sa znížili environmentálne a sociálno-ekonomické vplyvy.
Mat 04 Izolácia	Nie je k dispozícii	
Mat 05 Navrhovanie pre trvanlivosť a odolnosť	1	Budova obsahuje opatrenia na zníženie vplyvov spojených s poškodením a opotrebovaním. Príslušné stavebné prvky zahŕňajú vhodné konštrukčné a technické opatrenia na obmedzenie degradácie materiálu v dôsledku environmentálnych faktorov.
Mat 06 Účinnosť materiálov	1	Boli identifikované a prijaté možnosti a opatrenia na optimalizáciu využívania materiálov.

Mat 01 Vplyvy životného cyklu (všetky budovy)

Počet dostupných kreditov	Minimálne normy
Závisí od typu budovy	Nie

Cieľ

Rozpoznať a podporovať používanie robustných a vhodných nástrojov na posudzovanie životného cyklu a následne špecifikáciu stavebných materiálov s nízkym vplyvom na životné prostredie (vrátane integrovaného uhlíka) počas celého životného cyklu budovy.

Kritériá hodnotenia

Na preukázanie súladu sa vyžaduje:

Jeden až päť kreditov

1 Projekt využíva nástroj hodnotenia životného cyklu (LCA) na meranie vplyvu životného cyklu prvkov budovy na životné prostredie.

2 LCA zahŕňa aspoň povinné prvky budovy uvedené v časti „Rozsah hodnotenia materiálov“ kalkulačky BREEAM International Mat 01 (ak sa v budove nachádzajú).

3 Povinné požiadavky uvedené v časti „Nástroj na hodnotenie materiálov, metóda a údaje“ v kalkulačke BREEAM International Mat 01 na strane 279 boli splnené.

4 Člen projektového tímu vyplní kalkulačku BREEAM International Mat 01 na strane 279 a určí skóre na základe spoľahlivosti použitého nástroja LCA a rozsahu hodnotenia z hľadiska posudzovaných prvkov. Kredity sa udeľujú nasledovne:

Tabuľka 43: Percento dosiahnutých bodov a udelených kreditov z kalkulačky BREEAM Mat 01

Dosiahnuté percento bodov kalkulačky BREEAM Mat 01 (%)	Kredity	
	Priemyselné	Všetky ostatné budovy
25,0	1	1
625	1	2
75,0	1	3
80,0	2	4
82,5	2	5
85,0	2 + vzorové	5 + vzorové

Jeden kredit - Environmentálne vyhlásenia o produktoch (EPD)

5 Ak sa overené EPD vzťahuje na rad najmenej piatich produktov špecifikovaných vo fáze projektovania (DS) a inštalovaných vo fáze po výstavbe (PCS) (pozri CN3.2 na nasledujúcej strane).

Kritériá príkladnej úrovne

6 Požiadavky na kritériá príkladnej úrovne uvedené v tabuľke 43 na predchádzajúcej strane v rámci uvedených kritérií hodnotenia boli splnené.

7 Ak sa overené EPD špecifické pre výrobcu vzťahuje na rad najmenej 10 produktov špecifikovaných vo fáze projektovania (DS) a inštalovaných vo fáze po výstavbe (PCS) (pozri CN3.10 na nasledujúcej strane).

Kontrolné zoznamy a tabuľky

Žiadne.

Poznámky o súlade

Ref	Definície pojmov	Popis
Hrubá stavba a jadro (iba nebytové a rezidenčné inštitúcie)		
CN1	Príslušné hodnotiace kritériá	Obidve možnosti: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy Pozri Príloha D - Posúdenie plášťa a jadra projektu na strane 409 Podrobnejší opis možností hodnotenia plášťa a jadra.
Obytné - čiastočne a úplne vybavené		
CN2	Príslušné hodnotiace kritériá - Obydlia pre jednu rodinu a obydlia pre viaceré rodiny	Obidve možnosti: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy. Pozri Prílohu E – Uplatniteľnosť BREEAM New Construction na obydlia pre jednu rodinu a obydlia pre viaceré rodiny, čiastočne a úplne vybavené na str. 412, kde nájdete podrobnejší popis možností hodnotenia bytových domov.
Všeobecné		
CN3	Prvok nie je špecifikovaný (použiteľné prvky)	V niektorých budovách nebudú prítomné alebo uvedené všetky prvky uvedené v kalkulačke BREEAM International Mat 01 na strane 279, napr. horné poschodia v jednopodlažných budovách. V týchto prípadoch kalkulačka prehodnotí referenčné hodnoty štandardnej a príkladnej úrovne podľa príslušných prvkov.

Ref	Definície pojmov	Popis
CN3.1	Schválenia nástrojov LCA	Ak projektový tím zvažuje použitie nástroja LCA, ktorý nebol predtým hodnotený spoločnosťou BRE Global (BREG), posudzovateľ by mal kontaktovať spoločnosť BREG a poskytnúť jej všetky informácie potrebné na hodnotenie nástroja. Proces hodnotenia nástrojov LCA často vyžaduje predloženie dôkazov zo strany výrobnej alebo vývojárskej spoločnosti daného nástroja. Proces hodnotenia môže trvať až štyri týždne, preto sa posudzovateľom odporúča, aby čo najskôr kontaktovali skupinu BREG a začali tento proces. Hárok s poplatkami, ktorý je k dispozícii na stránke BREEAM Projects, uvádza podrobnosti o poplatkoch za hodnotenie nástrojov LCA. Všetky použité nástroje (a ich verzie) musia: 1. Spĺňať povinné požiadavky uvedené v kalkulačke BREEAM International Mat 01 na nasledujúcej strane 2. Mať skóre vygenerované kalkulačkou BREEAM International Mat 01 na nasledujúcej strane a vyhodnotené spoločnosťou BRE Global. Kalkulačka BREEAM International Mat 01 na nasledujúcej strane poskytuje zoznam predtým predložených nástrojov (podľa verzie) a ich súvisiace hodnotiace skóre.
CN3.2	Klasifikácie environmentálnych vyhlásení o produktoch (EPD)	Každé EPD sa klasifikuje podľa Mat 03 Zodpovedné získavanie stavebných výrobkov: (Tabuľka 46 na str. 291). Pre každé EPD vyberte klasifikáciu, ktorá sa mu najviac približuje. Na jednu klasifikačnú skupinu sa môžu započítať len dve EPD. Cieľom je podporiť celý rad EPD z rôznych sektorov stavebných výrobkov. Ak výrobok pozostáva z viac ako jedného materiálu, posudzovateľ by mal podľa vlastného uváženia rozhodnúť, ktorá kategória materiálu by sa mala použiť. Certifikáty EPD musia byť platné (nevypršala ich platnosť) v čase špecifikácie. Certifikáty EPD musia byť platné (nevypršala ich platnosť) v čase špecifikácie.

Dôkazová dokumentácia

Kritériá	Predbežná fáza projektu	Záverečná fáza po výstavbe
1–4	Špecifikácia potvrdzuje: 1. Názov a verzia použitého nástroja LCA 2. Kópia výstupu nástroja LCA alebo informácie od poskytovateľa nástroja na preukázanie odpovedí uvedených v kalkulačke BREEAM International Mat 01. Kópia výstupu z kalkulačky BREEAM International Mat 01. Podrobné požiadavky nájdete aj v časti Ďalšie informácie na nasledujúcej strane.	Ako fáza návrhu, ale s údajmi o stave konštrukcie.
5 na predchádzajúcej strane	Zoznam určených výrobkov v budove s prijatými EPD a ich kategórie výrobkov. Kópie certifikátov EPD.	Ako fáza návrhu, ale s údajmi o stave konštrukcie.

Dodatočné informácie

Relevantné definície

Kalkulačka BREEAM International Mat 01

Tabuľkový kalkulátor potrebný na určenie, či projekt použil vhodný nástroj LCA, a na výpočet počtu kreditov dosiahnutých v rámci tejto problematiky BREEAM na základe rozsahu a prísnosti posúdenia životného cyklu a prvkov zohľadnených v rámci LCA.

Environmentálne vyhlásenia o výrobkoch

EPD je nezávisle overená environmentálna značka (t. j. značka ISO typu III) podľa požiadaviek normy ISO 14025. V prípade stavebných výrobkov sa EPD musí vypracovať buď podľa EN 15804[62],ISO14025[63] alebo ISO 21930[64].

Integrovaný nástroj pre profil materiálu a kalkuláciu nákladov (IMPACT)

Integrovaný nástroj pre profil materiálu a kalkuláciu nákladov. Viac informácií o programe IMPACT nájdete na adrese: www.IMPACTwba.com

Postupy výpočtov

Táto otázka sa týka použitia LCA v projekte a robustnosti použitej metódy alebo nástrojov. V súčasnosti sa nesnažíme porovnávať výkonnosť. Je pravdepodobné, že to bude zahrnuté, keď sa LCA zdokonalí a BRE Global zhromaždí dostatok údajov o výkonnosti budov na stanovenie spoľahlivých referenčných hodnôt.

Kalkulačka Mat 01 prideľuje body na základe prísnosti hodnotenia životného cyklu z hľadiska:

1. Kvality nástroja alebo metódy hodnotenia a údajov
2. Rozsahu (stavebných prvkov) zahrnutých do posúdenia.

Iné informácie

Požiadavky na dôkazy

Poznámka: Okrem pravdepodobného prínosu pre životné prostredie zo strany tímov používajúcich nástroje LCA je cieľom BREEAM zhromažďovať údaje o výkonnosti LCA s cieľom vytvoriť referenčné hodnoty a informovať o budúcich aktualizáciách systému. Nižšie uvedené požiadavky na dôkazy sú všeobecné, ale BRE Global chápe, že niektoré nástroje nie sú schopné splniť všetky kritériá. V takom prípade by mal prevádzkovateľ nástroja predložiť výsledky čo najbližšie k výsledkom požadovaným pre daný nástroj.

Nástroje v súlade s IMPACT

Kópia celého súboru projektu IMPACT alebo budovy, ktorú posudzovateľ predložil spoločnosti BRE Global, sa musí zaslať v nasledovnom formáte:

1. Pre nástroje založené na 3D CAD alebo informačnom modeli budovy (BIM) v súlade s IMPACT: V súbore Industry Foundation Classes (IFC) alebo v natívnom formáte nástroja IMPACT Compliant.
2. Pre nástroje založené na tabuľkovom procesore, ktoré sú v súlade s IMPACT: IFC, MS Excel alebo formát súboru CSV (comma-separated variables).
3. Kategorizácia stavebných prvkov podľa nových pravidiel merania (NRM) Kráľovského inštitútu autorizovaných geodetov (RICS).
4. Tabuľka vo formáte MS Excel alebo vo formáte súboru CSV so zoznamom jednotlivých stavebných prvkov s informáciami uvedenými v bodoch 2 b, c a d (z časti „iné nástroje“) spolu s klasifikáciou NRM.

Ostatné nástroje

Elektronická tabuľka údajov alebo tabuľky výsledkov (s vhodným krížovým odkazom) vytvorené nástrojom, ktoré posudzovateľ predloží spoločnosti BRE Global, musia spĺňať tieto kritériá:

1. Predložte celkový výsledok vplyvu budovy na životné prostredie za obdobie štúdie v roku 0 (len inštalácia) a v roku 60 nasledovne:
   a. Zahrnúť individuálne výsledky pre všetky environmentálne otázky alebo ukazovatele, ktoré nástroj alebo údaje umožňujú a pomenovať
      problémy alebo ukazovateľov a použité jednotky. Ak sú k dispozícii otázky alebo ukazovatele podľa normy BS EN 15978:2011, mali by sa použiť
   b. Uveďte jednotlivé výsledky pre každú fázu etapu modul životného cyklu, napr. fázy A, B a C (pozri normu BS EN 15978:2011).
      Ak to nástroj ďalej umožňuje alebo ak nie je možné vykonať úplné meranie uvedených etáp, mali by sa uviesť podrobnejšie údaje. Mali by sa používať napríklad moduly podľa normy BS EN 15978:2011
   c. Formát správy by mal byť podľa normy BS EN 15978:2011 (alebo rovnocennej normy).
2. Výsledky pre každý prvok, ako je uvedené ďalej, aby členovia projektového tímu a posudzovatelia bez nástroja IMPACT Compliant mohli skontrolovať presnosť modelu:
   a. Vplyv prvku na oblasť (ako je uvedené vyššie), s jednotkami
   b. Prvok kg ekvivalent CO_2 na životnú fázu alebo modul (ako je uvedené vyššie)
   c. Množstvo prvkov s jednotkami
   d. Popis prvku
   e. Pre každý materiál v prvku:
      i. Inštalované množstvá s jednotkami
      ii. Množstvo odpadu na stavenisku s jednotkami
      iii. Výmena, oprava, renovácia množstva, s jednotkami
      iv. Množstvo opätovného použitia, recyklácie alebo zneškodnenia (skládka, spaľovanie) s uvedením jednotiek.
3. Odoslané vo formáte IFC, MS Excel alebo CSV.

Povolenia týkajúce sa údajov

Poskytnutie informácií spoločnosti BRE Global na účely posúdenia tejto otázky sa považuje za udelenie súhlasu skupine spoločností BRE na použitie týchto informácií na:

1. Splnenie požiadaviek na zabezpečenie kvality BREEAM
2. Vykonanie ďalšieho výskumu (s použitím anonymizovaných údajov) vrátane stanovenia spoľahlivých referenčných hodnôt výkonnosti na úrovni životného cyklu budovy v nástrojoch a metodikách BREEAM a BRE.

Mat 02 Pevné terénne úpravy a ochrana hraníc

V rámci BREEAM International New Construction sa neposudzuje ako samostatná oblasť, ale je zahrnutá do Mat 01 Vplyvy životného cyklu na strane 276.

Mat 03 Zodpovedné získavanie stavebných výrobkov

(všetky budovy)

Počet dostupných kreditov	Minimálne normy
4	Áno (iba kritérium 1 nižšie)

Cieľ

Rozpoznať a podporovať špecifikáciu a obstarávanie zodpovedne získaných stavebných produktov

Kritériá hodnotenia

Na preukázanie súladu sa vyžaduje:

Predpoklad

1 Všetko drevo a výrobky z dreva použité v projekte predstavujú Legálne vyťažené a obchodované drevo na strane 293.

Poznámka: Pre ostatné stavebné výrobky nie sú v tejto fáze stanovené žiadne predbežné požiadavky.

Jeden kredit - Plán udržateľného obstarávania

2 Do konca fázy návrhu koncepcie má klient alebo developer zdokumentovanú politiku a postup, v ktorom sú stanovené požiadavky na obstarávanie, ktoré musia dodržiavať všetci dodávatelia a remeselníci v súvislosti so zodpovedným obstarávaním stavebných výrobkov (pozri CN3 na nasledujúcej strane).

3 Zdokumentované zásady a postupy musia byť rozšírené medzi všetkých príslušných interných a externých pracovníkov a zahrnuté do zmluvy o výstavbe, aby sa zabezpečila ich vymožiteľnosť v rámci posudzovaného projektu.

4 Zdokumentovaná politika a postup musia podporovať špecifikáciu výrobkov s certifikáciou zodpovedného získavania zdrojov v porovnaní s podobnými výrobkami bez certifikácie.

Až tri kredity - Zodpovedné získavanie stavebných výrobkov

5 Dostupné kredity za zodpovedné získavanie (pozri tabuľku 44 nižšie) možno udeliť, ak sú príslušné stavebné výrobky (pozri tabuľku 45 na strane 286) zodpovedne získavané v súlade s metodikou BREEAM, ako je definované v časti Metodika na strane 285.

Tabuľka 44: Počet dosiahnutých kreditov BREEAM sa určuje nasledovne

Kredity za zodpovedné získavanie zdrojov	% dosiahnutých dostupných bodov zodpovedného získavania zdrojov
3	≥ 36
2	≥ 20
1	≥ 10

Kritériá prikladnej úrovne

Nasleduje prehľad vzorových kritérií úrovne na získanie inovačných kreditov pre túto otázku BREEAM:

6 Ak sa dosiahne aspoň 52 % dostupných bodov zodpovedného získavania zdrojov.

Kontrolné zoznamy a tabuľky

Žiadne.

Poznámky o súlade

Ref	Definície pojmov	Popis
Hrubá stavba a jadro (iba nebytové a rezidenčné inštitúcie)		
CN1	Príslušné hodnotiace kritériá	Obidve možnosti: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy Pozri Prílohu D - Hodnotenie plášťa a jadra projektu na str. 4099 v tomto dokumente schémy, kde nájdete ďalší popis vyššie uvedených možností.
Obytné - čiastočne a úplne vybavené		
CN2	Príslušné hodnotiace kritériá - Obydlia pre jednu rodinu a obydlia pre viaceré rodiny	Obidve možnosti: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy. Pozri Prílohu E – Uplatniteľnosť BREEAM New Construction na obydlia pre jednu rodinu a obydlia pre viaceré rodiny, čiastočne a úplne vybavené na str. 412, kde nájdete podrobnejší popis možností hodnotenia bytových domov.
Všeobecné		
CN3	Zdokumentovaná politika obstarávania výrobkov. Pozri kritérium 2 na predchádzajúce strane.	Môže byť pripravená a prijatá na organizačnej úrovni alebo môže byť špecifická pre dané miesto či projekt. Odporúča sa (ale nie je to požiadavka), aby sa zdokumentovaná politika riadila zásadami BS 8900-1:2013 [65] Riadenie udržateľného rozvoja organizácií - Príručka alebo BS 8903:2010 [66] Zásady a rámec pre udržateľné obstarávanie - Príručka. Táto politika môže byť súčasťou širšieho plánu udržateľného obstarávania alebo môže mať podobu samostatného dokumentu.
CN3.1	BREEAM uznané certifikačné systémy zodpovedného získavania zdrojov (RSCS) a ich bodové hodnotenie. Pozri kritérium 5 na predchádzajúcej strane.	Usmernenie 18, ktoré je k dispozícii na webovej stránke BREEAM v časti o zodpovednom získavaní zdrojov, obsahuje tabuľku RSCS uznaných podľa BREEAM, ich rozsah a súvisiace bodové hodnotenie. Táto tabuľka sa pravidelne reviduje a posudzovatelia BREEAM musia zabezpečiť, aby používali aktuálnu tabuľku.

Ref	Definície pojmov	Popis
CN3.2	Kontrola tvrdení o zodpovednom získavaní zdrojov. Pozri kritérium 5 na str. 282.	Potvrdenie tvrdení výrobcov a dodávateľov by sa malo vyžiadať od príslušného poskytovateľa systému zodpovedného získavania zdrojov. Mnohé organizácie, ktoré spravujú certifikačné systémy zodpovedného získavania zdrojov, uvádzajú na svojich webových stránkach zoznam spoločností a výrobkov, ktoré boli certifikované podľa ich noriem, vrátane rozsahu takejto certifikácie. Niektoré systémy, vrátane systému BES 6001 prostredníctvom webovej stránky www.greenbooklive.com, poskytujú na stiahnutie kópie príslušného certifikátu, ktoré sa môžu použiť ako dôkaz o zhode pre tento problém BREEAM.
CN3.3	Trasa 1 Preruše nie Pozri krok 1 v časti Metodológia na nasledujúcej strane.	Každý stavebný výrobok v nasledujúcich kategóriách umiestnenia alebo použitia (pozri Tabuľku 45 na strane 286), ktorý jednoznačne predstavuje menej ako nasledujúce objemy, môže byť z hodnotenia vylúčený. Za uvažovaný objem by sa mali považovať celkové vonkajšie rozmery stavebného výrobku vrátane všetkých vnútorných dutín a vzduchových priestorov. Drobné upevňovacie prvky (konzoly, klince, skrutky atď.), lepidlá, tesnenia a železiarsky tovar by zvyčajne spadali pod túto hranicu. Tiež pozri CN3.5 nižšie. „Vnútorné priečky a vnútorné steny (vrátane povrchových úprav)“: Menej ako 0,33 m³ na 1000 m² hrubej vnútornej podlahovej plochy (GIFA). „Strop (vrátane povrchovej úpravy stropu)“: Menej ako 0,33 m³ na 1000 m² plochy GIFA. Všetky ostatné kategórie umiestnenia alebo použitia: Menej ako 1 m³ na 1000 m² plochy GIFA.
CN3.4	Prerušený reťazec	S cieľom uznať certifikáciu zodpovedného získavania zdrojov tam, kde existuje v dodávateľskom reťazci, a zároveň znížiť riziká spojené s prerušeným reťazcom, je prípustné použiť v nástroji BREEAM International Mat 03 skóre predchádzajúcej certifikácie, ak sa následné riziko zodpovedného získavania zdrojov považuje za nízke. Konkrétne je prípustné, aby nasledujúce typy organizácií v dodávateľskom reťazci (ktoré sú nadväzujúce na organizáciu s certifikáciou) nemali vlastnú certifikáciu zodpovedného získavania zdrojov: 1. Organizácie, ktoré sa zaoberajú iba manipuláciou alebo prepravou, ALEBO 2. Organizácie, ktoré iba vyrábajú, montujú alebo inštalujú a používajú uznávaný systém riadenia kvality, aby sa zabezpečilo, že nedôjde k zmiešaniu a zámene certifikovaného východiskového zdroja s necertifikovanými zdrojmi A Pôsobia v jurisdikcii, ktorá vykazuje relatívne spoľahlivé a dobre presadzované environmentálne, sociálne a ekonomické kontroly. Napríklad: Členské štáty EÚ Štáty, ktoré vyhlásili, že dodržiavajú usmernenia OECD pre nadnárodné podniky.
CN3.5	Presnosť množstiev	Tolerancia prijateľná pre odhad množstva je ± 20 % konečného inštalovaného množstva. Na zdôvodnenie odhadov nie je potrebné, aby posudzovateľ predkladal výpočty. Najmä odhad hraničnej hodnoty pre mnohé stavebné výrobky (ktoré sú jednoznačne pod hraničnou hodnotou) sa môže vykonať bez potreby akýchkoľvek výpočtov.

Ref	Definície pojmov	Popis
CN3.6	Izolácia	Izolácia sa musí posúdiť (ak je to relevantné) v rámci kategórií umiestnenia alebo použitia uvedených v tabuľke 45 na nasledujúcej strane.

Metodológia

Na určenie počtu kreditov dosiahnutých v rámci kritéria 5 na strane 282 je potrebné postupovať buď spôsobom 1, 2 alebo 3 (informácie o rôznych spôsoboch nájdete v časti Ďalšie informácie na strane 292). V nasledujúcich krokoch je uvedený postup, ktorý je potrebné dodržať na určenie počtu kreditov dosiahnutých za zodpovedné získavanie zdrojov.

Príklady a ďalšie vysvetlenie tejto metódy spolu so zjednodušenou metodológiou pre stavebné výrobky stavebných služieb nájdete v Usmernení 24.

Krok 1: Zhromažďovanie informácií a ich zadávanie do nástroja BREEAM International Mat 03

Pre všetky trasy sa používa nástroj BREEAM International Mat 03 podľa nasledujúcich krokov.

1. Pre každý stavebný výrobok v budove, ktorý spadá do rozsahu hodnotenia (pozri tabuľku 46 na strane 291 v časti „Rozsah hodnotenia“ nižšie):

Poznámka: Pri **trase 1** sa musia dodržať len kroky 1.1,1.3,1.5,1.6,1.7 a 1.9. Krok 1.4 je pre trasy 1 a 2 nepovinný.

Krok 1.1: Odhadnite, či je množstvo výrobku vyššie ako hraničný objem (pozri CN3.3 na predchádzajúcej strane). Ak áno, zadajte stavebný výrobok do nástroja a priraďte mu kategóriu „Umiestnenie a použitie“, potom prejdite na ďalší krok. Ak množstvo spĺňa hraničnú hodnotu, výrobok sa môže vylúčiť.

Krok 1.2 **(len trasa 2)**: Odhadnite množstvo (hmotnosť alebo objem) výrobku (pozri CN3.5 na predchádzajúcej strane).

Krok 1.3: Získajte certifikát systému certifikácie zodpovedného obstarávania (RSCS) uznaný v rámci BREEAM alebo certifikát systému environmentálneho manažérstva (EMS), ak existuje (pozri CN3.2 na predchádzajúcej strane). Porovnajte certifikáciu s Usmernením 18 a získajte bodové hodnotenie RSCS. Ak stavebný výrobok nemá žiadnu certifikáciu, nie je v súlade s požiadavkami na prerušený reťazec (pozri CN3.4 na predchádzajúcej strane) alebo typ certifikácie nie je uvedený v usmernení 18, bodové hodnotenie je nula. Ak je stavebným výrobkom opätovne použitý výrobok, získajte pre tieto výrobky bodové hodnotenie z Usmernenia 18.

Krok 1.4 **(nepovinný, ak sa nedodržiava, prejdite na krok 1.5)**: Ak má zložka stavebného výrobku lepšie certifikačné skóre (pozri CN3.2 na predchádzajúcej strane) ako celkový stavebný výrobok a spĺňa požiadavky na prerušený reťazec (pozri CN3.4 na predchádzajúcej strane), mali by sa vykonať nasledujúce kroky:

Krok 1.4.1: Identifikujte kategórie materiálov, ktoré tvoria približne ≥ 80 % objemu stavebného výrobku.

Krok 1.4.2: Zahrňte do nástroja každú identifikovanú kategóriu materiálov (vytvorením nových riadkov v nástroji).

Krok 1.4.3: Ak v kroku 1.4.1 nie je započítaných ≥ 5 % objemu, zahrňte kategóriu „Iné“.

Krok 1.4.4 **(len trasa 2)**: Pre každý materiál v rámci trasy 2 a identifikovaný v kroku 1.4.1 zadajte do nástroja množstvo pre celú budovu. Môže to byť založené na percentuálnom podiele celkového množstva stavebného výrobku odhadnutého v kroku 1.1.

Krok 1.4.5: Pre každú kategóriu materiálu (vrátane kategórie „Iné“) zadajte do nástroja certifikačné skóre zložky určené v kroku 1.4.

Krok 1.5: Uveďte kategórie materiálov, ktoré tvoria odhadovaných ≥ 80 % objemu výrobku (okrem množstiev zadaných v kroku 1.4.1 , ak je to vhodné).

Krok 1.6: Zahrňte do nástroja každú identifikovanú kategóriu materiálov (duplikovaním záznamu vykonaného v kroku 1.1).

Krok 1.7: Ak v kroku 1.5 (a prípadne v kroku 1.4) nie je započítaných ≥ 5 % objemu, zahrňte kategóriu „Iné“.

Krok 1.8 **(len trasa 2)**: Pre každú kategóriu materiálu v rámci trasy 2 a identifikovaný v kroku 1.5 zadajte do nástroja množstvo pre celú budovu. Môže to byť založené na percentuálnom podiele celkového množstva stavebného výrobku odhadnutého v kroku 1.1.

Krok 1.9: Pre každú kategóriu materiálov (vrátane kategórie „Iné“) zadajte do nástroja celkové certifikačné skóre stavebného výrobku (z kroku 1.3).

Krok 2: Medzinárodný nástroj na hodnotenie a podávanie správ BREEAM

Krok 2.1: Zadajte výsledok hodnotenia získaný nástrojom BREEAM International Mat 03 do nástroja BREEAM International na hodnotenie a podávanie správ.

Rozsah hodnotenia

V nasledujúcej tabuľke 45 nižšie (založenej na klasifikačnom systéme nových pravidiel merania (NRM)) sú uvedené prvky budovy, ktoré musia byť zahrnuté do rozsahu hodnotenia. Zahrnutie týchto prvkov (a len týchto) je nevyhnutné na zabezpečenie primeranej úrovne porovnateľnosti. Všetky stavebné výrobky, ktoré sú inštalované ako súčasť jedného alebo viacerých týchto prvkov budovy, patria do rozsahu pôsobnosti a musia byť zahrnuté do nástroja BREEAM International Mat 03. Pre každý prvok budovy je v tabuľke uvedené príslušné kategórie umiestnenia alebo použitia na použitie v nástroji BREEAM International Mat 03.

Tabuľka 45: Rozsah posúdenia, označenie spoločných stavebných prvkov a kategórie umiestnenia a použitia

Prvky RICS NRM a ekvivalenty BREEAM			
Prvok úrovne 1: 1-Podkladová konštrukcia Prvok úrovne 2 : 1-Podkladová konštrukcia			
Čiastkový prvok úrovne 3		**Kategória BREEAM „Umiestnenie/využitie“**	**Zahŕňa**
1	Štandardné základy	7. Štruktúra , primárna a sekundárna	Á
2	Špecializované systémy základov	7. Štruktúra , primárna a sekundárna	Á
3	Konštrukcia najnižšieho podlažia	7. Štruktúra , primárna a sekundárna	Á
4	Výkopové práce v suteréne	Nie je k dispozícii	Á
5	Oporné múry v suteréne	7. Štruktúra , primárna a sekundárna	Á
Prvok úrovne 1: 2-Podkladová konštrukcia Prvok úrovne 2 : 1-Rám			
Čiastkový prvok úrovne 3		**Kategória BREEAM „Umiestnenie/využitie“**	**Zahŕňa**
1	Oceľové rámy	7. Štruktúra , primárna a sekundárna	Á
2	Priestorové paluby	7. Štruktúra , primárna a sekundárna	Á
3	Betónové plášte na oceľové rámy	7. Štruktúra , primárna a sekundárna	Á

Prvky RICS NRM a ekvivalenty BREEAM			
4	Betónové rámy	7. Štruktúra , primárna a sekundárna	Á
5	Drevené rámy	7. Štruktúra , primárna a sekundárna	Á
6	Ostatné rámové systémy	7. Štruktúra , primárna a sekundárna	Á
Prvok úrovne 1: 2-Podkladová konštrukcia Prvok úrovne 2 : 2-horné poschodia			
Čiastkový prvok úrovne 3		**Kategória BREEAM „Umiestnenie/využitie“**	**Zahŕňa**
1	Podlahy	3. Podlaha (vrátane povrchových úprav podlahy)	Á
2	Balkóny	3. Podlaha (vrátane povrchových úprav podlahy)	Á
3	Odvodnenie balkónov	11. Iné	Á
Prvok úrovne 1: 2-Podkladová konštrukcia Prvok úrovne 2 : 3– Strecha			
Čiastkový prvok úrovne 3		**Kategória BREEAM „Umiestnenie/využitie“**	**Zahŕňa**
1	Strešná konštrukcia	6. Strecha (vrátane povrchovej úpravy strechy)	Á
2	Strešný plášť	6. Strecha (vrátane povrchovej úpravy strechy)	Á
3	Špecializované strešné systémy	6. Strecha (vrátane povrchovej úpravy strechy)	Á
4	Odvodnenie strechy	6. Strecha (vrátane povrchovej úpravy strechy)	Á
5	Strešné svetlá, strešné okná a otvory	2. Dvere a okno	Á
6	Strešné prvky	6. Strecha (vrátane povrchovej úpravy strechy)	A
Prvok úrovne 1: 2-Podkladová konštrukcia Prvok úrovne 2 : 4-Schody a rampy			
Čiastkový prvok úrovne 3		**Kategória BREEAM „Umiestnenie/využitie“**	**Zahŕňa**
1	Konštrukcie schodísk a rámp	7. Štruktúra , primárna a sekundárna	Á
2	Povrchové úpravy schodísk a rámp	3. Podlaha (vrátane povrchových úprav podlahy)	Á
3	Schodiskové a rampové zábradlia a madlá	11. Iné	Á
4	Rebríky, šmýkačky a šmykľavky	11. Iné	Á

Prvky RICS NRM a ekvivalenty BREEAM			
Prvok úrovne 1: 2-Podkladová konštrukcia Prvok úrovne 2 : 5-Vonkajšie steny			
Čiastkový prvok úrovne 3		**Kategória BREEAM „Umiestnenie/využitie“**	**Zahŕňa**
1	Vonkajšie ohraničujúce steny nad úrovňou prízemia	8. Vonkajšia stena	Á
2	Vonkajšia ohraničujúca stena pod úrovňou prízemia	7. Štruktúra , primárna a sekundárna	Á
3	Solárne a dažďové tienenie	8. Vonkajšia stena	Á
4	Vonkajšie podhľady	8. Vonkajšia stena	Á
5	Vedľajšie steny, zábradlia, madlá a vlastné balkóny	11. Iné	Á
6	Prístupové a čistiace systémy fasád	11. Iné	Á
Prvok úrovne 1: 2-Nadstavba Prvok úrovne 2: 6-okná a vonkajšie dvere			
Čiastkový prvok úrovne 3		**Kategória BREEAM „Umiestnenie/využitie“**	**Zahŕňa**
1	Vonkajšie okná	2. Dvere a okno	Á
2	Vonkajšie dvere	2. Dvere a okno	Á
Prvok úrovne 1: 2-Nadstavba Prvok úrovne 2: 7-Vnútorné steny a priečky			
Čiastkový prvok úrovne 3		**Kategória BREEAM „Umiestnenie/využitie“**	**Zahŕňa**
1	Steny a priečky	5. Vnútorné priečky a vnútorné steny (vrátane povrchových úprav)	Á
2	Zábradlia a madlá	11. Iné	Á
3	Pohyblivé deliace steny	5. Vnútorné priečky a vnútorné steny (vrátane povrchových úprav)	Á
4	Kóje	5. Vnútorné priečky a vnútorné steny (vrátane povrchových úprav)	Á

Prvky RICS NRM a ekvivalenty BREEAM			
Prvok úrovne 1: 2-Podkladová konštrukcia Prvok úrovne 2 : 8-Vnútorné dvere			
Čiastkový prvok úrovne 3		**Kategória BREEAM „Umiestnenie/využitie“**	**Zahŕňa**
1	Vnútorné dvere	2. Dvere a okno	Á
Prvok úrovne 1: 3 - Vnútorné povrchové úpravy Prvok úrovne 2: 1-stenové povrchové úpravy			
Čiastkový prvok úrovne 3		**Kategória BREEAM „Umiestnenie/využitie“**	**Zahŕňa**
1	Povrchová úprava stien	5. Vnútorné priečky a vnútorné steny (vrátane povrchových úprav)	Á
Prvok úrovne 1: 3 - Vnútorné povrchové úpravy Prvok úrovne 2: 3-stropné povrchové úpravy			
Čiastkový prvok úrovne 3		**Kategória BREEAM „Umiestnenie/využitie“**	**Zahŕňa**
1	Povrchová úprava stropov	1. Strop (vrátane povrchovej úpravy stropu)	Á
2	Podhľady	1. Strop (vrátane povrchovej úpravy stropu)	Á
3	Demontovateľné zavesené podhľady	1. Strop (vrátane povrchovej úpravy stropu)	Á
Prvok úrovne 1: 4 - príslušenstvo, vybavenie a zariadenie Prvok úrovne 2: 1 - príslušenstvo, vybavenie a zariadenie			
Čiastkový prvok úrovne 3		**Kategória BREEAM „Umiestnenie/využitie“**	**Zahŕňa**
2	Kuchynské príslušenstvo a vybavenie (LEN)	11. Iné	Á
Prvok úrovne 1: 5- Služby Prvok úrovne 5: (VŠETKO)			
Čiastkový prvok úrovne 3		**Kategória BREEAM „Umiestnenie/využitie“**	**Zahŕňa**
	(VŠETKO)	9. Stavebné služby	Á
Prvok úrovne 1: 8-Externé práce Prvok úrovne 2: 2 - Cesty, chodníky a dlažby			
Čiastkový prvok úrovne 3		**Kategória BREEAM „Umiestnenie/využitie“**	**Zahŕňa**
1	(VŠETKO)	10. Terénne úpravy	Á

Prvky RICS NRM a ekvivalenty BREEAM			
Prvok úrovne 1: 8-Externé práce Prvok úrovne 2: 2 - Cesty, chodníky a dlažby			
Čiastkový prvok úrovne 3		**Kategória BREEAM „Umiestnenie/využitie“**	**Zahŕňa**
1	(VŠETKO)	10. Terénne úpravy	Á
Prvok úrovne 1: 8-Externé práce Prvok úrovne 2: 3-mäkké terénne úpravy, výsadba a zavlažovacie systémy			
Čiastkový prvok úrovne 3		**Kategória BREEAM „Umiestnenie/využitie“**	**Zahŕňa**
		Nie je k dispozícii	N
Prvok úrovne 1: 8-Externé práce Prvok úrovne 2: 4 - Oplotenie, zábradlia a steny			
Čiastkový prvok úrovne 3		**Kategória BREEAM „Umiestnenie/využitie“**	**Zahŕňa**
1	(VŠETKO)	10. Terénne úpravy	A
Prvok úrovne 1: 8-Externé práce Prvok úrovne 2: 5-Vonkajšie príslušenstvo			
Čiastkový prvok úrovne 3		**Kategória BREEAM „Umiestnenie/využitie“**	**Zahŕňa**
			N
Prvok úrovne 1: 8-Externé práce Prvok úrovne 2: 6-Vonkajšie odvodnenie			
Čiastkový prvok úrovne 3		**Kategória BREEAM „Umiestnenie/využitie“**	**Zahŕňa**
	(VŠETKO)	9. Stavebné služby	A
Prvok úrovne 1: 8-Externé práce Prvok úrovne 2: 7-Externé služby			
Čiastkový prvok úrovne 3		**Kategória BREEAM „Umiestnenie/využitie“**	**Zahŕňa**
	(VŠETKO)	9. Stavebné služby	Á

Kategórie materiálov na použitie v rámci nástroja BREEAM International Mat 03 musia byť v súlade s tabuľkou 46 na nasledujúcej strane. Pre každý stavebný výrobok určte najbližšiu zodpovedajúcu kategóriu.

Tabuľka 46: Kategórie materiálov

Kategórie materiálov
1. Drevo alebo výrobky z dreva 2. Betónové alebo cementové 3. Kov 4. Kameň alebo kamenivo 5. Hlinené 6. Sadra 7. Sklo 8. Plasty, polyméry, živice, farby, chemikálie a bitúmen 9. Živočíšne vlákno, koža, celulózové vlákno 10. Iné.

Dôkazová dokumentácia

Kritériá	Predbežná fáza projektu	Záverečná fáza po výstavbe
1 na strane 282	Písomné potvrdenie hlavného dodávateľa alebo objednávateľa, že všetko drevo a výrobky z dreva sa získavajú v súlade s definíciou legálne vyťaženého dreva a legálne obchodovaného dreva alebo majú certifikát, ktorý spĺňa tieto požiadavky (napr. FSC, PEFC) ALEBO Špecifikácia alebo písomné vyhlásenie projektového tímu potvrdzujúce, že všetky výrobky z dreva a na báze dreva budú obstarané v súlade s požiadavkami BREEAM.	Doklady potvrdzujúce, že všetko drevo použité v budove je legálne vyťažené a obchodované.
2 na strane 282–4 na strane 282	Kópia zdokumentovaného plánu udržateľného obstarávania. Dôkaz o distribúcii plánu alebo písomný záväzok, že sa tak stane. Dôkaz, že plán je zahrnutý do zmluvy o výstavbe, alebo písomný záväzok, že sa tak stane. Dôkaz, že existuje politika na podporu špecifikácie produktov so certifikáciou zodpovedného získavania zdrojov.	Dôkaz o tom, že plán bol distribuovaný. Dôkaz, že plán bol zahrnutý do zmluvy o výstavbe.

Kritériá	Predbežná fáza projektu	Záverečná fáza po výstavbe
5 na strane 282	Kópia vyplneného nástroja BREEAM International Mat 03. Kópia všetkých certifikátov zodpovedného získavania zdrojov a EMS certifikátov ALEBO Predbežná zmluva od projektového tímu alebo iný podrobný dokumentárny dôkaz potvrdzujúci, že výrobky pochádzajú od dodávateľov, ktorí sú schopní poskytnúť požadovanú certifikáciu. V prípade dotknutých certifikovaných stavebných výrobkov dôkazy o tom, ako sú splnené požiadavky na prerušený reťazec.	Písomné potvrdenie, že počas výstavby sa postupovalo podľa dokumentácie predloženej vo fáze návrhu. Ak sa líši od fázy návrhu, predložte aktualizované doklady, ktoré boli dodržané počas výstavby. Ak boli použité certifikované materiály, kópie certifikátov A zodpovedajúce faktúry a potvrdenia o dodaní. Len v prípade hodnotenia po ukončení výstavby predložte kópiu kalkulačky BREEAM Mat 03 a podrobné doklady (ako je uvedené v prípade fáze návrhu) A príslušné faktúry a potvrdenia o dodaní.

Dodatočné informácie

Relevantné definície

Kalkulačka BREEAM International Mat 03

Kalkulačka, ktorú používa posudzovateľ BREEAM na určenie počtu kreditov BREEAM dosiahnutých pre BREEAM oblasť Mat 03.

Certifikačné systémy zodpovedného obstarávania (RSCS) uznané BREEAM

Ide o systémy tretích strán, ktoré hodnotí spoločnosť BRE Global na účely uznania v rámci BREEAM. Informácie o hodnotiacich kritériách a procese hodnotenia a prijímania systémov vrátane podávania žiadostí a odvolaní nájdete v Usmernení 18, ktoré je k dispozícii v časti Zodpovedné získavanie zdrojov na webovej stránke BREEAM.

Dohovor o medzinárodnom obchode s ohrozenými druhmi (CITES)

Dohovor o medzinárodnom obchode s ohrozenými druhmi voľne žijúcich živočíchov a rastlín (CITES) funguje tak, že medzinárodný obchod s exemplármi vybraných druhov podlieha určitým kontrolám. Každý dovoz, vývoz, opätovný vývoz a zavedenie druhov, na ktoré sa vzťahuje dohovor, z mora musí byť povolený prostredníctvom systému udeľovania licencií. Každá zmluvná strana dohovoru musí určiť jeden alebo viacero riadiacich orgánov zodpovedných za správu tohto systému udeľovania licencií a jeden alebo viacero vedeckých orgánov, ktoré im budú poskytovať poradenstvo o vplyve obchodu na stav druhov. Druhy, na ktoré sa vzťahuje CITES, sú uvedené v troch prílohách podľa stupňa ochrany, ktorú potrebujú.

1. Príloha I zahŕňa druhy, ktorým hrozí vyhynutie. Obchodovanie s jedincami týchto druhov je povolené len vo výnimočných prípadoch.
2. Príloha II zahŕňa druhy, ktoré nie sú nevyhnutne ohrozené vyhynutím, ale obchod s nimi sa musí kontrolovať, aby sa zabránilo ich využívaniu, ktoré je nezlučiteľné s ich prežitím.
3. Príloha III obsahuje druhy, ktoré sú chránené aspoň v jednej krajine, ktorá požiadala ostatné krajiny CITES o pomoc pri kontrole obchodu s nimi.

V prílohách I a II zoznamu CITES sú uvedené druhy dreva, ktoré sú chránené priamo. Príloha III zoznamu CITES znázorňuje druhy, ktoré sú chránené aspoň v jednej krajine. Ak je drevina použitá v projekte uvedená v prílohe III , môže byť zahrnutá do hodnotenia, pokiaľ sa drevo nezískava z krajiny alebo krajín, ktoré sa snažia tento druh chrániť.

Legálne vyťažené a obchodované drevo

Legálne vyťažené drevo a výrobky z dreva sú tie, ktoré pochádzajú z lesa, kde sú splnené nasledovné kritériá:

1. Vlastník alebo správca lesa má zákonné užívacie práva k lesu
2. Organizácia lesného hospodárstva , ako aj všetci dodávatelia dodržiavajú miestne a vnútroštátne právne kritériá vrátane tých, ktoré sa týkajú:
   a. Lesné hospodárstvo
   b. Životné prostredie
   c. Práce a sociálne zabezpečenie
   d. Zdravie a bezpečnosť
   e. Práva iných strán na držbu a používanie
   f. Všetky príslušné licenčné poplatky a dane sú zaplatené.
3. Kritériá dohovoru CITES sú v plnom súlade.

Legálne obchodované drevo znamená, že drevo alebo výrobky z legálne vyťaženého dreva boli:

1. Vyvezené v súlade s právnymi predpismi vyvážajúcej krajiny, ktorými sa riadi vývoz dreva a výrobkov z dreva, vrátane zaplatenia všetkých vývozných daní, ciel alebo odvodov
2. Dovezené v súlade s právnymi predpismi dovážajúcej krajiny, ktorými sa riadi dovoz dreva a výrobkov z dreva, vrátane zaplatenia všetkých dovozných daní, ciel alebo odvodov
3. V prípade potreby sa obchoduje v súlade s právnymi predpismi týkajúcimi sa Dohovoru o medzinárodnom obchode s ohrozenými druhmi (CITES).

Nové pravidlá merania

Nové pravidlá merania poskytujú štandardný súbor pravidiel merania a základné usmernenia pre riadenie nákladov na stavebné projekty a údržbárske práce. Pre viac informácií navštívte: www.rics.org/.

Zodpovedné získavanie zdrojov

Riadenie a uplatňovanie zásad trvalo udržateľného rozvoja pri zabezpečovaní, obstarávaní a sledovateľnosti stavebných materiálov a komponentov. V systéme BREEAM sa to preukazuje prostredníctvom auditovateľných certifikačných systémov tretích strán. Aktuálnu tabuľku RSCS uznaných spoločnosťou BRE Global na účely hodnotenia BREEAM nájdete v Usmernení 18, ktoré je k dispozícii v časti Zodpovedné získavanie zdrojov na webovej stránke BREEAM.

Bodové hodnotenie certifikačného systému zodpovedného získavania zdrojov

Odstupňovaná stupnica, ktorá odráža prísnosť certifikačného systému používaného na preukázanie zodpovedného získavania zdrojov a tvorí základ pre udeľovanie kreditov v rámci BREEAM Mat 03. Aktuálnu tabuľku RSCS uznaných spoločnosťou BRE Global na účely hodnotenia BREEAM nájdete v Usmernení 18, ktoré je k dispozícii v časti Zodpovedné získavanie zdrojov na webovej stránke BREEAM.

Trasa 1

Trasa 1 nevyžaduje zadanie množstva každého stavebného výrobku do nástroja BREEAM International Mat 03. Tým sa skracuje čas potrebný na výpočet dosiahnutého skóre za stavebný výrobok, ale keďže pri výpočte kreditu nemožno zohľadniť rôzne množstvá jednotlivých stavebných výrobkov v budove, pre celkové skóre kategórie materiálov sa použije najnižšie skóre kategórie „umiestnenie alebo použitie“ za kategóriu materiálov.

Trasa 2

Trasa 2 poskytuje presnejšie meranie rizík v konštrukcii budovy spojených so stavebnými výrobkami tým, že zohľadňuje množstvo každého stavebného výrobku s kategóriou umiestnenia a použitia. Vyžaduje sa, aby sa množstvá zadali do nástroja BREEAM International Mat 03, a nie aby sa použilo najnižšie skóre kategórie „umiestnenie alebo použitie“ pre jednotlivé kategórie materiálov. Zvýšená úroveň prísnosti tak zvýhodňuje trasu 2, ktorá má potenciál dosiahnuť lepšie výsledky ako trasa 1.

Trasa 3

Trasa 3 je kombináciou trasy 1 a trasy 2. Napríklad trasa 1 sa môže použiť pre kategóriu dreva alebo drevnej hmoty a trasa 2 pre kategóriu kovov. Pre každú kategóriu materiálov možno použiť len jednu trasu.

Ďalšie informácie

Žiadne.

Mat 04 Izolácia

V rámci BREEAM International New Construction Version 6 sa neposudzuje ako samostatná oblasť, ale je zahrnutá v rámci Mat 01 Vplyvy životného cyklu na strane 276 a Mat 03 Zodpovedné získavanie stavebných výrobkov na strane 282.

Mat 05 Projektovanie pre trvanlivosť a odolnosť (všetky budovy)

Počet dostupných kreditov	Minimálne normy
1	Žiadne

Cieľ

Rozpoznať a podporovať primeranú ochranu exponovaných prvkov budovy a krajiny a tým minimalizovať frekvenciu výmen a maximalizovať optimalizáciu materiálov.

Kritériá hodnotenia

Na preukázanie súladu sa vyžaduje:

Jeden kredit

Ochrana zraniteľných častí budovy pred poškodením

1 Budova obsahuje vhodné opatrenia na zabezpečenie odolnosti a ochrany alebo navrhnuté prvky či riešenia na zabránenie poškodenia zraniteľných častí vnútorných a vonkajších prvkov budovy a terénnych úprav. Musia zahŕňať, ale nemusia sa nevyhnutne obmedzovať na:

- 1.a Ochranu pred účinkami veľkého pohybu chodcov v hlavných vchodoch, verejných priestoroch a dopravných priechodoch (chodby, výťahy, schody, dvere atď.)
- 1.b Ochranu pred akýmkoľvek vnútorným pohybom vozidiel alebo vozíkov vo vzdialenosti menšej ako 1 m od vnútornej konštrukcie budovy v priestoroch skladov, zásobovania, chodieb a kuchyne
- 1.c Ochranu pred možnou kolíziou s vozidlami alebo zabránenie takejto kolízii, ak sa parkovanie a manévrovanie s vozidlami uskutočňuje vo vzdialenosti do 1 m od fasády budovy pre všetky parkovacie plochy a do 2 m pre všetky zásobovacie plochy.

Ochranu exponovaných častí budovy pred degradáciou materiálu

2 Príslušné časti budovy obsahujú vhodné konštrukčné a technické opatrenia na obmedzenie degradácie materiálu v dôsledku environmentálnych faktorov (postup hodnotenia tohto kritéria je uvedený v Metodológii na strane 298).

Zoznam použiteľných prvkov, environmentálnych faktorov a účinkov degradácie materiálu, ktoré je potrebné zohľadniť, nájdete v tabuľke 47 na nasledujúcej strane.

Kontrolné zoznamy a tabuľky

Tabuľka 47: Príslušné stavebné prvky, environmentálne faktory a účinky degradácie materiálu, ktoré treba zohľadniť

Príslušné stavebné prvky, environmentálne faktory a účinky degradácie materiálu
Príslušné stavebné prvky
1. Základy, spodná stavba, najnižšie poschodie, oporné múry 2. Vonkajšie steny 3. Strecha alebo balkóny 4. Zasklenie: okná, strešné okno 5. Vonkajšie dvere 6. Zábradlia alebo stĺpiky (ak sú vystavené vonkajšiemu prostrediu) 7. Opláštenie (ak je vystavené vonkajšiemu prostrediu) 8. Schodiská alebo rampy (ak sú vystavené vonkajšiemu prostrediu) 9. Pevné terénne úpravy.
Environmentálne faktory
1. Environmentálne činitele vrátane nasledovných: a. Slnečné žiarenie b. Kolísanie teploty c. Voda alebo vlhkosť d. Vietor e. Zrážky, napr. dážď a sneh f. Extrémne poveternostné podmienky: vysoká rýchlosť vetra, záplavy, prudký dážď, sneh 2. Biologické látky vrátane nasledovných: a. Vegetácia b. Škodcovia, hmyz 3. Znečisťujúce látky vrátane: a. Znečisťujúce látky v ovzduší b. Znečisťujúce látky v pôde.
Účinky degradácie materiálu (zahŕňajú, ale nemusia byť obmedzené na nasledujúce)
1. Korózia 2. Rozmerová zmena, napr. zväčšenie alebo zmrštenie 3. Blednutie alebo zmena farby 4. Hniloba 5. Lúhovanie 6. Tvorba bublín 7. Roztápanie 8. Kryštalizácia soli 9. Obrúsenie.

Plnenie požiadaviek

Ref	Definície pojmov	Popis
Hrubá stavba a jadro (iba nebytové a rezidenčné inštitúcie)		
CN1	Príslušné hodnotiace kritériá	**Ochrana zraniteľných častí budovy pred poškodením - kritérium 1 na strane 295** Ak sú identifikované zraniteľné časti budovy súčasťou kompetencií developera v oblasti plášťa a jadra: Obe možnosti: Pri posudzovaní tejto otázky sa uplatňujú všetky kritériá posudzovania relevantné pre typ a funkciu budovy a musia sa zohľadniť. Ak identifikované zraniteľné časti budovy nepatria do kompetencií developera, napr. ak sa nachádzajú v prenajímateľných priestoroch a ich dodržiavanie je podmienené špecifikáciou nájomcu alebo budúceho užívateľa: Obe možnosti: Tieto oblasti môžu byť z hodnotenia vylúčené. **Ochrana exponovaných častí budovy pred degradáciou materiálu - kritérium 2 na strane 295** Obidve možnosti: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy. Podrobnejší popis možností vyhodnotenia hrubej stavby a jadra nájdete v Prílohe D - Posúdenie projektu hrubej stavby a jadra na strane 409.
Obytné - čiastočne a úplne vybavené		
CN2	Príslušné hodnotiace kritériá - Obydlia pre jednu rodinu	**Ochrana zraniteľných častí budovy pred poškodením - kritérium 1 na strane 295** Obidve možnosti: Kritériá 1.a na strane 295 a 1.b na strane 295 sa neuplatňujú. **Ochrana exponovaných častí budovy pred degradáciou materiálu - kritérium 2 na strane 295** Obidve možnosti: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy. Pozri Prílohu E – Uplatniteľnosť BREEAM New Construction na obydlia pre jednu rodinu a obydlia pre viaceré rodiny, čiastočne a úplne vybavené na str. 412, kde nájdete podrobnejší popis možností hodnotenia bytových domov.
CN2.1	Príslušné hodnotiace kritériá - Obydlia pre viaceré rodiny	**Ochrana zraniteľných častí budovy pred poškodením - kritérium 1 na strane 295** Obidve možnosti: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy. **Ochrana exponovaných častí budovy pred degradáciou materiálu - kritérium 2 na strane 295** Obidve možnosti: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy. Pozri Prílohu E – Uplatniteľnosť BREEAM New Construction na obydlia pre jednu rodinu a obydlia pre viaceré rodiny, čiastočne a úplne vybavené na str. 412, kde nájdete podrobnejší popis možností hodnotenia bytových domov.
Všeobecné		

Ref	Definície pojmov	Popis
CN3	Vhodné opatrenia na odolnosť. Pozri kritérium 1 na strane 295.	Vhodné opatrenia na odolnosť a ochranu zraniteľných častí budovy môžu zahŕňať: 1. Stĺpiky alebo zábrany alebo zvýšené obrubníky na miestach pre dodávky a odstavenie vozidiel 2. Robustná konštrukcia vonkajšej steny do výšky 2 m 3. Ochranné lišty na stenách chodieb 4. Nárazové dosky alebo ochrana proti nárazu (od vozíkov atď.) na dverách 5. Odolné a ľahko umývateľné podlahové krytiny v intenzívne využívaných komunikačných priestoroch (t. j. hlavný vchod, chodby, verejné priestory atď.) 6. Návrh rizika bez potreby špecifikácie dodatočných materiálov na ochranu zraniteľných oblastí.
CN3.1	Ochrana proti nárazu vozidla. Pozri kritérium 1.c na strane 295.	Všetky určené opatrenia na ochranu proti nárazu vozidla musia byť umiestnené v dostatočnej vzdialenosti od budovy, aby chránili konštrukciu pred nárazom akéhokoľvek vozidla s merateľným presahom karosérie z rozchodu kolies, najmä v prípade akýchkoľvek priestorov na dodávku tovaru. Len v oblastiach s pohybom vozidiel: ak je vonkajšia robustná konštrukcia steny špecifikovaná tak, aby spĺňala podmienky úveru, musí sa zabezpečiť dodatočná ochrana proti možnému poškodeniu robustnej fasády pohybom vozidiel, t. j. špecifikovať stĺpiky alebo ochranné lišty.
CN3.2	Predchádzanie nadmernému používaniu materiálu	Zvolená špecifikácia alebo konštrukčné opatrenia by mali odrážať potrebu vyvážiť dodatočnú špecifikáciu materiálov s potrebou chrániť stavebné prvky s cieľom minimalizovať ich výmenu, poistiť sa proti nadmernému používaniu materiálov a podporovať optimalizáciu materiálov. Pozri Mat 06 Účinnosť materiálov na strane 300.
CN3.3	Verejné alebo spoločné priestory	Mala by sa zvážiť špecifikácia materiálov vo verejných alebo spoločných priestoroch (najmä vo verejných čakárňach a na toaletách), aby sa v čo najväčšej miere zabezpečila ochrana pred možným zlomyseľným alebo fyzickým zneužitím.

Metodológia

Ochrana exponovaných častí budovy pred degradáciou materiálu

V nasledujúcom texte je uvedený postup hodnotenia kritéria 2 na strane 295 pre novo špecifikované materiály a konštrukčné prvky:

1. Zo zoznamu „použiteľné stavebné prvky“ v Tabuľke 47 na str. 296 identifikujte prvky, ktoré sú vhodné pre posudzovanú budovu.
2. Zo zoznamu „environmentálnych faktorov“ identifikujte tie faktory, ktoré pravdepodobne spôsobujú účinky degradácie materiálu v identifikovaných použiteľných prvkoch budovy.
3. Potvrďte zavedené konštrukčné a technické opatrenia na obmedzenie týchto degradačných účinkov.
4. Posudzovateľ by mal pri rozhodovaní o tom, či projektový tím primerane preukázal, že navrhol a špecifikoval materiály alebo opatrenia, ktoré budú účinné pri predchádzaní zbytočnému zhoršovaniu, používať odborný úsudok a tak znižovať časté výmeny, opravy a údržbu počas životného cyklu budovy.
5. Vo fáze po ukončení výstavby, ak sa inštalované konštrukčné a technické opatrenia líšia od opatrení navrhnutých vo fáze projektovania, musí posudzovateľ zabezpečiť, aby tieto opatrenia stále spĺňali ciele kritéria, ako je podrobne uvedené v bode 4.

Dôkazová dokumentácia

Kritériá	Predbežná fáza projektu	Záverečná fáza po výstavbe
1 na strane 295	Projektové výkresy znázorňujúce zraniteľné oblasti alebo časti budovy. Projektové výkresy alebo špecifikácia potvrdzujúca trvanlivosť uvedených opatrení.	Inšpekcia budovy alebo lokality vykonaná posudzovateľom alebo fotografický dôkaz potvrdzujúci súlad.
2 na strane 295	Projektové výkresy potvrdzujúce príslušné prvky. Dôkazný materiál o environmentálnych faktoroch a vplyvoch degradácie materiálu, ktorý sa považujú za relevantný pre budovu. Návrh a špecifikácia opatrení na obmedzenie účinkov degradácie. V prípade potreby technické údaje výrobcu potvrdzujúce účinok degradácie materiálu spôsobený špecifikovaným výrobkom.	Ako predbežná fáza návrhu a na základe hotových výkresov.

Dodatočné informácie

Relevantné definície

Účinnosť materiálov

Pozri BREEAM oblasť Mat 06 Účinnosť materiálov na strane 300

Ďalšie informácie

Žiadne.

Mat 06 Účinnosť materiálov (všetky budovy)

Počet dostupných kreditov	Minimálne normy
1	Žiadne

Cieľ

Uznávať a podporovať opatrenia na optimalizáciu materiálovej efektívnosti s cieľom minimalizovať vplyv používania materiálov a odpadu na životné prostredie bez toho, aby sa znížila stabilita konštrukcie, trvanlivosť alebo životnosť budovy.

Kritériá hodnotenia

Na preukázanie súladu sa vyžaduje:

Jeden kredit

1 Boli identifikované možnosti a preskúmané a implementované vhodné opatrenia na optimalizáciu efektívnejšieho využívania materiálov pri navrhovaní, obstarávaní, výstavbe, údržbe a ukončení životnosti budov.

2 Uvedené vykonáva projektový alebo stavebný tím po konzultácii s príslušnými stranami (pozri CN3 na nasledujúcej strane) v každej z nasledujúcich etáp projektových prác:
- 2.a Príprava a prehľad
- 2.b Koncepčný návrh
- 2.c Vypracovaný návrh
- 2.d Technický návrh
- 2.e Výstavba

Kontrolné zoznamy a tabuľky

Žiadne.

Poznámky o súlade

Ref	Definície pojmov	Popis
Hrubá stavba a jadro (iba nebytové a rezidenčné inštitúcie)		
CN1	Príslušné hodnotiace kritériá	Obidve možnosti: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy Pozri Príloha D - Posúdenie plášťa a jadra projektu na strane 409 Podrobnejší opis možností hodnotenia plášťa a jadra.

Ref	Definície pojmov	Popis
Obytné - čiastočne a úplne vybavené		
CN2	Príslušné hodnotiace kritériá - Obydlia pre jednu rodinu a obydlia pre viaceré rodiny	Obidve možnosti: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy. Pozri Prílohu E – Uplatniteľnosť BREEAM New Construction na obydlia pre jednu rodinu a obydlia pre viaceré rodiny, čiastočne a úplne vybavené na str. 412, kde nájdete podrobnejší popis možností hodnotenia bytových domov.
Všeobecné		
CN3	Príslušné strany	Konzultácie by sa mali uskutočniť so všetkými stranami (v závislosti od fázy projektu), ktoré sa podieľajú na návrhu, špecifikácii alebo výstavbe budovy. Patria sem okrem iného: 1. Zákazník alebo developer 2. Poradca pre náklady 3. Architekt 4. Stavební inžinieri 5. Inžinieri stavebných služieb - strojárstvo, elektrotechnika 6. Hlavný dodávateľ 7. Dodávateľ búracích alebo demolačných prác 8. Environmentálny poradca 9. Poradca pre projektový manažment 10. Výrobcovia alebo dodávatelia materiálov alebo komponentov.
CN3.1	Požiadavky na dôkazy	Dôkazy potrebné na preukázanie súladu sa líšia v závislosti od fázy práce; príklady, ako by sa mohla zohľadniť materiálová účinnosť, sú uvedené v tabuľke 48 na nasledujúcej strane. Na preukázanie zhody musia posudzovatelia BREEAM zabezpečiť minimálne splnenie opatrení a výstupov v stĺpci „dôkazy“.

Metodológia

Žiadne.

Dôkazová dokumentácia

Kritériá	Predbežná fáza projektu	Záverečná fáza po výstavbe
Všetky	Pozri poznámku o zhode CN3.1 vyššie, na preukázanie súladu s požiadavkami kritérií možno použiť jeden alebo viacero vhodných typov dôkazov.	

Dodatočné informácie

Relevantné definície

Účinnosť materiálov

Proces realizácie stavebného projektu s cieľom umožniť čo najefektívnejšie využitie materiálov počas životného cyklu budovy a jej komponentov. To zahŕňa použitie menšieho množstva materiálov, opätovné použitie existujúcich materiálov na demoláciu a rozobratie a prípadne obstaranie materiálov s vyšším obsahom recyklovaných materiálov. Môže tiež zahŕňať prijatie alternatívnych spôsobov navrhovania alebo výstavby, ktoré vedú k nižšej spotrebe materiálov a nižšej miere plytvania vrátane výroby mimo staveniska a používania vopred zmontovaných servisných modulov.

Ďalšie informácie

Tabuľka 48: Nasledujúca tabuľka vychádza zo zásad uvedených v častiach 1 a 2 série noriem BS 8895 a uvádza niekoľko príkladov, ako možno zohľadniť efektívnosť materiálu v každej fáze práce. Minimálne opatrenia uvedené v stĺpci „dôkazy“ boli splnené, aby sa preukázal súlad s danou otázkou.

Fáza práce	Cieľ	Účastníci	Opatrenie	Dôkazová dokumentácia
Príprava a prehľad	Stanovenie požiadaviek, ktoré budú podkladom pre rozhodnutia v priebehu návrhu a výstavby.	Klient alebo zástupca klienta so vstupom od projektové ho tímu.	Posúďte lokalitu, pravdepodobný rozsah projektu a funkčné a estetické požiadavky klienta, aby ste stanovili ciele efektívnosti materiálu pre projekt.	Špecializovaná správa, ktorá stanovuje jasný rámec na usmernenie činností v oblasti materiálovej efektívnosti počas návrhu a výstavby projektu. V správe by sa mali stanoviť zámery, ciele, ukazovatele výkonnosti, príležitosti, obmedzenia a zodpovednosti, ktorými sa budú riadiť činnosti v oblasti materiálovej efektívnosti.
Koncepčný návrh	Vypracujte stratégie na implementáciu alebo opatrenia týkajúce sa požiadaviek na efektívnosť materiálov stanovených v rámci etapy Príprava a prehľad.	Projektový tím.	Usporiadajte workshopy s projektovým tímom s cieľom identifikovať možnosti návrhu na zníženie alebo optimalizáciu používania materiálov prostredníctvom návrhu, špecifikácie, stavebných techník atď.	Zápisnice z uskutočnených seminárov. Dokumentácia preukazujúca, ako bola spätná väzba z workshopu zapracovaná do koncepcie projektu, napríklad: rámcová špecifikácia výberu materiálov, správa o predpokladanom znížení množstva materiálu.

Fáza práce	Cieľ	Účastníci	Opatrenie	Dôkazová dokumentácia
Vyvinutý návrh a technický návrh	Vypracované koncepcie návrhu na základe poznatkov z koncepčného návrhu.	Projektový tím.	Začlenenie opatrení a stratégií materiálovej efektívnosti identifikovaných v koncepčnom návrhu do architektonického, konštrukčného návrhu a návrhu služieb budovy podľa potreby. Preskúmanie výkonnosti v porovnaní s predchádzajúcimi etapami a identifikácia odchýlok.	Správa o odchýlkach z predchádzajúcich etáp. Dokumentácia preukazujúca začlenenie výsledkov z fázy koncepcie, napríklad: projektové výkresy alebo špecifikácie preukazujúce vykonané opatrenia na zvýšenie účinnosti materiálov.
Výstavba	Zavedenie opatrení na zvýšenie materiálovej efektívnosti v rámci výstavby.	Hlavný dodávateľ.	Implementácia opatrení a stratégií materiálovej efektívnosti identifikovaných v predchádzajúcich fázach výstavby budovy a identifikácia odchýlok. efektívnosti podľa potreby pre túto fázu.	Správa o odchýlkach z predchádzajúcich etáp. Zdokumentované dôkazy o činnosti na ďalšiu identifikáciu efektívnosti v tejto fáze, napríklad: zápisnice zo stretnutí, školenia, dokumentácia o znižovaní odpadu atď.

Optimalizácia používania materiálu

Optimalizácia využívania materiálov je jedným z kľúčových cieľov stratégie udržateľnosti v oblasti efektívneho využívania zdrojov. To zahŕňa rôzne zložky na zabezpečenie efektívneho využívania materiálov, predchádzania vzniku odpadu a jeho znižovania, minimálneho poškodzovania životného prostredia a vyčerpávania prírodných zdrojov. Cieľom tejto novej oblasti systému BREEAM je povzbudiť a podporiť snahy o zníženie množstva materiálov použitých pri navrhovaní budov bez toho, aby bola ohrozená stabilita konštrukcie a iné faktory výkonnosti. Spoločnosť BRE má v úmysle ďalej rozvíjať kritériá hodnotenia tejto problematiky v budúcich aktualizáciách systému BREEAM, a preto by spoločnosť BRE privítala akúkoľvek spätnú väzbu k uplatňovaniu tejto problematiky hodnotenia, ktorá by pomohla pri vývoji kritérií a zahrnutí dodatočných usmernení týkajúcich sa súladu do budúcich verzií systému BREEAM.

Nástroje na usmernenie stratégií materiálovej efektívnosti

Nižšie sú uvedené rámce na zváženie a preskúmanie efektívneho využívania zdrojov pri navrhovaní a výstavbe.

BS 8895 Navrhovanie materiálovej efektívnosti v stavebných projektoch

V tejto norme sú uvedené konkrétne procesy materiálovej efektívnosti, kľúčové úlohy, členovia tímu a ich zodpovednosti a výstupy špecifické pre každú pracovnú etapu spolu s podpornými usmerneniami a nástrojmi. Slúži ako užitočný nástroj, ktorý pomáha projektovému tímu pri vývoji a implementácii stratégií materiálovej efektívnosti pre ich projekty.

Norma sa skladá z nasledovných štyroch častí:

- Časť 1: Kódex postupov pre strategické vymedzenie a prípravu a prehľad [67] (uverejnený),
- časť 2: Kódex postupov pre koncepciu a vypracovaný návrh [68] (zverejnené)
- Časť 3: Kódex postupov pre technické navrhovanie (plánuje sa vypracovať)
- Časť 4: Kódex postupov pre prevádzku, rekonštrukciu (plánuje sa vypracovať).

WRAP

Návrh na odstránenie odpadu: Príručka projektového tímu pre budovy [69] V tomto dokumente sa uvádza päť zásad návrhov na odstránenie odpadu, ktoré sa môžu uplatniť počas vývoja návrhu a slúžia ako podnety na preskúmanie možností materiálovej efektívnosti pri navrhovaní.

Odpad

Zhrnutie

Táto kategória podporuje udržateľné nakladanie so stavebným a prevádzkovým odpadom a s odpadom z budúcej údržby a opráv súvisiacich s konštrukciou budovy (a jeho opätovné použitie, ak je to možné). Podporou správnych projektových a stavebných postupov sa otázky v tejto časti zameriavajú na zníženie množstva odpadu vznikajúceho pri výstavbe a prevádzke budovy, čím sa podporuje jeho odklon od skládky. Zahŕňa uznanie opatrení na zníženie budúceho odpadu v dôsledku potreby zmeny budovy vzhľadom na budúce zmeny klímy.

Sumárna tabuľka kategórie

Vydanie	Kredity	Zhrnutie kreditov
Wst 01 Nakladanie s odpadmi z výstavby	3	Vypracovanie plánu riadenia stavebných zdrojov. Zníženie množstva stavebného odpadu súvisiaceho s výstavbou na stavenisku a výrobou alebo spracovaním mimo staveniska. Odklonenie stavebného odpadu, ktorý nie je nebezpečný (na stavenisku a vyhradená výroba alebo výroba mimo staveniska), odpadu z demolácií a výkopov (ak je to vhodné), ktorý vznikol v rámci projektu, od skládky.
Wst 02 Recyklované kamenivo	1	Percentuálne úrovne recyklovaného alebo sekundárneho kameniva špecifikované v porovnaní so stanovenými cieľmi.
Wst 03a Prevádzkový odpad	1	Zabezpečenie vhodného priestoru a zariadení, ktoré umožnia triedenie a skladovanie prevádzkového množstva recyklovateľného odpadu vyprodukovaného posudzovanou budovou alebo jednotkou, jej obyvateľmi a činnosťami.
Wst 03b Prevádzkový odpad	2	Zabezpečenie vhodného priestoru a zariadení, ktoré umožnia triedenie a skladovanie prevádzkového množstva recyklovateľného odpadu vyprodukovaného posudzovanou budovou alebo jednotkou, jej obyvateľmi a činnosťami.
Wst 04 Špekulatívne dokončovacie práce	1	Špecifikácia povrchových úprav podláh a stropov len po dohode s užívateľom alebo v prípade prenajatých priestorov, kde nie je známy budúci užívateľ, sa koberce, iné povrchové úpravy podláh a stropov inštalujú len v predvádzacích priestoroch s cieľom znížiť plytvanie.
Wst 05 Prispôsobenie sa zmene klímy	1	Podporovať zváženie a realizáciu opatrení na zmiernenie vplyvu extrémnejších poveternostných podmienok vyplývajúcich zo zmeny klímy počas životnosti budovy.
Wst 06 Funkčná prispôsobivosť	1	Podporovať zváženie a realizáciu opatrení na prispôsobenie sa budúcim zmenám vo využívaní budovy a jej systémov počas jej životnosti.

Wst 01 Nakladanie so stavebným odpadom (všetky budovy)

Počet dostupných kreditov	Minimálne normy
3	Áno

Cieľ

Podporovať efektívne využívanie zdrojov prostredníctvom účinného a vhodného nakladania so stavebným odpadom.

Kritériá hodnotenia

Táto požiadavka je rozdelená do dvoch častí:

- Zníženie množstva stavebného odpadu (2 kredity)
- Odklon zdrojov od skládky (1 kredit)

Na preukázanie súladu sa vyžaduje:

Zníženie množstva stavebného odpadu

Jeden kredit

1 V prípade potreby sa ciele pre množstvo nie nebezpečného a nebezpečného odpadu vyprodukovaného na mieste stanovujú v m^3 odpadu na 100 m^2 alebo v tonách odpadu na 100 m^2.

2 V súlade s cieľmi sú zavedené postupy na minimalizáciu nie nebezpečného a nebezpečného odpadu.

3 Množstvo vzniknutého stavebného odpadu sa monitoruje a ciele sa pravidelne prehodnocujú.

4 Projektový alebo riadiaci tím staveniska vymenoval osobu zodpovednú za realizáciu vyššie uvedených opatrení.

5 Pred demoláciou sa vykoná audit všetkých existujúcich budov, konštrukcií alebo spevnených plôch, aby sa určilo, či je možná ich obnova alebo opätovné použitie, a ak nie, aby sa maximalizovalo zhodnotenie materiálu z demolácie na ďalšie použitie, pričom sa uprednostnia vysoko kvalitné alebo hodnotné aplikácie. Audit musí zahŕňať:
   - 5.a Identifikácia kľúčových renovácií a demolácia materiálov
   - 5.b Potenciálne aplikácie a všetky súvisiace problémy týkajúce sa opätovného použitia a recyklácie kľúčových materiálov z renovácie a demolácie.

6 Na základe zhromaždených údajov nahláste množstvo odpadu vyprodukovaného na 100 m^2 (hrubej vnútornej podlahovej plochy) v m^3 (pričom objem je skutočný objem odpadu, nie objemový) alebo v tonách z procesu výstavby prostredníctvom nástroja na hodnotenie a podávanie správ BREEAM.

Jeden kredit

7 Vyššie uvedené kritériá 1 až 6 vyššie (ak sa uplatňujú) sú splnené.

8 Sú zavedené postupy na triedenie, opätovné použitie a recykláciu stavebného odpadu do najmenej piatich definovaných skupín odpadu (pozri tabuľku 50 na strane 308) buď na stavenisku, alebo mimo staveniska prostredníctvom licencovaného externého dodávateľa.

Presmerovanie zdrojov od skládok

Jeden kredit

9 Významné množstvo stavebného a demolačného odpadu, ktorý nie je nebezpečný a ktorý vznikol v rámci projektu, bolo odklonené od skládky podľa údajov uvedených v tabuľke 49 nižšie:

Tabuľka 49: Ciele BREEAM pre presmerovanie od skládky podľa národnej miery zhodnocovania stavebného a demolačného odpadu (C&D)

Národná miera zhodnotenia odpadov *	Typ odpadu	Jeden kredit	Prikladné úrovne
		Cieľové hodnoty BREEAM pre presmerovanie od skládky	
< 50% (hmotnostných) *	Stavebný priemysel	≥ 60% (hmotnostných) alebo ≥ 50% (objemových)	≥ 75% (hmotnostných) alebo ≥ 65% (objemových)
≥ 50% (hmotnostných)*	Stavebný priemysel	≥ 10 % zlepšenie oproti národnej úrovni (až 95 % celkového vzniknutého odpadu sa presmeruje na skládku)	≥ 35 % zlepšenie oproti národnej úrovni (až 95 % celkového vzniknutého odpadu sa presmeruje na skládku)
< 60% (hmotnostných) *	Búracie práce	≥ 70% (hmotnostných) alebo ≥ 60% (objemových)	≥ 75% (hmotnostných) alebo ≥ 65% (objemových)
≥ 60 % (hmotnostných)*	Búracie práce	≥ 10 % zlepšenie oproti národnej úrovni (až 95 % celkového vytvoreného odpadu sa presmeruje od skládky)	≥ 95 % celkového množstva vytvoreného odpadu sa presmeruje od skládky
*Ak sa národná miera zhodnocovania odpadov uvádza pre stavebný aj demolačný odpad spolu, mal by sa použiť rovnaký cieľ pre oba druhy odpadov. Na to, aby projekt získal kredit, musí stavebný aj demolačný odpad (vykazovaný oddelene) spĺňať cieľovú hodnotu.			

10 Odpadové materiály sa budú triediť do jednotlivých kľúčových skupín odpadov (podľa prúdov odpadov vznikajúcich v rámci prác) buď na stavenisku, alebo mimo staveniska prostredníctvom oprávneného dodávateľa na zhodnotenie (informácie o skupinách odpadov sú uvedené v tabuľke 50 na nasledujúcej strane).

11 Na základe zozbieraných údajov nahláste prostredníctvom nástroja na hodnotenie a podávanie správ BREEAM nasledujúce údaje (v prípade potreby sa to vzťahuje na stavebný odpad a odpad z demolácií):
- 11.a Miesto určenia odpadu, ktorý nie je nebezpečný a opúšťa lokalitu (t. j. adresa a zariadenie) a
- 11.b Úroveň odpadu odkloneného od skládky ako percento z celkového množstva vzniknutého odpadu ALEBO m^3 odpadu na 100m^2 ALEBO ton odpadu na 100m^2 (pozri Plnenie požiadaviek na strane 309).

Kritériá prikladnej úrovne

Nasleduje prehľad príkladných kritérií úrovne na získanie inovačných kreditov pre túto oblasť BREEAM:

12 Vyššie uvedené kritériá 1 až 11 vyššie (ak sa uplatňujú) sú splnené.

13 Percento stavebného a demolačného odpadu, ktorý nie je nebezpečný (ak je to relevantné), odkloneného od skládky, spĺňa alebo prekračuje percentuálnu referenčnú hodnotu príkladnej úrovne (uvedenú v tabuľke 49 vyššie).

Kontrolné zoznamy a tabuľky

Aj keď niektoré lokality môžu mať obmedzenú infraštruktúru, malo by byť možné opätovne použiť a recyklovať päť základných materiálov (keramiku, výkopový materiál, sadrokartón, betón a drevo) na miestnej úrovni, preto sa druhý kredit udelí len vtedy, ak sa odpad z C&D triedi aspoň do piatich skupín odpadu (pozri : Kľúčové príklady skupín odpadov uvedené nižšie) alebo minimum požadované miestnymi predpismi, podľa toho, čo je prísnejšie. V prípade, že existuje značné množstvo kovov, ktoré sa majú opätovne použiť alebo recyklovať, môže to nahradiť najmenšiu z piatich uvedených kategórií.

Tabuľka 50: Príklady kľúčových skupín odpadov

Kľúčová skupiny	Príklady
Tehly	Tehly
Betón	Rúry, obrubníky, dlažobné dosky, betónová drvina, prefabrikáty a in situ
Izolácia	Sklenené vlákna, minerálna vlna, penový plast
Balenie	Nádoby s farbou, palety, kartón, káblové bubny, baliace pásky, polyetylénové fólie
Drevo	Mäkké drevo, tvrdé drevo, výrobky z dosák, ako sú preglejky, drevotrieskové dosky, drevovláknité dosky strednej hustoty (MDF)
Elektrické a elektronické zariadenie	Elektrické a elektronické televízory, chladničky, klimatizačné jednotky, svietidlá
Jedáleň alebo kancelária	Kancelársky odpad, odpad z jedální, organický odpad, napr. potravinový odpad
Oleje	Hydraulický olej, motorový olej, mazací olej
Asfalt a decht	Bitúmen, uhoľné dechty, asfalt
Keramika	Obkladačky, tehly, keramické sanitárne výrobky atď.
Vykopaný materiál (všetok inertný)	Zmiešaná suť (zmes betónu, keramiky a inertnej zeminy, hliny, skál atď.)
Ornica	Ornica
Sklo	Sklo
Kovy	Radiátory, káble, drôty, tyče, plechy
Sadra	Sadrokartón, omietka, sadra, cement, vláknocementové dosky, malta

Kľúčová skupiny	Príklady
Plasty	Rúry, obklady, rámy, neobalové fólie
Nábytok	Stoly, stoličky, písacie stoly, pohovky
Zeminy	Pôdy, íly, piesok, štrk, prírodný kameň
Tekutiny	Nebezpečné farby, riedidlá, prípravky na ošetrenie dreva
Nebezpečný odpad	Ako je definované vo vnútroštátnych právnych predpisoch alebo ako je definované v Zozname nebezpečných odpadov (HWL) Európskeho katalógu odpadov (EWC). Vyžaduje sa dodržiavanie prísnejšieho z týchto dvoch predpisov.
Podlahové krytiny (mäkké)	Koberce, vinylové podlahy
Architektonické prvky	Strešné škridly, obnovené tehly, krby
Zmiešaný odpad a iný odpad	Vždy, keď je to možné, by sa malo vyvinúť úsilie na kategorizáciu odpadu do vyššie uvedených kategórií

Plnenie požiadaviek

Ref	Definície pojmov	Popis
Hrubá stavba a jadro (iba nebytové a rezidenčné inštitúcie)		
CN1	Príslušné hodnotiace kritériá	Obidve možnosti: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy Pozri Príloha D - Posúdenie plášťa a jadra projektu na strane 409 Podrobnejší opis možností hodnotenia plášťa a jadra.
Obytné - čiastočne a úplne vybavené		
CN2	Príslušné hodnotiace kritériá - Obydlia pre jednu rodinu a obydlia pre viaceré rodiny	Obidve možnosti: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy. Pozri Prílohu E – Uplatniteľnosť BREEAM New Construction na obydlia pre jednu rodinu a obydlia pre viaceré rodiny, čiastočne a úplne vybavené na str. 412, kde nájdete podrobnejší popis možností hodnotenia bytových domov.
Všeobecné		
CN3	Prístavby k existujúcim budovám	V prípade posudzovania prístavieb k existujúcim budovám, keď sa posudzuje len prístavba, musí byť v súlade len prístavba.

Ref	Definície pojmov	Popis
CN3.1	Odklon od skládky	Odklon od skládky zahŕňa: nasledovné: 1. Opätovné použitie materiálu na mieste (in situ alebo pre nové aplikácie) 2. Opätovné použitie materiálu na iných stavbách 3. Záchrana alebo regenerácia materiálu na opätovné použitie 4. Vrátenie materiálu dodávateľovi prostredníctvom systému spätného odberu 5. Zhodnotenie materiálu zo stavby autorizovaným dodávateľom pre nakladanie s odpadom a jeho následná recyklácia alebo odoslanie na energetické zhodnotenie.
CN3.2	Používanie BRE Smartwaste	Kritériá 1 - 4 na strane 306 sú splnené, ak objednávateľ alebo zhotoviteľ potvrdí, že na plánovanie a monitorovanie sa bude používať systém BRE SMARTWaste.
CN3.3	Obmedzený priestor na triedenie a skladovanie	Ak je priestor na stavenisku príliš obmedzený na to, aby sa odpadové materiály mohli separovať, môže sa na separovanie a spracovanie recyklovateľných materiálov využiť dodávateľ odpadu mimo miesta. Podobne by sa mohli využiť aj systémy spätného odberu výrobcov. V takom prípade je potrebné predložiť dostatočné písomné dôkazy, ktoré preukážu, že triedenie materiálov sa vykonáva na dohodnutej úrovni a že materiály sa podľa potreby opätovne používajú alebo recyklujú.
CN3.4	Národná miera zhodnocovania stavebného a demolačného odpadu	Ak sú známe národné miery zhodnotenia stavebných a demolačných odpadov, predložte ich ako súčasť procesu ASWL. Ak nie sú známa národná miera zhodnotenia stavebného a demolačného odpadu, projektový tím by mal predpokladať, že sú 50 % pre výstavbu aj demoláciu. Dosiahnutie 10 % zlepšenia si preto vyžaduje, aby projektový tím alebo dodávateľ odklonil 60 % hmotnosti stavebného odpadu, ktorý nie je nebezpečný, od skládok.
CN3.5	Odpad z dočasných podporných konštrukcií	Niektoré projekty si vyžadujú dočasné práce, ktoré nepatria do rozsahu bežných stavebných metód alebo postupov, napríklad projekty, ktoré si vyžadujú dočasné podpery z oceľových konštrukcií na mieru na zachovanie fasády. Ak je možné preukázať, že použité komponenty a materiály budú po použití opätovne použité alebo, ak to nie je možné , recyklované, potom môžu byť vylúčené z hodnotenia znižovania množstva stavebného odpadu a odklonu od skládkovania v rámci tohto problému. Stratégia na zabezpečenie návrhu dočasných prác efektívne využívajúcich zdroje a vysvetlenie opätovného použitia alebo recyklácie príslušných materiálov sa však musia uviesť v pláne odpadového hospodárstva na stavenisku vrátane úplného odôvodnenia výnimky a poskytnúť spoločnosti BRE Global. Toto odôvodnenie preskúma spoločnosť BRE Global v každom jednotlivom prípade a musí byť schválené pred udelením týchto kreditov.

Metodológia

Žiadna.

Dôkazová dokumentácia

Kritériá	Predbežná fáza projektu	Záverečná fáza po výstavbe
Všetky	Kópia špecifikácie alebo zmluvy alebo iného formálneho dokumentu potvrdzujúceho postupy nakladania s odpadmi vrátane recyklácie a cieľov ALEBO list od klienta alebo jeho zástupcu. V prípade potreby kópiu auditu pred demoláciou.	Kópia postupov pre odpad vrátane recyklácie a stanovených cieľov. Monitorovacie záznamy alebo správa. V prípade potreby kópiu auditu pred demoláciou.

Dodatočné informácie

Relevantné definície

Vhodné ciele

Tieto hodnoty sa môžu stanoviť podľa osvedčených postupov (ak sú k dispozícii) a budú závisieť od druhu odpadu a možností jeho opätovného využitia na mieste. Ciele by sa mohli stanoviť aj na zlepšenie údajov z podobných minulých projektov alebo projektov, ktoré sa snažia dosiahnuť cieľ spoločnosti. Projektový tím by mal zdôvodniť, prečo sa ciele považujú za vhodné. Cieľ sa v rámci tejto problematiky NEPOVAŽUJE za „vhodný cieľ“ len preto, že je dosiahnuteľný. Poznámka: Ciele a merania by nemali zahŕňať odpad z demolácií a výkopov, pretože ten sa v jednotlivých projektoch líši (a je zahrnutý v zápočte „odklon od skládky“). Ďalšie informácie o tom, ako stanoviť vhodné ciele, nájdete na webovej stránke Plán SMARTWaste.

Inertný odpad

Odpad sa považuje za inertný, ak:

1. Nepodlieha žiadnym významným fyzikálnym, chemickým alebo biologických zmenám;
2. Nerozpúšťa sa, nehorí ani inak fyzikálne alebo chemicky nereaguje , nerozkladá sa biologicky ani nepriaznivo neovplyvňuje iné látky, s ktorými prichádza do styku , spôsobom, ktorý by mohol spôsobiť znečistenie životného prostredia alebo poškodenie ľudského zdravia a
3. Jeho celková vylúhovateľnosť a obsah znečisťujúcich látok a ekotoxicita jeho výluhov sú nevýznamné a najmä neohrozujú kvalitu povrchových alebo podzemných vôd (prevzaté zo smernice Európskeho spoločenstva (ES) 1999/31/ES o skládkach odpadov).

Audity pred demoláciou

Poskytujú podrobné informácie o materiáloch, ktoré sa dajú regenerovať a recyklovať, čím sa znižujú náklady a vplyv likvidácie odpadu na životné prostredie, prinášajú úspory z opätovného použitia existujúcich materiálov a zisk z predaja tých, ktoré nie sú potrebné. Tieto:

1. Identifikujú objemy odpadov, aby vaša spoločnosť mohla naplánovať činnosti „opätovného použitia, recyklácie a zhodnotenia“ pred začatím prác.
2. Sú prispôsobené pre každý projekt demolácie vrátane:
   a. Identifikácia trhov pre recyklovaný alebo zhodnotený materiál
   b. Identifikácia potenciálu rekultivácie a opätovného využitia na stavenisku aj mimo neho
   c. Miestne a vnútroštátne oceňovanie materiálu
   d. Odporúčania týkajúce sa triedenia
   e. Environmentálna kvantifikácia.
3. Zvýšte efektivitu materiálu a práce, znížte množstvo odpadu a maximalizujte zisk.

Ďalšie informácie

Plán nakladania s odpadmi na stavenisku

Implementácia plánu nakladanie s odpadmi na stavenisku (SWMP) môže pomôcť pri nakladaní so stavebným odpadom, ktorý vzniká na stavenisku. Cieľom SWMP je podporovať efektívne využívanie zdrojov a predchádzať nezákonným činnostiam v oblasti odpadov. Efektívne využívanie zdrojov zahŕňa minimalizáciu odpadu pri zdroji a zabezpečenie toho, aby klienti, projektanti a hlavní dodávatelia posúdili použitie, opätovné použitie a recykláciu materiálov a výrobkov na stavenisku aj mimo neho. SWMP pozostáva z kombinácie záväzkov týkajúcich sa:

1. Návrhov na odstránenie odpadu
2. Zníženia množstva odpadu vznikajúceho na stavenisku
3. Vypracovania a zavedenia postupov na triedenie a opätovné použitie alebo recykláciu stavebného odpadu na stavenisku a mimo neho (podľa potreby).

Údaje získané z merania a monitorovania stavebného odpadu na stavenisku sa potom môžu použiť na kontrolu výkonnosti v porovnaní s cieľmi a referenčnými hodnotami, na analýzu účinnosti všetkých zavedených riešení a na snahu o neustále zlepšovanie.

SMARTWaste

SMARTWaste je online nástroj na podávanie environmentálnych správ pre stavebníctvo. Umožňuje organizáciám efektívne zachytávať, monitorovať a vykazovať nasledovné:

- Odpady (vrátane plánov nakladania s odpadom a auditov pred demoláciou)
- Energia (vrátane prepočtu na emisie oxidu uhličitého)
- Voda
- Zodpovedne získané materiály (vrátane dreva) Doprava
- Systém zodpovedných dodávateľov.

SMARTWaste, ktorý sa používa na splnenie kritérií tejto problematiky a ako zdroj dôkazov na preukázanie zhody, pomáha organizáciám znížiť ich vplyv na životné prostredie, čím sa výrazne šetrí čas a náklady.

Viac informácií o SMARTWaste nájdete na webstránke: www.smartwaste.co.uk.

Wst 02 Recyklované

kamenivo (všetky budovy)

Počet dostupných kreditov	Minimálne normy
1	Žiadne

Cieľ

Rozpoznať a podporiť používanie recyklovaných a sekundárnych agregátov, čím sa zníži dopyt po pôvodných materiáloch a optimalizuje sa materiálová účinnosť v stavebníctve.

Kritériá hodnotenia

Na preukázanie súladu sa vyžaduje:

Jeden kredit - Recyklované kamenivo

1 Najmenej 25 % vysokokvalitného kameniva (v rámci rozvoja) sa používa ako druhotné alebo recyklované kamenivo. Tento percentuálny podiel sa môže merať pomocou hmotnosti alebo objemu.

2 Recyklované alebo sekundárne kamenivo predstavuje BUĎ
- 2.a Stavebný, demolačný a výkopový odpad získaný na stavenisku alebo mimo neho ALEBO
- 2.b Sekundárne agregáty (pozri Relevantné definície na strane 315)

Kritériá prikladnej úrovne

Nasleduje prehľad príkladných kritérií úrovne na získanie inovačných kreditov pre túto oblasť BREEAM:

3 Ak je celkové množstvo recyklovaného alebo sekundárneho kameniva vyššie ako 50 % (hmotnosti alebo objemu) celkového množstva vysokokvalitného kameniva určeného pre projekt.

4 Doplnkové recyklované alebo sekundárne kamenivo sa nesmie prepravovať cestnou dopravou na vzdialenosť dlhšiu ako 30 km.

Kontrolné zoznamy a tabuľky

Žiadne.

Poznámky o súlade

Ref	Definície pojmov	Popis
Hrubá stavba a jadro (iba nebytové a rezidenčné inštitúcie)		
CN1	Príslušné hodnotiace kritériá	Obidve možnosti: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy Pozri Príloha D - Posúdenie plášťa a jadra projektu na strane 409 Podrobnejší opis možností hodnotenia plášťa a jadra.
Obytné - čiastočne a úplne vybavené		
CN2	Príslušné hodnotiace kritériá - Obydlia pre jednu rodinu a Obydlia pre viaceré rodiny	Obidve možnosti: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy Pozri Prílohu E – Uplatniteľnosť BREEAM New Construction na obydlia pre jednu rodinu a obydlia pre viaceré rodiny, čiastočne a úplne vybavené na str. 412, kde nájdete podrobnejší popis možností hodnotenia bytových domov.
Všeobecné		
CN3	Recyklované kamenivo v betóne	Ak vnútroštátne stavebné predpisy obmedzujú použitie recyklovaného kameniva v betóne (zvyčajne sa vzťahujú na uvedené použitia viazaného kameniva), zodpovednosť za dosiahnutie tohto kreditu nesú neviazané použitia (upozorňujeme, že celkový údaj o kamenive musí stále zahŕňať viazané použitia).
CN3.1	Vnútroštátne obmedzenia týkajúce sa používania recyklovaného kameniva	V krajinách, kde je používanie recyklovaného kameniva obmedzené, sa tento kredit štandardne nedá dosiahnuť. V krajinách, kde je maximálna povolená úroveň recyklovaného kameniva nižšia ako 50 %, je možné získať vzorový kredit, ak je percento použitého recyklovaného kameniva vyššie alebo rovné 35 %. Ak nie je stanovená maximálna regulačná úroveň, na udelenie tohto kreditu je potrebné splniť požiadavku 50 %.
CN3.2	Vnútroštátne usmernenie o osvedčených postupoch pri definovaní granulovaného plnenia a uzatvárania ako vysokokvalitného použitia	ASWL potvrdí všetky schválené vnútroštátne normy týkajúce sa používania vysokokvalitných materiálov. Ak neboli schválené žiadne, na potvrdenie súladu by sa mal použiť kontrolný zoznam A6. Potom by sa mal predložiť na schválenie spoločnosti BRE a ASWL sa aktualizuje.
CN3.3	Recyklované kamenivo mimo staveniska	Ak sa používa recyklované kamenivo zo stavebného, demolačného a výkopového odpadu mimo staveniska, malo by sa vyrábať v súlade s príslušnými normami pre kamenivo.
CN3.4	Kamenivo v aplikáciách vyrábaných mimo staveniska	Ak bolo použitie vysokokvalitného kameniva zahrnuté do žiadostí vyrobených mimo staveniska, kamenivo prítomné v týchto žiadostiach by sa malo zahrnúť do posúdenia tejto oblasti.

Ref	Definície pojmov	Popis
CN3.5	Vzduchom chladená vysokopecná troska ako sekundárne kamenivo	Vzduchom chladená vysokopecná troska sa klasifikuje ako vedľajší produkt (a nie ako odpad), a preto sa môže používať ako kamenivo bez potreby protokolu o kvalite. Použitá troska musí spĺňať požiadavky európskych noriem a noriem pre kamenivo, ktoré sa vzťahujú na konečné použitie (napr. viazaný bitúmen, neviazaný atď.).

Metodológia

Žiadna.

Dôkazová dokumentácia

Kritériá	Predbežná fáza projektu	Záverečná fáza po výstavbe
Všetky	Príslušná časť a ustanovenia špecifikácie budovy alebo zmluvy. Výpočty projektového tímu. Dokumentácia potvrdzujúca zdroj recyklovaného alebo druhotného kameniva a to, že je možné zabezpečiť požadované množstvo. Príslušná dokumentácia k zoznamu schválených noriem a váh, napr. špecifikácia, normy atď.	Výpočty s podrobnými údajmi o hmotnostiach (alebo objemoch) a druhoch kameniva pre každú aplikáciu. Dodacie listy (alebo potvrdenie od dodávateľa) o druhoch a množstvách kameniva dodaného na stavenisko. Potvrdenie, že materiály spĺňajú príslušnú normu definovanú v zozname schválených noriem a váh.

Dodatočné informácie

Relevantné definície

Použitie vysokokvalitného kameniva

Za použitie vysokokvalitného kameniva sa považujú:

Viazané

1. Rám konštrukcie
2. Podlahové dosky vrátane dosiek prízemia
3. Asfaltové alebo hydraulicky viazané podklady, spojivá a povrchové vrstvy pre spevnené plochy a cesty.

Neviazané

1. Asfaltové alebo podobné povrchy ciest
2. Granulovaná výplň a uzáver
3. Podložka pod potrubie
4. Podklady a základy budov
5. Štrkové terénne úpravy.

Použitie kameniva nízkej kvality

Drvené murivo používané ako výplňový materiál na všeobecné terénne úpravy sa nepovažuje za vysokokvalitné. Tento postup je v súčasnosti na staveniskách bežný z dôvodu zvýšených nákladov na skládky.

Recyklované kamenivo

Recyklované kamenivo je kamenivo získané opätovným spracovaním materiálov, ktoré sa predtým použili v stavebníctve, napr. drvený betón alebo murivo zo stavebného a demolačného odpadu.

Sekundárne kamenivo

1. Odpad kaolínu
2. Bridlicové nadložie
3. Pulverizovaný palivový popol (PFA)
4. Mletá granulovaná vysokopecná troska (GGBFS)
5. Vzduchom chladená vysokopecná troska
6. Oceľová troska
7. Popolček zo spodnej časti pece (FBA)
8. Spodný popol zo spaľovne
9. Zlievarenské piesky
10. Recyklované sklo
11. Recyklovaný plast
12. Vyhorená ropná bridlica
13. Uhoľná hlušina
14. Zvyšky zo spracovania tuhého komunálneho odpadu.

Ďalšie informácie

Žiadne.

Wst 03a Prevádzkový odpad

(nebytové a bytové zariadenia)

Pre obytné budovy pozri Wst 03b Prevádzkový odpad na strane 322.

Počet dostupných kreditov	Minimálne normy
1	Áno

Cieľ

Rozpoznať a podporovať poskytnutie vyhradených skladovacích zariadení pre toky recyklovateľných odpadov z prevádzky, ktoré súvisia s prevádzkou budovy, aby sa tento odpad odklonil zo skládky alebo spaľovanie.

Kritériá hodnotenia

Na preukázanie súladu sa vyžaduje:

Jeden kredit - Prevádzkový odpad

1 Vyhradený priestor je určený na triedenie a skladovanie prevádzkového množstva recyklovateľného odpadu vyprodukovaného posudzovanou budovou alebo jednotkou, jej obyvateľmi a činnosťami. Tento priestor musí byť:
- 1.a Jasne označený, aby sa uľahčilo triedenie, skladovanie a zber recyklovateľných tokov odpadu.
- 1.b Prístupný pre užívateľov budov alebo prevádzkovateľov zariadení na ukladanie materiálov a odvoz zmluvnými partnermi v oblasti odpadového hospodárstva
- 1.c S kapacitou zodpovedajúcou typu budovy, veľkosti, počtu jednotiek (ak je to relevantné) a predpokladanému objemu odpadu, ktorý vznikne pri denných alebo týždenných prevádzkových činnostiach a miere obsadenosti.

2 Tam, kde je pravdepodobná trvalá objemová produkcia príslušných prevádzkových prúdov odpadov, napr. veľké množstvo obalových alebo kompostovateľných odpadov vznikajúcich pri užívaní a prevádzke budovy, sú k dispozícii nasledovné zariadenia:
- 2.a Statické lisy alebo balíky na odpad; umiestnené v servisnej zóne alebo vo vyhradenom priestore na nakladanie s odpadom
- 2.b Nádoby na kompostovanie vhodného organického odpadu, ktorý vzniká pri každodennej prevádzke a používaní budovy; ALEBO primeraný priestor na skladovanie separovaného potravinového odpadu a kompostovateľného organického materiálu pred jeho zberom a dodaním do alternatívneho kompostovacieho zariadenia
- 2.c Ak sa má organický odpad skladovať alebo kompostovať na mieste, v blízkosti zariadenia alebo v jeho vnútri sa nachádza vodovodný kohútik na čistiace a hygienické účely.

Okrem toho len pre rezidenčné inštitúcie so samostatnými bytmi

3 Každý byt má k dispozícii tri vnútorné skladovacie kontajnery, a to nasledovne:
- 3.a Minimálna celková spoločná kapacita 30 litrov
- 3.b Žiadna samostatná nádoba menšia ako 7 litrov
- 3.c Všetky kontajnery vo vyhradenej neobmedzujúcej polohe
- 3.d Okrem kontajnerov na recykláciu sú k dispozícii aj kontajnery na nerecyklovateľný odpad.

4 Zariadenia na domáce kompostovanie a informačný leták o domácom kompostovaní sú k dispozícii v kuchynskej časti každého samostatného obydlia.

Okrem toho len pre rezidenčné zariadenia s individuálnymi spálňami a spoločnými zariadeniami

5 Vyššie uvedené požiadavky na skladovanie (kritérium 3 na predchádzajúcej strane) pre samostatné obydlia alebo obytné jednotky sú splnené na každých šesť spální.

6 Sklad recyklovateľných odpadov je umiestnený na vyhradenom mieste, ktoré neprekáža:
- 6.a Spoločné kuchyne ALEBO
- 6.b Ak nie sú k dispozícii spoločné kuchyne, v spoločnom priestore, ako sú spoločné salóniky alebo technické priestory.

7 Zariadenia na domáce kompostovanie a informačný leták o domácom kompostovaní sú k dispozícii v kuchynskom kúte alebo spoločnom priestore pre každú jednotlivú spálňu a spoločné zariadenie samostatného, lôžkového bytu alebo spoločnej kuchyne.

Kontrolné zoznamy a tabuľky

Žiadne.

Poznámky o súlade

Ref	Definície pojmov	Popis
Hrubá stavba a jadro (iba nebytové a rezidenčné inštitúcie)		
CN1	Príslušné hodnotiace kritériá	**Prevádzkový odpad, kritériá 1 a 2 na predchádzajúcej strane** Obidve možnosti: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy. **Ďalšie kritériá pre rezidenčné inštitúcie, vyššie uvedené kritériá 3 až 7** Obidve možnosti: Tieto kritériá sa neuplatňujú. Podrobnejší popis možností vyhodnotenia hrubej stavby a jadra nájdete v Prílohe D - Posúdenie projektu hrubej stavby a jadra na strane 409.
CN1.1	Konečný užívateľ nie je známy. Pozri kritérium 2 na predchádzajúcej strane	Ak konečný užívateľ nie je známy, ale funkcie alebo priestory posudzovanej budovy naznačujú, že počas prevádzky budovy bude pravdepodobne vznikať veľké množstvo odpadov z obalov alebo kompostovateľných odpadov, napr. ide o maloobchodný alebo priemyselný projekt alebo obsahuje veľké stravovacie zariadenie, potom sa musí zabezpečiť primerane veľký priestor a služby alebo infraštruktúra na umiestnenie príslušných zariadení. Na preukázanie súladu nie je nevyhnutne potrebné poskytnúť alebo nainštalovať samotné zariadenia.
Obytné - čiastočne a úplne vybavené		
CN2	Príslušné hodnotiace kritériá - Obydlia pre jednu rodinu a obydlia pre viaceré rodiny	Obidve možnosti: Táto otázka sa neuplatňuje. Pozri Prílohu E – Uplatniteľnosť BREEAM New Construction na obydlia pre jednu rodinu a obydlia pre viaceré rodiny, čiastočne a úplne vybavené na str. 412, kde nájdete podrobnejší popis možností hodnotenia bytových domov.
Všeobecné		

Ref	Definície pojmov	Popis
CN3	Stanovenie, či vyhradený priestor vyhovuje. Pozri kritériá 1 a 2 na strane 317.	Projektový tím preukáže, že zabezpečenie zariadení na nakladanie s odpadmi pre posudzovanú budovu je primerané vzhľadom na typ budovy, užívateľa (ak je známy), prevádzkovú funkciu a pravdepodobné toky a objemy odpadov, ktoré budú vznikať. Ak nie je možné určiť, aký priestor by sa mal zabezpečiť, mal by sa použiť nasledujúci návod na zabezpečenie minimálneho úložného priestoru: 1. Najmenej 2m² na 1000m² čistej podlahovej plochy pre budovy < 5000m² 2. Minimálne 10m² pre budovy ≥ 5000m² 3. Ďalšie 2m² na 1000m² čistej podlahovej plochy, kde sa poskytuje stravovanie (s dodatočnými minimálne 10m² pre budovy ≥ 5000m²). Čistá podlahová plocha by sa mala zaokrúhliť na najbližších 1000 m².
CN3.1	Prístavby k existujúcim budovám	Ak sa v existujúcej budove nachádzajú zariadenia, môžu sa použiť na posúdenie zhody. Rozsah týchto zariadení musí byť primeraný na pokrytie celkového objemu predpokladaného recyklovateľného odpadu z nových a existujúcich budov.
CN3.2	Posúdenie viacerých budov a budovy, ktoré sú súčasťou širšieho areálu. Pozri kritérium 1.c na strane 317.	Ak sa posúdenie vzťahuje na jednu alebo viac budov alebo jednotiek, ktoré sú súčasťou širšieho areálu alebo komplexu, projektový tím sa môže rozhodnúť preukázať súlad prostredníctvom poskytnutia vyhradených centrálnych skladovacích priestorov a zariadení na nakladanie s odpadom s kapacitou na uskladnenie recyklovateľného odpadového materiálu vyprodukovaného zo všetkých budov a ich činností.
CN3.3	Obmedzený priestor alebo prístup vozidiel pre kompaktor alebo lis. Pozri kritérium 2 na strane 317.	V prípade stavenísk, ktoré majú obmedzený priestor pre statické zariadenia, možno súlad posúdiť na základe poskytnutia primeraného priestoru pre menší prenosný kompaktor alebo lis.
CN3.4	Vnútorné skladovacie priestory	Ak sú zariadenia umiestnené vo vnútri, výška a šírka brány pre vozidlá a manévrovací a nakladací priestor musia byť dimenzované tak, aby sa zabezpečil ľahký prístup pre vozidlá zbierajúce recyklovateľné materiály.
CN3.5	Všeobecný odpad	Plocha na skladovanie recyklovateľných materiálov musí byť zabezpečená spolu s plochami a zariadeniami určenými na nakladanie so všeobecným odpadom a inými zariadeniami na nakladanie s odpadom, napr. kompaktormi, lismi a kompostérmi.
CN3.6	Malé priemyselné jednotky. Pozri kritérium 1 na strane 317.	V prípade priemyselnej budovy alebo areálu pozostávajúceho z viacerých menších jednotiek, z ktorých každá má podlahovú plochu ≤ 200 m², postačujú na získanie tohto kreditu spoločné zariadenia, ktoré spĺňajú vyššie uvedené kritériá pre budovu alebo areál ako celok.
CN3.7	Nákupné centrá a maloobchodné parky. Pozri kritérium 1 na strane 317.	V prípade nákupných centier a maloobchodných parkov musí byť k dispozícii dostatočný priestor pre každého nájomcu a jeho potenciálne množstvo recyklovateľného odpadu. Nájomcovia, ktorí zaberajú veľkú časť centra, t. j. „hlavní nájomcovia“, musia mať vlastné vyhradené vyhovujúce priestory. V prípade menších nájomných jednotiek, ktoré nie sú hlavnými nájomcami, splnia kritériá hodnotenia pre túto otázku BREEAM vyhovujúce centrálne alebo spoločné zariadenia na mieste alebo vyhradené priestory pre jednotlivé jednotky.

Ref	Definície pojmov	Popis
CN3.8	Automatizované systémy zberu odpadu	Tieto sú akceptované ako forma súladu, pokiaľ je zavedený plán riadenia, ktorý môže byť buď verejný (miestny orgán), alebo súkromný a sú splnené požiadavky na oddelenie.
Špecifické pre budovu		
CN4	Informačný leták o domácom kompostovaní (viacbytové budovy). Pozri kritériá 3, 5, 6 a 7 na strane 318.	V letáku musia byť uvedené informácie o: Ako kompostovanie funguje a prečo je dôležité; Materiály, ktoré možno kompostovať (napr. surové šupky zo zeleniny a ovocia, drvený papier, čajové vrecúška atď.) a Podrobnosti o pláne prevádzky a riadenia systému komunitného kompostovania. Ak je v prevádzke systém zberu zeleného alebo kuchynského odpadu, informačný leták poskytnutý miestnym orgánom postačuje na splnenie kritérií informačného letáku.
CN4.1	Rezidenčné inštitúcie: zariadenie podporovaného bývania	Ak nie je možné umiestniť nádoby na recykláciu v spoločnom priestore, ktorý je prístupný obyvateľom, z bezpečnostných dôvodov (napr. ak majú obyvatelia problémy s duševným zdravím a voľný prístup k týmto zariadeniam by predstavoval značné riziko sebapoškodenia alebo ublíženia iným), je prijateľné umiestniť ich na vyhradenom nerušivom mieste prístupnom len pre personál, ale v tesnej blízkosti priestorov, kde sa vytvára recyklovateľný odpad.

Metodológia

Žiadna.

Dôkazová dokumentácia

Kritériá	Predbežná fáza projektu	Záverečná fáza po výstavbe
Všetky	Projektové výkresy alebo príslušná časť alebo body špecifikácie stavby potvrdzujúce zabezpečenie a rozsah vyhradených zariadení (na stavenisku a mimo neho). Zápisnica zo stretnutia projektového tímu alebo list potvrdzujúci pravdepodobné toky stavebného odpadu a orientačné objemy.	Ako fáza návrhu. Správa o kontrole pracoviska BREEAM a fotografické dôkazy potvrdzujúce zhodu.

Dodatočné informácie

Relevantné definície

Dostupný priestor

Prístupný priestor sa zvyčajne nachádza do 20 m od vchodu do budovy. V závislosti od veľkosti budovy, obmedzení na mieste alebo nájomných podmienok nemusí byť možné, aby sa zariadenia nachádzali do 20 m od vchodu do budovy. Za takýchto okolností je potrebné posúdiť, či je priestor „prístupný“ pre užívateľov budovy a odvoz vozidiel.

Automatizovaný systém zberu odpadu

Niektoré spoločnosti v súčasnosti ponúkajú plne automatizovaný podzemný systém na zber, triedenie a prepravu odpadu. Umožňuje separovanie odpadu priamo pri zdroji, pre rôzne druhy odpadu a z viacerých miest, so zlepšenými hygienickými normami a normami bezpečnosti a ochrany zdravia pri práci. Znižuje sa tým aj využívanie prepravy odpadu nákladnými automobilmi, znižuje sa rušenie a emisie CO_2 zo spotreby fosílnych palív.

Vyhradená neprekážajúca poloha

Ľahko prístupná skrinka pod drezom alebo akákoľvek iná skrinka v kuchyni, vedľa skladu alebo pravdepodobného priestoru na uskladnenie nerecyklovateľného odpadu, ak je to praktické. Ak nie je možné umiestniť odpadkový kôš do kuchynskej linky, môže byť umiestnený v blízkosti kuchyne, napríklad v technickej miestnosti alebo v pripojenej garáži.

Hlavný alebo kľúčový nájomca

Najväčší a hlavný nájomca v rámci maloobchodnej výstavby, zvyčajne maloobchodníci typu obchodných domov.

Kompaktor alebo lis na odpad

Stroj, ktorý je určený na stláčanie prúdov odpadu s cieľom zlepšiť účinnosť skladovania a prepravy.

Ďalšie informácie

Skladovanie recyklovateľného odpadu

Nasledujúce rozmery plochy môžu slúžiť ako pomôcka pri určovaní kritérií veľkosti a prístupnosti priestoru skladovania recyklovateľného odpadu:

1. Rozmery kompaktora: približne veľkosť jedného parkovacieho miesta; 4,8 x 2,4 m
2. Kontajnery: rozmery kontajnerov s objemom 8 a 12 kubických metrov sú 3,4 m x 1,8 m; na uskladnenie a prístup k týmto kontajnerom je preto potrebné počítať s minimálnou šírkou 2,0 m a dĺžkou 4,0 m alebo plochou 8 m².
3. Nádoby na kolieskach: 360 litrov = 0,86 m x 0,62/660 l = 1,2 m x 0,7 m/1100 l = 1,28 m x 0,98 m
4. Kontajnery na kolieskach: minimálne 6,1 m x 2,4 m
5. Prístup vozidiel: Nižšie sú uvedené rozmery typov nákladných vozidiel, ktoré sa zvyčajne používajú na zber odpadu. Výška a šírka brány by preto nemali byť menšie ako tieto rozmery:
   a. Smetiarske vozidlo: stredná kapacita; dĺžka = 7,4 m, výška = 4 m, šírka 3,1 m
   b. Nákladné vozidlo s kontajnerom: dĺžka = 7 m, výška = 3,35 m, šírka 3,1 m.

Do úvahy treba vziať aj všetky ostatné typy vozidiel, ktoré si vyžadujú prístup do tejto oblasti, napr. nákladné vozidlá s kontajnerom na kolieskach.

Recyklačné nádoby

Na maximalizáciu miery recyklácie sú potrebné jednotlivé recyklačné nádoby umiestnené na vhodných miestach v budove.

Wst 03b Prevádzkový odpad

(len bytové priestory)

Pre nebytové budovy a rezidenčné inštitúcie pozri Wst 03a Prevádzkový odpad na strane 317.

Počet dostupných kreditov	Minimálne normy
2	Áno

Cieľ

Rozpoznať a podporovať poskytovanie vyhradených skladovacích zariadení pre toky odpadu z domácností, ktoré sú spojené s prevádzkou, a tak pomôcť zabrániť tomu, aby sa odpad neposielal na skládku alebo do spaľovne.

Kritériá hodnotenia

Na preukázanie súladu sa vyžaduje:

Jeden kredit - Recyklovanie

1 Na uskladnenie recyklovateľného aj nerecyklovateľného alebo nekompostovateľného odpadu z domácností bol vyčlenený primeraný vonkajší priestor (pozri Plnenie požiadaviek na nasledujúcej strane). Tento priestor musí byť:
- 1.a Aspoň minimum odporúčané príslušným miestnym orgánom ALEBO
- 1.b Ak neexistujú odporúčania miestneho orgánu, 100 l objemu pre obydlie s jednou spálňou a ďalších 70 l pre každú ďalšiu spálňu
- 1.c Nachádza sa na rovnom spevnenom povrchu
- 1.d Prístupné pre obyvateľov domu alebo bytového domu.

2 Na uskladnenie recyklovateľného odpadu z domácností bol vyčlenený primeraný vnútorný priestor (vrátane nádob):
- 2.a V prípade, že v oblasti existuje systém zberu recyklovateľného odpadu, ktorý môžu obyvatelia využívať, na uskladnenie recyklovateľného odpadu z domácností bol zabezpečený NIEKTORÝ z nasledujúcich spôsobov:
  - 2.a.i Minimálne tri samostatné vnútorné nádoby, z ktorých každá nie je menšia ako 7 l ALEBO
  - 2.a.ii Jedna nádoba s minimálnym objemom 35 l (prípustné len v prípade, že sa v rámci miestneho zberu zbiera viacero rôznych skupín odpadu v jednej nádobe)
- 2.b Ak nie je zavedený systém zberu recyklovateľného odpadu, najmenej päť nádob (každá nie menšia ako 15 l) boli určené na uskladnenie recyklovateľného odpadu z domácností
- 2.c Vnútorné recyklačné nádoby by mali byť umiestnené na vyhradenom mieste, ktoré neprekáža. Voľne stojace nádoby na recykláciu umiestnené priamo na podlahe alebo v skrini nie sú v súlade. Nádoby môžu byť v kuchyni (v blízkosti nádoby na nerecyklovateľný odpad) alebo umiestnené v tesnej blízkosti kuchyne (t. j. vo vzdialenosti do 10 m), napr. v technickej miestnosti alebo v pripojenej garáži.

Jeden kredit - Kompostovanie

3 Zabezpečenie vhodných externých zariadení na skladovanie alebo kompostovanie kompostovateľného odpadu z domácností. Zariadenia musia byť:
- 3.a Umiestnené na vyhradenom mieste a prístupné pre obyvateľov obydlia
- 3.b Spolu s informačným letákom, ktorý sa doručí do každého bytu alebo spoločnej kuchyne. V letáku musia byť uvedené nasledovné informácie:
  - 3.b.i Ako kompostovanie funguje a prečo je dôležité;

3.b.ii Materiály, ktoré možno kompostovať (napr. surové šupky zo zeleniny a ovocia, drvený papier, čajové vrecúška atď.)
3.b.iii Podrobnosti o pláne prevádzky a riadenia akéhokoľvek systému komunitného kompostovania
3.b.iv Ak sú k dispozícii vhodné externé kompostovacie zariadenia, informácie o riešení problémov, napr. čo robiť, ak je kompost príliš suchý alebo príliš vlhký.

4 V každej kuchyni v byte alebo v každej spoločnej kuchyni je k dispozícii dostatočný vnútorný priestor na uskladnenie kompostovateľného organického materiálu (t. j. potravinového odpadu) (dostatočne veľký na to, aby sa doň zmestila aspoň 7-litrová nádoba). Môže to byť jeden z troch vnútorných zásobníkov uvedených v kritériu 2.a na predchádzajúcej strane.

5 Ak nie sú k dispozícii primerané externé zariadenia s nádobou na kompostovanie, súlad možno preukázať, ak sa na všetky posudzované obydlia vzťahuje jedna z nasledovných podmienok:
5.a Dostupná miestna komunitná služba alebo služba komunitného kompostovania, ktorú prevádzkuje buď miestny orgán, alebo súkromná organizácia
5.b Plán riadenia, ktorý je zavedený s cieľom zabezpečiť, aby sa potravinový alebo zelený odpad vhodne odstránil a dopravil do alternatívneho kompostovacieho zariadenia.
5.c Systém zberu zeleného alebo kuchynského odpadu miestneho úradu alebo súkromnej organizácie.

6 V prípade spoločných zariadení je k dispozícii aspoň jeden vývod vody na čistenie v zariadení a jeho okolí.

Kontrolné zoznamy a tabuľky

Žiadne.

Poznámky o súlade

Ref	Definície pojmov	Popis
Hrubá stavba a jadro (iba nebytové a rezidenčné inštitúcie)		
CN1	Príslušné hodnotiace kritériá	Obidve možnosti: Táto otázka sa neuplatňuje. Podrobnejší popis možností vyhodnotenia hrubej stavby a jadra nájdete v Prílohe D - Posúdenie projektu hrubej stavby a jadra na strane 409.
Obytné - čiastočne a úplne vybavené		
CN2	Príslušné hodnotiace kritériá - Obydlia pre jednu rodinu a obydlia pre viaceré rodiny	Čiastočne vybavené: Uplatňujú sa len kritériá 1 na predchádzajúcej strane a 3 na predchádzajúcej strane. Plne vybavené: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy. Pozri Prílohu E – Uplatniteľnosť BREEAM New Construction na obydlia pre jednu rodinu a obydlia pre viaceré rodiny, čiastočne a úplne vybavené na str. 412, kde nájdete podrobnejší popis možností hodnotenia bytových domov.
Všeobecné		
CN3	Prístavby k existujúcim budovám	Ak sa v existujúcej budove nachádzajú externé zariadenia, môžu sa použiť na posúdenie zhody. Rozsah týchto zariadení musí byť primeraný na pokrytie celkového objemu predpokladaného odpadu z nových a existujúcich budov.
CN3.1	Primeraný vonkajší priestor na úrovni spoločenstva	V krajinách, kde vonkajší priestor na uskladnenie nerecyklovateľného a recyklovateľného odpadu poskytuje miestny orgán malým spoločenstvám obydlí, možno tento priestor stále použiť na preukázanie súladu.

Ref	Definície pojmov	Popis
CN3.2	Prístupné - primeraná vzdialenosť k zariadeniam	Ľahko dostupný a v primeranej vzdialenosti od zariadení. Vzdialenosť bude závisieť od systému zberu prevládajúceho v krajine alebo lokalite a mala by umožňovať jednoduchý presun recyklovaných prúdov odpadu do zariadenia. Za základnú vzdialenosť by sa zvyčajne mala považovať odporúčaná vzdialenosť stanovená v požiadavkách miestnych orgánov alebo 50 m od vonkajšieho vchodu v prípade domov a bytových domov, kde nie sú stanovené žiadne iné požiadavky.
CN3.3	Oblasti, na ktoré sa zatiaľ nevzťahuje systém zberu	Na účely kritéria 2 na strane 322 sa môže rozvoj považovať za rozvoj so zavedeným systémom recyklácie, ak miestny orgán alebo prevádzkovateľ poskytuje miestny systém recyklácie a v písomnom vyhlásení potvrdí, že systém recyklácie bude pre rozvoj zabezpečený do jedného roka od dátumu dokončenia obydlia (alebo prvej fázy rozvoja v prípade projektov väčšieho rozsahu).
CN3.4	Recyklovateľný odpad z domácností	Na účely tejto problematiky musí byť priestor kompatibilný so sortimentom recyklovateľných zberov, ktoré zabezpečuje miestny orgán; zvyčajne sa preto uvažuje o týchto materiáloch: 1. Papierenský priemysel 2. Kartón, lepenka 3. Plasty 4. Sklo 5. Kovy (plechovky a konzervy) 6. Textil (oblečenie a obuv) 7. Rastlinné oleje (z kuchyne) 8. Batérie.
CN3.5	Automatizované systémy zberu odpadu	Tieto sú akceptované ako forma súladu, pokiaľ je zavedený plán riadenia, ktorý môže byť buď verejný (miestny orgán), alebo súkromný a sú splnené požiadavky na oddelenie.
CN3.6	Primerané externé kompostovacie zariadenia	Tie musia pozostávať z externej nádoby na kompostovateľný odpad alebo kompostovacieho kontajnera. Kompostovacia nádoba musí byť špeciálne navrhnutá na kompostovanie a umiestnená podľa pokynov výrobcu. Takéto kontajnery by nemali byť umiestnené v tesnej blízkosti okien, dverí alebo prívodov vzduchu do obytných priestorov v obydlí alebo okolitých obydlí. Nie sú stanovené žiadne požiadavky na typ nádoby alebo požadovanú kapacitu skladovania, pretože to bude závisieť od konečného používateľa a predpokladaného množstva organického kompostovateľného odpadu. Posudzovateľ by sa mal presvedčiť, že zariadenie je v rámci možností primerané veľkosti stavby, pričom sa zohľadní pravdepodobné množstvo organického odpadu, ktoré vznikne pri výstavbe.

Ref	Definície pojmov	Popis
CN3.7	Komunitné systémy kompostovania	Existujúce a navrhované komunitné systémy sú v rámci tejto otázky prijateľné, ak spĺňajú všetky špecifikácie uvedené v technickej príručke. Miesto kompostovania komunitného systému by malo byť ľahko prístupné zo všetkých obydlí, ktoré systém obsluhuje, t. j. majiteľ domácnosti by mal zvyčajne odpad doniesť pešo. Je prijateľné, aby bola nádoba umiestnená vedľa iných recyklačných nádob na spoločnom zbernom mieste, pokiaľ je jasne identifikovateľné, že je spojený s licencovaným komunitným systémom. Vzdialenosť medzi vstupom na miesto a spoločnými alebo komunitnými nádobami zvyčajne nesmie presiahnuť 50 m (ak platia vnútroštátne predpisy a sú prísnejšie, vyžaduje sa ich dodržiavanie).
CN3.8	Systémy zberu zeleného alebo kuchynského odpadu miestnych orgánov	Systém zberu kuchynského odpadu prevádzkovaný miestnym úradom je prijateľnou alternatívou ku komunitným alebo spoločným kompostovacím zariadeniam.

Dôkazová dokumentácia

Kritériá	Predbežná fáza projektu	Záverečná fáza po výstavbe
Všetky	Výkresy alebo kópia špecifikácie. Výpočty na odôvodnenie veľkosti priestoru určeného na externé skladovanie odpadu. Listy alebo zmluva od miestneho orgánu alebo súkromnej organizácie, ak je to vhodné. Dôkaz o existencii primeraného vonkajšieho priestoru spoločenstva, ktorý v prípade potreby zriadil a spravuje miestny orgán.	Ako fáza návrhu. Výkresy alebo špecifikácie reálneho zhotovenia (ak je to vhodné) ALEBO písomné potvrdenie, že stavba bola zhotovená v súlade s výkresmi a špecifikáciami z projektovej fázy.

Dodatočné informácie

Relevantné definície

Automatizovaný systém zberu odpadu

Niektoré spoločnosti v súčasnosti ponúkajú plne automatizovaný podzemný systém na zber, triedenie a prepravu odpadu. Umožňuje separovanie odpadu priamo pri zdroji, pre rôzne druhy odpadu a z viacerých miest, so zlepšenými hygienickými normami a normami bezpečnosti a ochrany zdravia pri práci. Znižuje sa tým aj využívanie prepravy odpadu nákladnými automobilmi, znižuje sa rušenie a emisie CO_2 zo spotreby fosílnych palív.

Kompostovanie

Kompostovanie je prirodzený proces, pri ktorom sa organický odpad pomocou baktérií a mikroorganizmov mení na zemitú hmotu. Proces kompostovania podporujú aj larvy, vošky, chrobáky, červy a iné podobné tvory.

Spoločné alebo komunitné kompostovanie

Spoločné alebo komunitné kompostovanie je kompostovanie, pri ktorom skupina ľudí využíva spoločný kompostovací systém. Suroviny poskytujú všetci, ktorí sa do programu zapojili a kompost sa potom využíva v komunite, buď vo vlastných záhradách, alebo na väčšie projekty v rámci miestneho prostredia. Vzdialenosť medzi vstupom na pozemok a spoločnými alebo komunitnými nádobami zvyčajne nesmie presiahnuť 50 m (alebo vnútroštátne predpisy, ak sú prísnejšie).

Systém kompostovania musí byť v súlade so všetkými platnými právnymi predpismi v krajine hodnotenia.

Vyhradená neprekážajúca poloha

Ľahko prístupná skrinka pod drezom alebo akákoľvek iná skrinka v kuchyni, vedľa skladu alebo pravdepodobného priestoru na uskladnenie nerecyklovateľného odpadu, ak je to praktické. Ak nie je možné umiestniť odpadkový kôš do kuchynskej linky, môže byť umiestnený v blízkosti kuchyne, napríklad v technickej miestnosti alebo v pripojenej garáži.

Systém zberu miestnych orgánov

V týchto systémoch je miestny orgán zodpovedný za pravidelný zber domového odpadu z obydlia alebo jeho lokality. Patrí sem zber zvyškového odpadu (odpad, ktorý nie je určený na recykláciu alebo kompostovanie) a recyklovateľného odpadu z domácností.

Súkromný prevádzkovateľ recyklačného systému

Súkromný prevádzkovateľ recyklačného systému môže byť poverený zberom recyklovateľných materiálov, ak nie je v prevádzke systém zberu miestnych orgánov alebo ak sa majiteľ alebo nájomca rozhodne pre súkromný zber, napr. v niektorých bytoch.

Ďalšie informácie

Žiadne.

Wst 04 Špekulatívne povrchové materiály

(len kancelárie a bytové domy)

Počet dostupných kreditov	Minimálne normy
1	Žiadne

Cieľ

Podporovať špecifikáciu a montáž povrchových úprav vybraných užívateľom budovy a tým zabrániť zbytočnému plytvaniu materiálmi.

Kritériá hodnotenia

Na preukázanie súladu sa vyžaduje:

Jeden kredit - Špekulatívne dokončovacie práce

1 V prípade prenajatých kancelárskych priestorov (kde nie je známy budúci nájomca) sa pred kompletným zariadením inštalovali koberce, iné podlahové krytiny a stropné krytiny len v ukážkovej časti.

2 V administratívnej budove vybudovanej pre konkrétneho používateľa si tento používateľ vybral (alebo súhlasil s nimi) špecifikované podlahové a stropné povrchové úpravy.

3 Pre viac obydlí (kde budúci obyvatelia nie sú známi) boli podlahové, kuchynské a kúpeľňové povrchy inštalované iba na výstavnej ploche.

4 V obytnej budove si budúci obyvatelia vybrali (alebo súhlasili s nimi) najmenej tri zo špecifikovaných podlahových, kuchynských a kúpeľňových povrchov (pozri príslušné na str. 329).

Kontrolné zoznamy a tabuľky

Žiadne.

Poznámky o súlade

Ref	Definície pojmov	Popis
Hrubá stavba a jadro (iba nebytové a rezidenčné inštitúcie)		
CN1	Príslušné hodnotiace kritériá	Obe možnosti - Táto oblasť sa neuplatňuje. Podrobnejší popis možností vyhodnotenia hrubej stavby a jadra nájdete v Prílohe D - Posúdenie projektu hrubej stavby a jadra na strane 409.
Obytné - čiastočne a úplne vybavené		
CN2	Príslušné hodnotiace kritériá - Obydlia pre jednu rodinu	Obidve možnosti: Táto otázka sa neuplatňuje. Pozri Prílohu E – Uplatniteľnosť BREEAM New Construction na obydlia pre jednu rodinu a obydlia pre viaceré rodiny, čiastočne a úplne vybavené na str. 412, kde nájdete podrobnejší popis možností hodnotenia bytových domov.
CN2.1	Príslušné hodnotiace kritériá - Obydlia pre viaceré rodiny	Obidve možnosti: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy. Pozri Prílohu E – Uplatniteľnosť BREEAM New Construction na obydlia pre jednu rodinu a obydlia pre viaceré rodiny, čiastočne a úplne vybavené na str. 412, kde nájdete podrobnejší popis možností hodnotenia bytových domov.
CN2.2	Užívateľ je zaangažovaný	V prípade obydlí, v ktorých sa užívateľ nepodieľa na výbere povrchových úprav, sa tento kredit nemôže udeliť.
Všeobecné		
CN3	Všeobecné	Žiadne.

Metodológia

Žiadna.

Dôkazová dokumentácia

Kritériá	Predbežná fáza projektu	Záverečná fáza po výstavbe
Všetky	Projektové výkresy alebo príslušná časť alebo ustanovenia špecifikácie budovy alebo zmluvy alebo list od klienta, projektového tímu alebo užívateľa budovy, ak je budúci užívateľ známy.	Ako fáza návrhu alebo správa posudzovateľa BREEAM z miesta spolu s fotografiami.

Dodatočné informácie

Relevantné definície

Povrchové úpravy obytných kuchýň a kúpeľní

1. Kuchynské linky (skrinky a pulty):
2. Kuchynské spotrebiče
3. Povrchová úprava stien v kuchyni
4. Kúpeľňové súpravy (vaňa, sprcha, umývadlo, WC)
5. Povrchová úprava stien v kúpeľni.

Výstavná miestnosť

— Kancelárske budovy: buď poschodie, alebo jednotlivá kancelária. Aby sa však tento kredit pridelil, musí byť menší ako 25 % čistej prenajímateľnej podlahovej plochy.
Obytné budovy: výstavný dom alebo byt.

Ďalšie informácie

Žiadne.

Wst 05 Prispôsobenie sa zmene klímy (všetky budovy)

Počet dostupných kreditov	Minimálne normy
1	Žiadne

Cieľ

Rozpoznať a podporovať opatrenia prijaté na zmiernenie dosahu extrémnych poveternostných podmienok spôsobených zmenou klímy počas životnosti budovy.

Kritériá hodnotenia

Viaceré oblasti BREEAM v rámci systému novej výstavby obsahujú kritériá hodnotenia, ktorých cieľom je podporiť zmiernenie vplyvov extrémnych poveternostných udalostí vyplývajúcich zo zmeny klímy. Hlavný kredit v tejto oblasti sa zameriava na odolnosť konštrukcie a komponentov stavby, ktorá nie je zahrnutá v iných oblastiach. Príkladný kredit sa udeľuje, ak bol zahrnutý holistický prístup k adaptácii na zmenu klímy, ktorý bol preukázaný dosiahnutím kreditov v iných otázkach.

Na preukázanie súladu sa vyžaduje:

Jeden kredit - Prispôsobenie sa zmene klímy - štrukturálna a konštrukčná odolnosť

1 Vykonajte posúdenie stratégie adaptácie na zmenu klímy pre odolnosť konštrukcie a štruktúry do konca koncepčného návrhu (alebo ekvivalentného postupu) v súlade s nasledujúcim prístupom:

1.a Uskutočnite systematické hodnotenie (špecifické pre konštrukčnú a štrukturálnu odolnosť) na identifikáciu a vyhodnotenie vplyvu očakávaných extrémnych poveternostných podmienok vyplývajúcich zo zmeny klímy na budovu počas jej plánovaného životného cyklu a podľa možnosti zmierniť tieto vplyvy. Hodnotenie by malo zahŕňať tieto fázy (pozri Metodológia):

- 1.a.i Identifikácia nebezpečenstva
- 1.a.ii Hodnotenie nebezpečenstva
- 1.a.iii Odhad rizika
- 1.a.iv POSÚDENIE RIZIKA
- 1.a.v Riadenie rizika
- 1.a.vi Príkladný kredit - Reakcia na prispôsobenie sa zmene klímy.

Príkladný kredit - Reakcia na prispôsobenie sa zmene klímy.

Dosiahnutie týchto kritérií predstavuje holistický prístup k návrhu a výstavbe počas životného cyklu súčasnej budovy s cieľom zmierniť vplyvy zmeny klímy.

Nasleduje prehľad príkladných kritérií úrovne na získanie inovačných kreditov pre túto oblasť BREEAM:

2 Dosiahnutie vyššie uvedeného kritéria 1, kritéria odolnosti konštrukcie a štruktúry v tejto oblasti a nasledujúcich bodov kritérií alebo kreditov:

Hea 04 Tepelný komfort

(Prepojenie s oblasťou Wst 05: zabrániť zvýšeniu rizika prehriatia)

- Hea 04 Tepelný komfort: Kritérium 6 bolo splnené.

Hea 07 Riziká

(Prepojenie s oblasťou Wst 05: znížiť riziko prírodných nebezpečenstiev, ktoré môžu byť závažnejšie v dôsledku

- zmeny klímy) Kredit Hea 07 bol dosiahnutý.

Ene 01 Zníženie spotreby energie a emisií uhlíka

(Prepojenie s oblasťou Wst 05: maximalizovať energetickú účinnosť a prispieť k nízkym emisiám uhlíka vyplývajúcim z rastúcich požiadaviek na energiu)

- V tejto otázke bolo dosiahnutých najmenej osem kreditov.

Ene 04 Projekt s nízkymi emisiami uhlíka

(Prepojenie s oblasťou Wst 05: maximalizovať príležitosti na zabránenie zbytočným

- emisiám uhlíka) Kredit za analýzu pasívneho návrhu v tejto oblasti bol dosiahnutý.

Wat 01 Spotreba vody

(Prepojenie s Wst 05: minimalizovať nároky na vodu v obdobiach sucha)

- V tejto oblasti boli dosiahnuté minimálne tri kredity.

Mat 05 Navrhovanie pre trvanlivosť a odolnosť

(Prepojenie s oblasťou Wst 05: zabrániť zvýšenému riziku zhoršenia stavu a vyšším nárokom na

- údržbu) Kritérium 2 týkajúce sa degradácie materiálu v tejto otázke bolo splnené.

Pol 03 Odtok povrchovej vody

(Prepojenie s Wst 05: minimalizovať riziká zvýšeného povodňového rizika a odtoku povrchovej vody, ktoré

- ovplyvňujú lokalitu alebo iné osoby) Povodňové riziko - bol dosiahnutý minimálne jeden kredit.
- Odtok povrchovej vody - boli dosiahnuté dva kredity.

Kontrolné zoznamy a tabuľky

Žiadne.

Poznámky o súlade

Ref	Definície pojmov	Popis
Hrubá stavba a jadro (iba nebytové a rezidenčné inštitúcie)		
CN1	Príslušné hodnotiace kritériá	**Prispôsobenie sa zmene klímy - štrukturálna a konštrukčná odolnosť** Obe možnosti: Uplatňuje sa kritérium 1 na strane 330. **Kritériá príkladnej úrovne** Iba plášť: Neuplatňuje sa kritérium 2 na strane 330. Plášť a jadro: Uplatňuje sa kritérium 2 na strane 330. Podrobnejší popis možností vyhodnotenia hrubej stavby a jadra nájdete v Prílohe D - Posúdenie projektu hrubej stavby a jadra na strane 409.
Obytné - čiastočne a úplne vybavené		
CN2	Príslušné hodnotiace kritériá - Obydlia pre jednu rodinu a obydlia pre viaceré rodiny	Obidve možnosti: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy. Pozri Prílohu E – Uplatniteľnosť BREEAM New Construction na obydlia pre jednu rodinu a obydlia pre viaceré rodiny, čiastočne a úplne vybavené na str. 412, kde nájdete podrobnejší popis možností hodnotenia bytových domov.
Všeobecné		
CN3	Príslušné orgány, pozri identifikáciu nebezpečenstva nižšie.	Patria sem okrem iného: Miestne orgány Štatutárny orgán Technické orgány.

Metodológia

Identifikácia nebezpečenstva

1. Preskúmať dôkazy a informácie od príslušných orgánov s cieľom identifikovať a pochopiť očakávané dôsledky zvýšeného výskytu extrémnych poveternostných javov v dôsledku zmeny klímy na budovu.
2. Identifikujte pravdepodobné nebezpečenstvá (pozri Relevantné definície na nasledujúcej strane).

Hodnotenie nebezpečenstva

1. Určite rozsah identifikovaných nebezpečenstiev.

Odhad rizika

1. Identifikujte riziko, ktoré tieto nebezpečenstvá predstavujú pre budovu, a pravdepodobný vplyv nebezpečenstiev, pričom zohľadnite minimálne nasledovné aspekty:
   a. Štrukturálna stabilita
   b. Štrukturálna odolnosť
   c. Odolnosť voči poveternostným podmienkam a podrobné nákresy
   d. Trvanlivosť materiálu
   e. Zdravie a bezpečnosť obyvateľov budovy a iných osôb
   f. Vplyv na obsah budovy a kontinuitu prevádzky.

Hodnotenie rizík

1. Vyhodnoťte potenciálny vplyv týchto rizík na budovu.
2. Určite hranicu prípustného rizika.
3. Skontrolujte citlivosť hodnotenia rizík.
4. Identifikujte oblasti, v ktorých sú riziká neprijateľné z hľadiska zdravia a bezpečnosti, hodnotenia životného cyklu a z finančného hľadiska.

Riadenie rizika

1. Identifikujte opatrenia na zníženie rizika.
2. Zmiernite nebezpečenstvá, pokiaľ je to prakticky možné.
3. Upravte návrh alebo špecifikáciu tak, aby ste do konečného návrhu zahrnuli opatrenia zistené na základe posúdenia rizík.

Dôkazová dokumentácia

Kritériá	Predbežná fáza projektu	Záverečná fáza po výstavbe
Všetky	Kópia systematického hodnotenia rizík a všetkých zavedených zmierňujúcich opatrení.	Ako v rámci fázy návrhu Správa z inšpekcie na mieste vypracovaná posudzovateľom BREEAM a fotografický dôkaz.

Dodatočné informácie

Relevantné definície

Odolnosť

Schopnosť odolávať opotrebovaniu, tlaku alebo poškodeniu.

Riziko

Riziko je situácia alebo udalosť, ktorá môže spôsobiť škodu. Môže ísť o náhodné alebo úmyselné konanie, nedostatočnú silu alebo odolnosť alebo nadmernú odchýlku od plánovaných limitov.

Odolnosť

Schopnosť budovy alebo konštrukčného systému alebo materiálu odolať náhodnému alebo výnimočnému zaťaženiu alebo inej udalosti bez toho, aby došlo k neprimeranému stupňu poškodenia alebo zníženiu úžitkových vlastností tak, že dôjde k postupnému zrúteniu, strate úžitkových vlastností alebo neprimeranému stupňu poškodenia.

Odolnosť konštrukcie a štruktúry

BREEAM ju definuje ako schopnosť konštrukcie odolať zvýšenej záťaži počasia, zvýšenému tlaku alebo nebezpečenstvám spojeným so zmenou klímy. Medzi príklady zvýšených záťaží alebo rizík patria nasledovné:

1. Slnečné žiarenie
2. Kolísanie teploty
3. Voda alebo vlhkosť
4. Vietor
5. Zrážky, napr. dážď a sneh
6. Extrémne poveternostné podmienky: vysoká rýchlosť vetra, záplavy, prudký dážď, sneh, dažďová voda v rybníkoch
7. Prepadnutie alebo pohyb pôdy .

Systematické hodnotenie rizík

Štruktúrovaný prístup, ktorý pomáha odborníkom identifikovať, hodnotiť a riadiť riziká, pričom neoddeliteľnou súčasťou procesu je znižovanie identifikovaných rizík. Zahŕňa:

- Identifikácia rizík
- Odstránenie nebezpečenstiev, pokiaľ je to primerane možné.
- Zníženie rizík vyplývajúcich z každého nebezpečenstva v čo najväčšej
- možnej miere Vypracovanie návrhu budovy tak, aby bol odolný.

Ďalšie informácie

Cieľom tejto novej oblasti BREEAM je povzbudiť a podporiť úsilie o zmiernenie budúcich vplyvov zmeny klímy na budovu prostredníctvom zohľadnenia viacerých relevantných faktorov vo fázach návrhu. Spoločnosť BRE sa pri hodnotiacich kritériách vyhla prílišnej normatívnosti, aby umožnila určitú flexibilitu pri ich uplatňovaní a preukazovaní zhody, pričom uznala, že ide o komplexnú environmentálnu a konštrukčnú problematiku, kde sú riešenia a prístupy do veľkej miery ovplyvnené umiestnením na mieste a faktormi špecifickými pre budovu. To kladie väčší dôraz na posudzovateľa BREEAM, aby na základe vlastného úsudku určil, či projektový tím a návrh budovy splnili cieľ a zámer kreditu a jeho kritérií, pričom na podporu svojho úsudku použije vhodné informácie o projekte. Spoločnosť BRE potvrdí úsudok posudzovateľa BREEAM prostredníctvom auditu zabezpečenia kvality, ak je zrejmé primerané odôvodnenie udelenia kreditu na základe činností projektového tímu a navrhovaných konštrukčných riešení. BRE privíta akúkoľvek spätnú väzbu k uplatňovaniu tejto problematiky hodnotenia, ktorá by pomohla pri vývoji kritérií a zahrnutí dodatočných usmernení týkajúcich sa súladu do budúcich verzií systému BREEAM.

Existuje niekoľko správ a publikácií Spojeného kráľovstva, ktoré poskytujú užitočné zásady adaptácie na zmenu klímy aj pre medzinárodné projekty, vrátane:

1. Správa o Národnom adaptačnom programe[70] vypracovaná spoločne vládou, priemyslom a ďalšími mimovládnymi organizáciami. Obsahuje súbor politík a opatrení, ktoré majú Spojenému kráľovstvu pomôcť úspešne sa prispôsobiť budúcim poveternostným podmienkam , a to prostredníctvom riešenia rizík a využívania príležitostí.
2. Kniha „Dizajn pre zmenu klímy“[71] opisuje budovy a problémy v rámci projektu „ Dizajn pre budúcnosť“. budovy a problémy v rámci programu Design for Future Climate, Adapting Buildings (Návrhy pre klímu budúcnosti, prispôsobenie budov), ktorý je najväčším programom zameraným na adaptáciu budov na zmenu klímy v Spojenom kráľovstve. Cieľom tohto programu Rady pre technologickú stratégiu (Technology Strategy Board - TSB) je zlepšiť odolnosť stavebných projektov voči zmene klímy. Kniha obsahuje pokyny týkajúce sa konštrukcie vrátane stability konštrukcie.
3. Správa BRE[72], Potenciálne dôsledky zmeny klímy v zastavanom prostredí, pojednáva o stratégiách adaptácie na zmenu klímy, vrátane niektorých stratégií pre štrukturálnu odolnosť.

Wst 06 Funkčná prispôsobivosť (len pre nebytové priestory)

Počet dostupných kreditov	Minimálne normy
1	Žiadne

Cieľ

Rozpoznať a podporovať opatrenia prijaté na prispôsobenie sa budúcim zmenám vo využívaní budovy počas jej životnosti.

Kritériá hodnotenia

Na preukázanie súladu sa vyžaduje:

Jeden kredit - Funkčná prispôsobivosť

1 Klient a projektový tím vypracovali do dokončenia koncepčného návrhu štúdiu stratégie funkčného prispôsobenia budovy, ktorá obsahuje odporúčania pre opatrenia, ktoré sa majú zahrnúť s cieľom uľahčiť budúcu adaptáciu.

2 Funkčné adaptačné opatrenia (pozri príklady v tabuľke 51 na strane 337) boli implementované do návrhu dokončením technického návrhu v súlade s odporúčaniami stratégie funkčnej adaptácie, ak to bolo praktické a nákladovo efektívne. Vynechanie bolo posudzovateľovi písomne zdôvodnené.

Kontrolné zoznamy a tabuľky

Žiadne.

Poznámky o súlade

Ref	Definície pojmov	Popis
Hrubá stavba a jadro (iba nebytové a rezidenčné inštitúcie)		
CN1	Príslušné hodnotiace kritériá	Obidve možnosti: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy Pozri Príloha D - Posúdenie plášťa a jadra projektu na strane 409 Podrobnejší opis možností hodnotenia plášťa a jadra.
Obytné - čiastočne a úplne vybavené		

Ref	Definície pojmov	Popis
CN2	Príslušné hodnotiace kritériá - Obydlia pre jednu rodinu a obydlia pre viaceré rodiny	Obidve možnosti: Táto otázka sa neuplatňuje. Pozri Prílohu E – Uplatniteľnosť BREEAM New Construction na obydlia pre jednu rodinu a obydlia pre viaceré rodiny, čiastočne a úplne vybavené na str. 412, kde nájdete podrobnejší popis možností hodnotenia bytových domov.
Všeobecné		
CN3	Štúdia stratégie funkčného prispôsobenia	Štúdia stratégie funkčného prispôsobenia by mala zohľadniť nasledovné: 1. Možnosť rozsiahlej rekonštrukcie vrátane výmeny fasády 2. Aspekty návrhu, ktoré uľahčujú výmenu všetkých hlavných zariadení počas životnosti budovy, napr. panely v podlahách alebo stenách, ktoré sa dajú odstrániť bez vplyvu na konštrukciu, zabezpečenie zdvíhacích nosníkov a výťahov 3. Stupeň prispôsobivosti vnútorného prostredia zmenám v pracovných postupoch 4. Stupeň prispôsobivosti vnútorného fyzického priestoru a vonkajšieho plášťa na prispôsobenie sa zmenám v používaní 5. Rozsah dostupnosti miestnych služieb, ako je miestna elektrická energia, dátová infraštruktúra atď. Ďalšie pokyny nájdete v tabuľke 51 na nasledujúcej strane
CN3.1	Implementácia funkčného prispôsobenia	Realizácia bude špecifická pre danú budovu a rozsah projektu, ale informácie by mali byť k dispozícii posudzovateľovi, ktorý ich zastrešuje: 1. Možnosť viacnásobného alebo alternatívneho využitia budovy a funkcií priestoru, napríklad v súvislosti s konštrukčným riešením budovy 2. Možnosti viacnásobného využitia budovy a funkcií priestoru na základe konštrukčných detailov, napr. modularita 3. Trasy a metódy výmeny veľkých zariadení, napr. siete a spojenia majú flexibilitu a kapacitu na rozšírenie 4. Dostupnosť pre miestne rozvody zariadení a služieb, napr. podrobné informácie o infraštruktúre stavebných rozvodov a prípojok 5. Možnosť horizontálneho rozšírenia budovy, vertikálne alebo v oboch smeroch.

Metodológia

Žiadna.

Dôkazová dokumentácia

Kritériá	Predbežná fáza projektu	Záverečná fáza po výstavbe
Všetky	Správa o stratégii funkčného prispôsobenia a implementačnom pláne.	Podľa predbežnej fázy návrhu.

Dodatočné informácie

Relevantné definície

Funkčné prispôsobenie budovy

Práce na existujúcej budove, ktoré reagujú na požadovanú zmenu využitia alebo požiadavky a presahujú rámec údržby a opráv. Tieto zmeny riešia funkčné problémy a môžu priniesť významné zlepšenia. Funkčné prispôsobenie môže zahŕňať úpravy, prestavby alebo prístavby.

Funkčná prispôsobivosť

Schopnosť budovy prispôsobiť sa zmene prevádzkových požiadaviek v rámci toho istého typu budovy alebo na použitie ako iný typ budovy.

Ďalšie informácie

V tabuľke 51 nižšie sú uvedené príklady funkčných návrhových opatrení, ktoré možno prijať pre každú časť hodnotenia pri posudzovaní prístupnosti, priestorovej prispôsobivosti a rozšíriteľnosti.

Tabuľka 51: Návrh opatrení umožňujúcich budúce prispôsobenie

	Dostupnosť	Priestorová prispôsobivosť	Rozšíriteľnosť
Konštrukcia a štruktúra: Vonkajšie steny Opláštenie Prízemie a prvé poschodie Strecha.	Použitie výrobkov alebo systémov, ktoré umožňujú ľahkú výmenu.	Umiestnenie konštrukčných prvkov v rámci podlahovej plochy.	Možnosť pridania prístavieb alebo úprav na zvýšenie kapacity budovy.
Základné a miestne služby: Mechanické a elektrické inštalatérske práce Schody a výťahy Požiar.	Zahrnutie požiadaviek na správu zariadení a spätnú väzbu z hľadiska riadenia konštrukcie pre budúce prevádzkové potreby.		Zabezpečenie kapacity v infraštruktúre s cieľom umožniť budúce rozšírenie a prispôsobenie.
Dizajn interiéru: Povrchové úpravy Podlahy Vnútorné steny Prípojky.	Použitie výrobkov alebo systémov, ktoré umožňujú ľahkú výmenu.	Usporiadanie v štandardizovaných mriežkach. Použitie vlastných povrchových úprav umožňujúcich výmenu. Použitie štandardizovaných veľkostí materiálov.	identifikácia alebo rozpoznanie potenciálnych budúcich funkčných požiadaviek. Efektívne využitie priestoru s cieľom umožniť prípadné zvýšenie obsadenosti.

Využívanie pôdy a ekológia

Zhrnutie

Táto kategória podporuje udržateľné využívanie pôdy, ochranu a vytváranie biotopov a zlepšovanie dlhodobej biodiverzity v mieste stavby a na okolitých pozemkoch. Otázky v tejto časti sa týkajú opätovného využitia hnedých priemyselných zón alebo plôch s nízkou ekologickou hodnotou, zmierňovania a zlepšovania ekológie a dlhodobého riadenia biodiverzity.

Sumárna tabuľka kategórie

Vydanie	Kredity	Zhrnutie kreditov
LE 01 Výber lokality	3	Podporovať využívanie predtým obývaných alebo kontaminovaných pozemkov a vyhýbať sa doteraz nenarušených pozemkom.
LE 02 Ekologická hodnota miesta a ochrana ekologických prvkov	2	Podporovať výstavbu na pozemkoch, ktoré už majú obmedzenú hodnotu pre voľne žijúce živočíchy, a chrániť existujúce ekologické prvky pred výrazným poškodením počas prípravy staveniska a ukončenia stavebných prác.
LE 03 Minimalizácia vplyvu na existujúcu ekológiu miesta	Nie je k dispozícii	
LE 04 Zlepšenie ekológie miesta	3	Podporovať opatrenia prijaté na zvýšenie ekologickej hodnoty lokality v dôsledku výstavby.
LE 05 Dlhodobý vplyv na biodiverzitu	2	Minimalizovať dlhodobý vplyv výstavby na lokalitu a biodiverzitu okolia.

LE 01 Výber miesta (všetky budovy)

Počet dostupných kreditov	Minimálne normy
3	Nie

Cieľ

Podporovať využívanie predtým obývaných alebo kontaminovaných pozemkov a vyhýbať sa doteraz nenarušených pozemkom.

Kritériá hodnotenia

Táto požiadavka je rozdelená do dvoch častí:

- Predtým využívaná pôda (2 kredity)
- Kontaminovaná pôda (1 kredit)

Na preukázanie súladu sa vyžaduje:

Až dva kredity - predtým obývaná pôda

1 Percento plochy navrhovanej výstavby sa nachádza na ploche, ktorá bola predtým obsadená priemyselnými, obchodnými alebo rezidenčnými budovami alebo pevnou pozemnou infraštruktúrou.

Tabuľka 52: Percentuálny podiel plochy navrhovanej výstavby na predtým zastavanom území

Percentuálny podiel plochy navrhovaného rozvoja na predtým zastavanej pôde	Kredity
75%	1
95%	2

Jeden kredit - Kontaminovaná pôda

2 Lokalita sa považuje za značne kontaminovanú, t. j. nie je možné ju rozvíjať alebo zastavať na navrhované konečné využitie bez sanácie. Tento fakt môže potvrdiť expert na kontaminovanú pôdu alebo sa to dá zistiť pomocou Kontrolného zoznamu A7 na strane 442.

3 Boli prijaté nasledujúce nevýhodnejšie kritériá:
- 3.a Národné usmernenia pre prieskum lokality, hodnotenie rizík a posúdenie kontaminovanej pôdy , ako je stanovené v legislatívnych nariadeniach alebo národnom kódexe osvedčených postupov ALEBO
- 3.b Vykonal sa dôkladný prieskum lokality, posúdenie rizík a hodnotenie v súlade s požiadavkami Kontrolného zoznamu A7 na strane 442 (ako minimum).

4 Objednávateľ alebo hlavný dodávateľ potvrdzuje, že sanácia lokality sa vykoná v súlade s odporúčanou stratégiou sanácie a plánom jej realizácie (definovaným v Kontrolnom zozname A7 na strane 442) na základe posudku experta na kontaminované územia a v súlade so všetkými príslušnými vnútroštátnymi alebo inými právnymi predpismi.

Kontrolné zoznamy a tabuľky

Žiadne.

Poznámky o súlade

Ref	Definície pojmov	Popis
Hrubá stavba a jadro (iba nebytové a rezidenčné inštitúcie)		
CN1	Príslušné hodnotiace kritériá	Obidve možnosti: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy Pozri Príloha D - Posúdenie plášťa a jadra projektu na strane 409 Podrobnejší opis možností hodnotenia plášťa a jadra.
Obytné - čiastočne a úplne vybavené		
CN2	Príslušné hodnotiace kritériá - Obydlia pre jednu rodinu a obydlia pre viaceré rodiny	Obidve možnosti: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy. Pozri Prílohu E – Uplatniteľnosť BREEAM New Construction na obydlia pre jednu rodinu a obydlia pre viaceré rodiny, čiastočne a úplne vybavené na str. 412, kde nájdete podrobnejší popis možností hodnotenia bytových domov.
Všeobecné		
CN3	Dočasné jednotky. Pozri kritérium 1 na predchádzajúcej strane	Nezastavané plochy, ktoré sa majú použiť na dočasné práce (napr. dočasné kancelárie alebo parkoviská, sklady materiálu alebo strojov), sa musia považovať za rozvoj na nezastavanej pôde, a preto sa musia zahrnúť do výpočtov, pokiaľ neboli definované ako „pôda s nízkou ekologickou hodnotou“ v súlade s dokumentom BREEAM LE 02 Ekologická hodnota lokality a ochrana ekologických prvkov na strane 344.
CN3.1	Výstavba na zastavanom území. Pozri kritérium 1 na predchádzajúcej strane	Výstavba v rámci existujúcich lokalít neznamená, že projekt automaticky spĺňa kritériá opätovného využitia pozemkov. Pozemok, na ktorom sa bude nachádzať aspoň 75 % alebo 95 % novej budovy, musí spĺňať definíciu predtým zastavaného pozemku.
CN3.2	Predchádzajúca dekontaminácia. Pozri kritériá 2 a 3 na predchádzajúcej strane.	Získanie kreditu za využitie kontaminovanej pôdy možno udeliť len vtedy, ak sa uskutočnila sanácia, ktorá umožňuje rozvoj lokality na účely posudzovanej budovy alebo väčší etapovitý rozvoj, ktorý zahŕňa posudzovanú budovu. Kredit nie je možné získať v prípadoch, keď došlo k predchádzajúcej sanácii a rozvoju lokality mimo rozsahu aktuálnych rozvojových návrhov.
CN3.3	Veľké pozemky rozdelené na menšie parcely. Pozri kritériá 2 a 3 na predchádzajúcej strane.	Ak bola kontaminácia veľkej lokality sanovaná a následne bola lokalita rozdelená na menšie pozemky pre jednotlivé budovy (prípadne ako súčasť stratégie postupného rozvoja), kredit možno udeliť bez ohľadu na umiestnenie hodnotenej budovy na pozemku v rámci širšieho rozvojového plánu. Podmienkou je, že lokalita by nemohla byť vybudovaná bez uskutočnenia sanačných prác.

Ref	Definície pojmov	Popis
CN3.4	Dekontaminácia súvisiaca so zdravím a bezpečnosťou. Pozri kritériá 2 a 3 na strane 339	Kontaminovaná pôda, ktorá bola dekontaminovaná výlučne zo zdravotných a bezpečnostných dôvodov (a nie na konkrétny účel rekonštrukcie), nie je vyhovujúca.
CN3.5	Azbest. Pozri kritériá 2 a 3 na strane 339	Ak je jedinou požadovanou sanáciou odstránenie azbestu v rámci existujúcej budovy, lokalitu nemožno klasifikovať ako kontaminovanú pôdu. Ak sa však zistí prítomnosť azbestu v pôde, bude sa to na účely posúdenia tejto požiadavky považovať za kontamináciu.
CN3.6	Kontrolný zoznam A7 na strana 442	V Kontrolnom zozname A7 na strane 442 sa uvádza pravdepodobnosť výskytu závažných problémov s kontamináciou v lokalite na účely hodnotenia BREEAM. Stanovuje sa v ňom aj rozsah predbežného prieskumu, prieskumu lokality a stratégie sanácie. Jej cieľom nie je vyhodnotiť typy, úrovne alebo riziká kontaminácie danej lokality.
Špecifické pre budovu		
CN4	Vzdelávanie (len školy). Ihriská. Pozri kritérium 1 na strane 339.	Výstavbu ihriska v zóne výstavby možno považovať za výstavbu na predtým zabranej pôde len vtedy, ak sa do jedného roka od ukončenia stavebných prác obnoví rovnocenná plocha ihriska a ak takéto obnovenie nezasiahne do pôdy s vysokou ekologickou hodnotou, ako je definovaná v dokumente BREEAM. LE 02 Ekologická hodnota stránky a ochrana ekologických prvkov na strane 344

Metodológia

Žiadna.

Dôkazová dokumentácia

Kritériá	Predbežná fáza projektu	Záverečná fáza po výstavbe
1	Projektové výkresy (vrátane existujúceho plánu lokality), správa alebo fotografie lokality.	Správa posudzovateľa BREEAM z inšpekcie na mieste a fotografický dôkaz alebo výkresy zhotovenia. Ak došlo k zmene, percentuálny podiel sa musí prepočítať na základe plánov skutočného stavu.

Kritériá	Predbežná fáza projektu	Záverečná fáza po výstavbe
2–4	Vyplnenú kópiu príslušných častí Kontrolného zoznamu A7 na strane 442. Existujúce plány lokality zobrazujúce kontaminované Oblasti ktoré sa majú sanovať vo vzťahu ku ktorejkoľvek navrhovanej výstavbe. Kópia kontaminovanej pôdy o kontaminovanom pozemku. List od hlavného zhotoviteľa alebo zhotoviteľa sanácie, kde sú potvrdené: 1. Sanačná stratégia pre lokalitu 2. Súhrnné údaje o pláne implementácie. Ak dodávateľ ešte nebol vymenovaný, list od objednávateľa alebo jeho zástupcu potvrdzujúci, že určený zhotoviteľ vykoná potrebné sanačné práce na zmiernenie rizík identifikovaných v správe.	V štádiu návrhu s informáciami pre skutočný stav.

Dodatočné informácie

Relevantné definície

Stavebná zóna

Na účely tohto dokumentu BREEAM je zóna výstavby definovaná ako akýkoľvek pozemok na stavenisku, na ktorom sa realizujú (a teda, kde dochádza k narušeniu pôdy) budovy, úprava zelene, terénne práce a prístupové komunikácie na stavenisko vrátane 3 m širokého pásu od ich hraníc. Zahŕňa aj všetky plochy používané na dočasné skladovanie a budovy. Ak nie je presne známe, kde sa budú nachádzať budovy, spevnené plochy, prístupové komunikácie a dočasné sklady, musí sa predpokladať, že zónou výstavby je celé stavenisko.

Kontaminovaná pôda alebo lokalita

Pozemok, ktorý by nebolo možné legálne alebo bezpečne zastavať alebo obhospodarovať na navrhované konečné využitie bez sanácie kontaminácie. Kontaminácia je definovaná ako akákoľvek látka v zemi alebo na zemi v zóne výstavby, ktorá predstavuje neprijateľné riziko pre ľudské zdravie, majetok alebo životné prostredie. Na účely systému BREEAM sú látky, ktoré by mohli predstavovať neprijateľné riziko kontaminácie, definované ako látky, ktoré pôsobia ako prekážka rozvoja územia, čo môže zahŕňať určité rastlinné druhy, ako napríklad, ale nie výlučne, pohánkovec japonský a prasličku obrovskú.

Expert na kontaminovanú pôdu

Osoba, ktorá má vysokoškolské vzdelanie alebo rovnocennú kvalifikáciu v oblasti chémie, environmentálnych vied alebo manažmentu, vied o zemi, stavebného inžinierstva alebo v príbuznom odbore a má minimálne trojročnú relevantnú prax (počas posledných piatich rokov) v oblasti prieskumu, posudzovania a hodnotenia rizík na stavenisku. Tieto skúsenosti musia jasne preukazovať praktické znalosti metodík prieskumu lokality a pochopenie techník sanácie a vnútroštátnych právnych predpisov v tejto oblasti, ako aj pôsobenie v poradenskej funkcii pri poskytovaní odporúčaní na sanáciu.

Predtým obývaná pôda

Na účely tejto problematiky BREEAM definuje predtým obývanú pôdu ako pôdu, ktorá je alebo bola obývaná trvalou stavbou vrátane akejkoľvek súvisiacej pevnej povrchovej infraštruktúry (definícia vychádza z definície predtým obývanej pôdy podľa Národného rámca politiky plánovania 73). Táto definícia nezahŕňa:

1. Pozemky, na ktorých sú alebo boli postavené poľnohospodárske alebo lesnícke budovy
2. Pozemky, ktoré boli využívané na ťažbu nerastných surovín alebo na skládku odpadov, ak sa v rámci postupov kontroly rozvoja prijali opatrenia na ich obnovu
3. Pozemky v zastavaných oblastiach, ako sú parky, rekreačné oblasti a parcely, ktoré síce môžu pavilóny a iné budovy, ktoré neboli predtým používané.
4. Pozemky, ktoré boli predtým obývané, ale kde pozostatky trvalej stavby alebo pevnej povrchovej stavby časom splynuli s krajinou (do takej miery, že ich možno odôvodnene považovať za súčasť prírodného prostredia).

Navrhovaný rozvoj

Akákoľvek výstavba (budovy, spevnené plochy, parkoviská a prístupové komunikácie), ktorá spadá do hraníc posudzovanej lokality.

Sanácia

Činnosť vykonávaná na prevenciu, minimalizáciu, nápravu alebo zmiernenie rizika spôsobeného kontaminovaným územím pre ľudské zdravie alebo životné prostredie.

Ďalšie informácie

Žiadne.

LE 02 Ekologická hodnota lokality a ochrana ekologických prvkov (všetky budovy)

Počet dostupných kreditov	Minimálne normy
2	Žiadne

Cieľ

Podporovať výstavbu na pozemkoch, ktoré už majú obmedzenú hodnotu pre voľne žijúce živočíchy, a chrániť existujúce ekologické prvky pred výrazným poškodením počas prípravy staveniska a ukončenia stavebných prác.

Kritériá hodnotenia

Táto požiadavka je rozdelená do dvoch častí:

- Ekologická hodnota lokality (1 kredit)
- Ochrana ekologických prvkov (1 kredit)

Na preukázanie súladu sa vyžaduje:

Jeden kredit - ekologická hodnota lokality

1 Pôda v hodnotenej zóne je definovaná ako „pôda s nízkou ekologickou hodnotou“ buď na základe:

1.a Kontrolného zoznamu BREEAM(tabuľka 53 na nasledujúcej strane) na definovanie pozemkov s nízkou ekologickou hodnotou (pozri kontrolné zoznamy a tabuľky na nasledujúcej strane)

ALEBO

1.b Posudku relevantného kvalifikovaného ekológa (SQE), ktorý v správe o ekologickom hodnotení na základe prieskumu lokality označil pozemok za „nízko ekologicky hodnotný“. Pozri definíciu pojmu Kvalifikovaný ekológ (SQE) v dokumente BREEAM na strane 349.

Jeden kredit - Ochrana ekologických prvkov

2 Všetky existujúce prvky ekologickej hodnoty (pozri príslušné definície na strane 349) v rámci hodnotenej zóny a hraničnou oblasťou lokality sú primerane chránené pred poškodením počas odstraňovania, prípravy staveniska a stavebných činností (pozri CN3 na strane 347).

3 Vo všetkých prípadoch je hlavný zhotoviteľ povinný zabezpečiť ekologickú ochranu na základe odporúčania kvalifikovaného ekológa, pred akýmikoľvek predbežnými stavebnými alebo prípravnými prácami na stavenisku (napr. vyčistenie staveniska alebo vybudovanie dočasných zariadení staveniska).

Kontrolné zoznamy a tabuľky

Kontrolný zoznam BREEAM na definovanie pôdy s nízkou ekologickou hodnotou

Ak je odpoveď na všetky otázky v kontrolnom zozname „nie“, pôdu možno definovať ako pôdu s nízkou ekologickou hodnotou a udeliť jej kredit. V prípade kladnej odpovede na niektorú z otázok sa kredit môže udeliť len na základe potvrdenia od kvalifikovaného ekológa, že lokalita má nízku ekologickú hodnotu.

Kontrolný zoznam by mal vyplniť buď posudzovateľ BREEAM na základe príslušných dôkazov predložených projekčným tímom, alebo ho vyplní projekčný tím a predloží ho posudzovateľovi spolu s príslušnými podpornými dôkazmi. Odpovede v kontrolnom zozname musia vychádzať z hodnotenia lokality pred akýmkoľvek vypratávaním lokality alebo stavebnými činnosťami (ďalšie podrobnosti nájdete v Poznámkach o súlade na nasledujúcej strane).

Tabuľka 53: Kontrolný zoznam BREEAM na definovanie pôdy s nízkou ekologickou hodnotou

ID	Otázka	Áno	Žiadne
O1	Identifikovala niektorá z nasledujúcich miestnych organizácií možnú ekologickú hodnotu lokality? (pred odpoveďou na otázku je potrebné kontaktovať všetky príslušné orgány) 1. Príslušný regulačný orgán 2. Prírodné alebo ochranárske skupiny.	❑	❑
O2	Je rozvoj v okruhu 2 km od jasne vymedzeného geografického priestoru, ktorý je uznaný, vyhradený a spravovaný prostredníctvom právnych alebo iných účinných prostriedkov na dosiahnutie dlhodobej ochrany prírody so súvisiacimi ekosystémovými službami (napr. lokalita pri meste Ramsar)? Nasledujúce zdroje informácií nie sú úplné, ale môžu sa použiť na kontrolu miestneho využitia pôdy 1. http://www.protectedplanet.net/ 2. Webové stránky príslušného regulačného orgánu 3. Mapy, ktoré zobrazujú konkrétne lokality a poskytujú informácie o miestnych politikách týkajúcich sa danej lokality.	❑	❑
O3	Nachádza sa výstavba vo vzdialenosti do 500 m od určenej oblasti? Nasledujúce zdroje informácií nie sú úplné, ale môžu sa použiť na kontrolu miestneho využitia pôdy 1. http://www.protectedplanet.net 2. Webové stránky príslušného regulačného orgánu 3. Mapy, ktoré zobrazujú konkrétne lokality a poskytujú informácie o miestnych politikách týkajúcich sa danej lokality.	❑	❑

ID	Otázka	Áno	Žiadne
O4	Nachádzajú sa v zóne výstavby alebo v okruhu 100 m od nej niektoré z nasledujúcich biotopov? Nasledujúci zoznam nie je úplný, ale stanovuje druh biotopu, ktorý BREEAM definuje ako ekologicky hodnotný: 1. Lesy (napr. vysoký les, háj, kroviny)* 2. Vodné toky (napr. rieky, potoky alebo kanály)** 3. Mokrade (napr. močiare, bažiny, vlhké lúky, rašeliniská, oázy, ústia riek, delty, prílivové a odlivové oblasti, príbrežné morské oblasti, mangrovové porasty, koralové útesy a človekom vytvorené lokality, ako sú rybníky, ryžoviská, nádrže a soľné panvy) 4. Lúky a pastviny (napr. step, prérie, pampy, lúka, pasienok, spevnené steny, trávnaté plochy, savany, vresoviská, močiare atď.) 5. Biotopy s trpasličími krovinami (napr. vresoviská, rašeliniská, húštiny) 6. Suchá, polosuchá púšť*** 7. Všetky ostatné biotopy, ktoré sa považujú za ekologicky hodnotné.	❑	❑
O5	Nachádza sa v zóne výstavby alebo na jej hranici niektorý z nasledujúcich prvkov? 1. Dospelé alebo takmer dospelé stromy 2. Dospelý živý plot alebo dospelá výsadba označujúca hranicu (poľné živé ploty s výškou nad 1 m a šírkou 0,5 m)**** 3. Existujúce budovy (obývané alebo opustené), ktoré môžu poskytovať útočisko pre faunu a flóru	❑	❑

Poznámky:
* Les je definovaný ako „viac ako 25% korún stromov a kríkov vysokých viac ako jeden meter“.
** Široké biotopy riek a potokov sú definované ako tečúce vodné toky od malých pramenných potokov až po veľké rieky. Tento široký biotop zahŕňa spolu s mokraďami aj samotnú vodnú plochu a vegetáciu pozdĺž vodného okraja.
*** UNEP potvrdzuje, že púšte sú jedinečné, vysoko prispôsobené prírodné ekosystémy, ktoré poskytujú životodarné planéty a podporu ľudských populácií rovnakým spôsobom ako v iných ekosystémoch
**** Živý plot je definovaný ako „línia drevinovej vegetácie, ktorá bola upravená tak, že stromy už nemajú svoj prirodzený tvar“.

Poznámky o súlade

Ref	Definície pojmov	Popis
Hrubá stavba a jadro (iba nebytové a rezidenčné inštitúcie)		
CN1	Príslušné hodnotiace kritériá	Obidve možnosti: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy Pozri Príloha D - Posúdenie plášťa a jadra projektu na strane 409 Podrobnejší opis možností hodnotenia plášťa a jadra.
Obytné - čiastočne a úplne vybavené		
CN2	Príslušné hodnotiace kritériá - Obydlia pre jednu rodinu a obydlia pre viaceré rodiny	Obidve možnosti: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy. Pozri Prílohu E – Uplatniteľnosť BREEAM New Construction na obydlia pre jednu rodinu a obydlia pre viaceré rodiny, čiastočne a úplne vybavené na str. 412, kde nájdete podrobnejší popis možností hodnotenia bytových domov.

Ref	Definície pojmov	Popis
Všeobecné		
CN3	Ochrana prvkov s ekologickou hodnotou	V prípade, že sa na lokalite nachádzajú a zachovávajú nasledujúce prvky ekologickej hodnoty, mali by sa chrániť, ako je uvedené nižšie: Stromy s priemerom kmeňa nad 100 mm, porasty stromov a stromy s významnou ekologickou hodnotou majú byť chránené zábranami. Bariéry musia zabraňovať stavebným prácam v oblasti medzi bariérou a kmeňom stromu. Minimálna vzdialenosť medzi kmeňom stromu a zábranami musí byť buď vzdialenosť rozpätia konárov, alebo polovica výšky stromu, podľa toho, ktorá je väčšia. Stromy musia byť chránené pred priamym nárazom a pred odrezaním alebo udusením koreňov. Pobrežná zástavba, vodné toky, mokrade, oblasti sladkej vody a známe studne podzemnej vody by mali byť chránené ochrannými priekopami a odtokmi zo staveniska, aby sa minimalizovalo znečistenie, odplavovanie alebo erózia. Ohradené zóny vylúčenia by sa mali udržiavať okolo všetkých mangrovových porastov (na strane pevniny), ktoré sa zachovávajú, aby sa minimalizovalo poškodenie týchto citlivých biotopov pracovnými silami. Ak je to možné, malo by sa zabrániť činnostiam na morskej strane mangrovových porastov a mali by sa dôkladne monitorovať a kontrolovať. Je potrebné potvrdiť, že mangrovové porasty nebudú vystavené dlhodobému suchu alebo zamokreniu v dôsledku zmien hladiny vody v dôsledku stavebných činností. Ostatné ekologické prvky a prírodné oblasti, ktoré si vyžadujú ochranu, musia mať buď byť vybudované a chránené bariéry, alebo ak sú vzdialené od staveniska alebo skladovacích priestorov, musia byť chránené zákazom stavebnej činnosti v okolí.
CN3.1	Žiadne prvky ekologickej hodnoty. Pozri kritérium 2 na strane 344.	V prípade, že neexistujú žiadne prvky ekologickej hodnoty, kredit za ochranu ekologických prvkov sa môže udeliť len vtedy, ak je hodnotená zóna definovaná ako „pôda s nízkou ekologickou hodnotou“.
CN3.2	Posudok kvalifikovaného ekológa Pozri kritérium 1 na strane 344.	V prípade, že sa získal posudok kvalifikovaného ekológa, ktorý na základe svojho odborného posúdenia definoval lokalitu ako územie s nízkou ekologickou hodnotou, toto posúdenie alebo úsudok má prednosť pred akýmkoľvek posúdením určeným na základe kontrolného zoznamu BREEAM na definovanie územia s nízkou ekologickou hodnotou. Kvalifikovaný ekológ musí svoje zistenia založiť na údajoch zozbieraných z terénneho prieskumu lokality vykonaného vo vhodnom ročnom období, keď sa vyskytujú rôzne druhy rastlín a živočíchov. Obsah ekologickej správy má byť reprezentatívny pre existujúcu ekológiu lokality pred začatím počiatočných prípravných prác na stavenisku (t. j. pred výstavbou). Ak ekológ nenavštívil lokalitu v príslušnom čase, kredit nemožno udeliť (s výnimkou okolností uvedených nižšie v bode CN3.4 na nasledujúcej strane).
CN3.3	Prvky s malou alebo žiadnou ekologickou hodnotou. Pozri kritérium 2 na strane 344	Ak kvalifikovaný ekológ potvrdil, že prvok prítomný na lokalite má malú alebo žiadnu ekologickú hodnotu (pozri Príslušné definície na strane 349), alebo ak štatutárny orgán alebo kvalifikovaný arborista považuje strom za významné nebezpečenstvo pre verejnosť alebo obyvateľov, potom môže byť tento prvok vyňatý z požiadavky „ochrany ekologických prvkov“ v tejto otázke.

Ref	Definície pojmov	Popis
CN3.4	Prvotné odstránenie prvkov s ekologickou hodnotou	Ak boli prvky ekologickej hodnoty odstránené v rámci prípravy staveniska, takáto výstavba nemôže získať kredity, aj keď budú takéto prvky nahradené v rámci novej stratégie ochrany zelene.
CN4	Príprava staveniska pred jeho kúpou. Pozri kritérium 1 na strane 344	V prípade lokalít, ktoré boli vyčistené pred kúpou lokality a menej ako päť rokov pred hodnotením, by mal kvalifikovaný ekológ odhadnúť ekologickú hodnotu lokality bezprostredne pred jej vyčistením na základe dostupných informácií zo staveniska (vrátane leteckých snímok) a typu krajiny alebo okolia staveniska. Ak ekológovia nevedia určiť, že lokalita mala pred vyčistením nízku ekologickú hodnotu, kredity sa musia odobrať, t. j. ak neexistuje žiadny dôkaz , a teda ani odôvodnenie pre udelenie kreditov. V prípade lokalít vyčistených pred viac ako piatimi rokmi sa ekologická hodnota lokality zakladá na súčasnej situácii na základe toho, že do piatich rokov sa ekologické prvky začnú obnovovať, a preto slúžia ako ukazovateľ ekologickej hodnoty lokality.
CN4.1	Overenie správy vypracovanej ekológom, ktorá nespĺňa kritériá BREEAM na kvalifikovaného ekológa. Pozri kritérium 1 na strane 344.	V prípade, že kvalifikovaný ekológ overuje ekologickú správu vypracovanú iným ekológom, ktorý nespĺňa kritériá kvalifikovaného ekológa, musí správu minimálne preskúmať a písomne potvrdiť nasledovné faktory: 1. Boli použité osvedčené postupy 2. Správne, pravdivo a objektívne boli podané správy a odporúčania. 3. Správa bola vhodná vzhľadom na posudzovanú budovu a rozsah navrhovaných prác 4. Neboli poskytnuté neplatné, skreslené a prehnané odporúčania. Okrem toho sa vyžaduje písomné potvrdenie od overovateľa tretej strany, že sú v súlade s definíciou kvalifikovaného ekológa.

Metodológia

Žiadne.

Dôkazová dokumentácia

Kritériá	Predbežná fáza projektu	Záverečná fáza po výstavbe
Všetky	Vyplnená kópia tabuľky 53 na strana 345 podpísaná a datovaná klientom alebo členom projektového tímu A BUĎ Plány, fotografie staveniska a špecifikácie potvrdzujúce prítomnosť alebo neprítomnosť ekologických prvkov a uvedených ochranných opatrení ALEBO Správa ekológa, v ktorej sa zdôrazňujú požadované informácie v súlade s poznámkou k usmerneniu 13 - Súvisiaca správa ekológa pre BREEAM.	Správa BREEAM o kontrole skutočného stavu staveniska spolu s fotografiami ALEBO Správa ekológa potvrdzujúca, že: 1. Hranice staveniska a stavebnej zóny sa nezmenili 2. V prípade potreby všetky existujúce ekologické prvky stále pretrvávajú.

Dodatočné informácie

Relevantné definície

Príslušný regulačný orgán

Ide o štátneho alebo súkromného regulátora, ktorého povinnosťou je vykonávať funkciu schvaľovania plánovania pre rozvojovú oblasť.

Hodnotiaca zóna

Na účely tohto dokumentu BREEAM je hodnotená zóna definovaná ako akýkoľvek pozemok v lokalite , ktorý je zastavaný (a teda narušený) budovami, spevnenými plochami, mäkkými terénnymi úpravami, prístupom k lokalite , plus 3 m široká zóna meraná smerom von od hranice okolo týchto oblastí bez ohľadu na hranicu lokality . Zahŕňa aj všetky plochy používané na dočasné skladovanie a budovy. Ak nie je presne známe, kde sa budú nachádzať budovy, spevnené plochy, prístupové komunikácie a dočasné sklady, musí sa predpokladať, že zónou výstavby je celé stavenisko.

Predmet súvisiaci s ekológiou

V závislosti od stupňa ekologického obsahu (minimálne 60%) sa za relevantné môžu považovať tieto stupne: Ekológia, biologické vedy, zoológia, botanika, manažment krajiny, environmentálne vedy, morský a sladkovodný manažment, vedy o Zemi, poľnohospodárstvo, lesníctvo, geografia, manažment krajiny.

Prvky ekologickej hodnoty.

Prvky, ktoré si vyžadujú ochranu počas prípravy staveniska a výstavby, aby sa zachovala ich prítomnosť a ekologická hodnota, medzi ktoré patria minimálne:

1. Stromy, ktorých hodnota sa určila pomocou jedného z týchto pravidiel
   a. Staršie ako 10 rokov (alebo ak vek nie je známy, priemer kmeňa je väčší ako 100 mm)
   b. Strom s významnou ekologickou hodnotou podľa definície v norme BS 5837: 2012 od kvalifikovaného ekológa alebo kvalifikovaného arboristu
2. Živé ploty a prírodné oblasti vyžadujúce si ochranu
3. Vodné toky a mokrade
4. Možnosti hniezdenia vtákov alebo netopierov v budove.

Poznámka: Ak regulátor alebo kvalifikovaný arborista určí, že strom predstavuje významné nebezpečenstvo pre verejnosť alebo obyvateľov, potom môže byť tento prvok vyňatý z požiadavky „ochrany ekologických prvkov“ v tejto otázke.

Relevantný kvalifikovaný ekológ (SQE)

Osoba, ktorá dosiahne všetky nasledujúce body, sa môže považovať za „primerane kvalifikovanú“ na účely súladu s BREEAM:

1. Má vysokoškolské vzdelanie alebo rovnocennú kvalifikáciu v oblasti ekológie alebo príbuznom odbore s významným podielom prvku ekológie.
2. Pôsobí ako ekológ minimálne tri roky (za obdobie posledných päť rokov). Tieto skúsenosti musia jasne preukazovať praktické pochopenie faktorov ovplyvňujúcich akustiku vo vzťahu k stavbe a zastavanému prostrediu vrátane pôsobenia v poradenskej funkcii s cieľom poskytovať odporúčania týkajúce sa vhodných opatrení na ochranu a zlepšenie životného prostredia a zmierňovania negatívnych dopadov. Príslušná prax sa musí týkať krajiny, v ktorej sa hodnotenie vykonáva.

Ďalšie informácie

Veľmi často sa stáva, že stavenisko má potenciál zvýšiť svoju hodnotu z hľadiska biodiverzity prostredníctvom vhodného návrhu a riadenia bez ohľadu na to, či sa na získanie stavebného povolenia vyžaduje zvýšenie biodiverzity. Táto otázka hodnotenia BREEAM poskytuje príležitosť oceniť tie projekty, ktoré prispievajú k ochrane a zvyšovaniu biodiverzity, zlepšujú životné prostredie a plnia environmentálne ciele.

Odporúčania kvalifikovaného ekológa môžu mať vplyv na špecifikácie vypracované inými členmi projektového tímu, napríklad krajinnými architektmi alebo inžiniermi pre odvodnenie. BREEAM odporúča, aby sa už vo fáze koncepcie vývoja hľadali možnosti spolupráce medzi ekológom a príslušnými odborníkmi s cieľom poukázať na príležitosti a obmedzenia a umožniť účinné začlenenie týchto aspektov do odporúčaní ekológa.

Svetová databáza chránených území (WDPA) obsahuje informácie od rôznych organizácií, ako sú národné vlády, mimovládne organizácie, akademické inštitúcie, sekretariáty medzinárodných dohovorov o biodiverzite atď. Údaje a mapy sa môžu použiť na analýzu vplyvu na životné prostredie a rozhodovanie súkromného sektora v prípade, že by mohlo dôjsť k ovplyvneniu oblastí s ekologickou hodnotou.

Prepojenie ekologických správ s BREEAM

Usmernenie k prepojeniu ekologických správ s BREEAM je k dispozícii v Usmernení 13 na webovej stránke BREEAM.

LE 03 Minimalizácia vplyvu na existujúcu ekológiu staveniska

Táto otázka sa nevzťahuje na BREEAM International New Construction, verzia 6.

LE 04 Zlepšenie ekológie staveniska (všetky budovy)

Počet dostupných kreditov	Minimálne normy
3	Žiadne

Cieľ

Podporovať opatrenia prijaté na zvýšenie ekologickej hodnoty lokality v dôsledku výstavby.

Kritériá hodnotenia

Táto požiadavka je rozdelená do dvoch častí:

- Správa ekológa a odporúčania (1 kredit) Zvýšenie
- ekologickej hodnoty (2 kredity)

Na preukázanie súladu sa vyžaduje:

Jeden kredit - Správa ekológa a odporúčania

1 Objednávateľ alebo jeho zástupca vymenoval kvalifikovaného ekológa najneskôr do ukončenia projektovej dokumentácie, t. j. ekológ je vymenovaný na začiatku fázy koncepčného návrhu.

2 Kvalifikovaný ekológ pripravil ekologickú správu s príslušnými ekologickými odporúčaniami (pozri príslušné definície na strane 354) na zlepšenie ekológie staveniska vo fáze návrhu koncepcie. Správa vychádza z návštevy na mieste alebo z prieskumu, ktorý vykonal kvalifikovaný ekológ (pozri tiež CN2.1 na nasledujúcej strane).

3 Aspoň 50% odporúčaní na zlepšenie ekológie v rámci ekologickej správy bolo alebo bude implementovaných do konečného návrhu a stavby.

Až dva kredity - Zvýšenie ekologickej hodnoty

4 Kritériá 1 a 2 sú splnené.

5 Percento odporúčaní na zlepšenie ekológie v rámci ekologickej správy, ktoré boli alebo budú implementované do konečného návrhu a stavby.

Tabuľka 54: Percento realizovaných odporúčaní z ekologickej správy

Percento implementovaných odporúčaní z ekologickej správy	Kredity
75%	1
95%	2

Kontrolné zoznamy a tabuľky

Žiadne.

Poznámky o súlade

Ref	Definície pojmov	Popis
Hrubá stavba a jadro (iba nebytové a rezidenčné inštitúcie)		
CN1	Príslušné hodnotiace kritériá	Obidve možnosti: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy Pozri Príloha D - Posúdenie plášťa a jadra projektu na strane 409 Podrobnejší opis možností hodnotenia plášťa a jadra.
Obytné - čiastočne a úplne vybavené		
CN1.1	Príslušné hodnotiace kritériá - Obydlia pre jednu rodinu a Obydlia pre viaceré rodiny	Obidve možnosti: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy Pozri Prílohu E – Uplatniteľnosť BREEAM New Construction na obydlia pre jednu rodinu a obydlia pre viaceré rodiny, čiastočne a úplne vybavené na str. 412, kde nájdete podrobnejší popis možností hodnotenia bytových domov.
Všeobecné		
CN2	Zapojenie ekológa SQE v ranom štádiu. Pozri kritérium 1.	Úlohou ekológa SQE vo fáze prípravy a stručného popisu je poskytovať poradenstvo pri rozhodovaní o usporiadaní staveniska a hustote zástavby v počiatočnej fáze, aby sa maximalizovali príležitosti na zlepšenie ekológie staveniska. Účasť ekológa SQE vo fáze návrhu koncepcie bude potrebná na poskytnutie podrobnejších ekologických odporúčaní (pozri príslušné definície na nasledujúcej strane) na základe rámcového návrhu.
CN2.1	Načasovanie prieskumu a správy ekológa. Pozri kritérium 2.	SQE musí vykonať prieskum existujúcej ekológie lokality, z ktorého vychádza jeho správa (alebo poskytnúť overenie, ak správu vypracovali iní) vo fáze návrhu koncepcie, aby sa uľahčilo a maximalizovalo potenciálne ekologické zlepšenie.
CN2.2	Usmernenia pre ekológov a posudzovateľo v	Usmernenie k prepojeniu ekologických správ s BREEAM je k dispozícii v Usmernení 13 na webovej stránke BREEAM.
CN2.3	Výstavba na zastavanom území v prípade existujúcich lokalít s obmedzenými ekologickými vylepšeniami alebo nadradenými bezpečnostnými požiadavkami. Pozri kritérium 1.	Ak nie je možné realizovať ekologické vylepšenia v rámci zóny výstavby z dôvodu nadradených bezpečnostných otázok alebo ak je priestor na ekologické vylepšenia v rámci zóny značne obmedzený, môžu sa zohľadniť ekologické vylepšenia vykonané v iných oblastiach staveniska a použiť na určenie počtu dosiahnutých kreditov BREEAM. Tieto vylepšenia sa musia uskutočniť v rámci širšej existujúcej zástavby a musia byť naplánované a uvedené do prevádzky v podobnom časovom horizonte ako posudzovaná zástavba. Príkladmi prípadov, v ktorých sa táto poznámka o súlade môže uplatniť, sú nové budovy v rámci existujúcich univerzitných a vysokoškolských areálov, maloobchodných alebo obchodných parkov.

Metodológia

Žiadne.

Dôkazová dokumentácia

Kritériá	Predbežná fáza projektu	Záverečná fáza po výstavbe
Všetky	Správa kvalifikovaného ekológa so zreteľom na informácie požadované v Usmernení 13 alebo kópia Usmernenia 13 vyplnená ekológom. Projektové výkresy vrátane navrhovaného a existujúceho (pred výstavbou) plánu lokality alebo prieskumu. Písomné potvrdenie od klienta alebo projektového tímu potvrdzujúce, ako sa budú vykonávať odporúčania ekológa.	Požiadavky fázy návrhu Správa posudzovateľa BREEAM z inšpekcie na mieste a fotografický dôkaz potvrdzujúci výsadbu v súlade s plánom v štádiu návrhu. Príslušný oddiel alebo ustanovenia stavebnej špecifikácie alebo zmluvy alebo list od objednávateľa alebo hlavného dodávateľa potvrdzujúci, že výsadba bude dokončená do 18 mesiacov od ukončenia výstavby*. * Týka sa to veľkých projektov so zmiešaným využitím alebo projektov s viacerými budovami, kde ešte nie je dokončené celá stavenisko a ešte neboli pridané ekologické vylepšenia, alebo kde sa prvky pridávajú neskôr vo vhodnom období výsadby

Dodatočné informácie

Relevantné definície

Ekologické odporúčania

Ekologické odporúčania sú definované ako opatrenia prijaté na zlepšenie ekológie lokality. Ide o opatrenia, o ktorých ekológ odôvodnene predpokladá, že sa dajú realizovať, a to s ohľadom na ich uskutočniteľnosť pri zohľadnení stavebných alebo územných obmedzení. Medzi ne môžu patriť, ale nielen:

1. Výsadba lokálne vhodných pôvodných druhov alebo nepôvodných druhov so známou atraktivitou alebo prínosom pre miestne voľne žijúce živočíchy
2. Prijatie osvedčených postupov úpravy zelene (napr. žiadne alebo nízke používanie reziduálnych pesticídov)
3. Inštalácia búdok pre vtáky, netopiere alebo hmyz na vhodných miestach v lokalite
4. Vypracovanie úplného plánu riadenia biodiverzity vrátane zamedzenia výrubu alebo prác v kľúčových obdobiach roka (napr. v období rozmnožovania)
5. Správna integrácia, návrh a údržba udržateľných odvodňovacích systémov (SuDS) (ako sú dažďové zelené strechy, zelené steny, komunitné sady, komunitné parcely atď.

Ďalšie informácie

Žiadne.

LE 05 Dlhodobý vplyv na biodiverzitu

(všetky budovy)

Počet dostupných kreditov	Minimálne normy
2	Žiadne

Cieľ

Minimalizovať dlhodobý vplyv výstavby na lokalitu a biodiverzitu okolia.

Kritériá hodnotenia

Na preukázanie súladu sa vyžaduje nasledovné:

Až dva kredity

1 Ak sa pred začatím činností na stavenisku vymenuje kvalifikovaný ekológ, ktorý potvrdí, že počas procesu projektovania a výstavby boli dodržané všetky príslušné predpisy EÚ, miestne a vnútroštátne právne predpisy alebo požiadavky týkajúce sa ochrany a zlepšovania ekológie.

2 Ak sa vypracuje plán manažmentu krajiny a biotopov vhodný pre danú lokalitu (vrátane vplyvov stavby počas výstavby aj počas prevádzky), ktorý sa bude vzťahovať aspoň na prvých päť rokov po dokončení projektu. Odovzdáva sa vlastníkovi budovy alebo užívateľom a obsahuje:
- 2.a Správa všetkých chránených prvkov v lokalite
- 2.b Správu všetkých nových, existujúcich alebo rozšírených biotopov
- 2.c Odkaz na všetky súčasné alebo budúce právne požiadavky (miestne, vnútroštátne alebo regionálne), ktoré sa vzťahujú na lokalitu v súvislosti s ochranou druhov a biotopov (a prípadne odkaz na akčné stratégie alebo akčné plány v oblasti biodiverzity).
- 2.d Potvrdenie kvalifikovaného ekológa, že všetky relevantné aspekty ekológie sú zahrnuté v pláne.

3 V prípade prijatia dodatočných opatrení na zlepšenie dlhodobej biodiverzity hodnotenej lokality podľa tabuľky 55 na nasledujúcej strane.

Ak sú splnené kritériá 1 až 3, kredity sa môžu udeliť takto:

Počet kreditov	Počet dodatočných opatrení
1	2
2	4

Ak kvalifikovaný ekológ potvrdí, že niektoré z dodatočných opatrení uvedených v tabuľke 55 na nasledujúcej strane sa na posudzovaný projekt nevzťahujú, kredity sa môžu udeliť takto:

	Príslušné dodatočné opatrenia				
	Všetky	**4**	**3**	**2**	**1**
Kredity	**Počet ďalších opatrení na posúdenie**				
1	2	2	2	Nie je k dispozícii	Nie je k dispozícii
2	4	4	3	2	1

Kontrolné zoznamy a tabuľky

Tabuľka 55: Ďalšie opatrenia na zlepšenie dlhodobej biodiverzity

Ref	Ďalšie opatrenia na zlepšenie dlhodobej biodiverzity
1	Hlavný zhotoviteľ vymenuje zástupcu pre biodiverzitu, ktorý má právomoc ovplyvňovať činnosti na stavenisku a zabezpečiť, aby sa minimalizovali škodlivé vplyvy na biodiverzitu na stavenisku v súlade s odporúčaniami kvalifikovaného ekológa.
2	Hlavný dodávateľ zaškolí pracovníkov na stavbe o tom, ako chrániť ekológiu na stavbe počas projektu. Pre všetkých pracovníkov na stavenisku sa musí uskutočniť osobitné školenie, aby sa zabezpečilo, že si budú vedomí toho, ako sa počas činností na stavenisku vyhnúť poškodeniu ekológie na stavenisku. Školenie by malo vychádzať zo zistení a odporúčaní na ochranu ekologických prvkov, na ktoré upozorňuje správa vypracovaná kvalifikovaným ekológom.
3	Hlavný zhotoviteľ zaznamenáva opatrenia prijaté na ochranu biodiverzity a monitoruje ich účinnosť počas kľúčových fáz stavebného procesu. Táto požiadavka zaväzuje hlavného zhotoviteľa, aby takéto záznamy sprístupnil, ak o to verejnosť požiada.
4	Ak sa vytvorí nový ekologicky hodnotný biotop vhodný pre miestnu oblasť. Patrí sem biotop, ktorý podporuje národne, regionálne alebo lokálne významnú biodiverzitu alebo ktorý je sám o sebe národne, regionálne alebo lokálne významný. Pred ukončením fázy návrhu koncepcie by sa mali vyžiadať odborné posudky o miestnej biodiverzite, ktoré by pomohli identifikovať druhy s miestnym významom pre biodiverzitu v danej lokalite a zabezpečiť, aby návrhy podporovali miestne priority.
5	Ak sa na stavenisku nachádzajú biotopy rastlín a živočíchov, zhotoviteľ naplánuje práce na stavenisku tak, aby sa minimalizovalo vyrušovanie voľne žijúcich živočíchov. Napríklad príprava staveniska, zemné práce a úpravy zelene boli alebo budú naplánované na vhodné ročné obdobie, kedy sú dopady na voľne žijúcich živočíchov minimálne. Načasovanie prác môže mať významný vplyv napríklad na hniezdenie vtákov, kvitnúce rastliny, kľúčenie semien, obojživelníky atď. Opatrenia, ako napríklad postupné odstraňovanie vegetácie, môžu pomôcť zmierniť ekologické vplyvy. Táto dodatočná požiadavka sa splní, ak sa vypracuje jasný plán, v ktorom sa podrobne uvedie, ako sa činnosti načasujú, aby sa zabránilo akémukoľvek vplyvu na biodiverzitu lokality v súlade s odporúčaniami kvalifikovaného ekológa.

Ref	Ďalšie opatrenia na zlepšenie dlhodobej biodiverzity
6	**Budovy pre vzdelávanie (len predškolské zariadenia, školy a vysoké školy)** Projektový tím nadviazal partnerstvo s miestnou skupinou, ktorá má odborné znalosti v oblasti voľne žijúcich živočíchov a táto skupina: 1. Poskytla poradenstvo na začiatku procesu navrhovania v súvislosti s ochranou a zabezpečením biotopov pre druhy miestneho významu v lokalite 2. Poskytla poradenstvo s cieľom zabezpečiť, aby bol návrh šetrný voči životnému prostrediu. Mala by pritom vychádzať z poznatkov o miestnych podmienkach všetkých prvkov alebo druhov ekologického záujmu na stavenisku alebo v jeho blízkosti. 3. Poskytla alebo bude naďalej poskytovať priebežnú podporu a poradenstvo prostredníctvom vzdelávania na pomoc pri správe, údržbe a dlhodobom rozvoji vonkajšieho priestoru.

Poznámky o súlade

Ref	Definície pojmov	Popis
Hrubá stavba a jadro (iba nebytové a rezidenčné inštitúcie)		
CN1	Príslušné hodnotiace kritériá	Obidve možnosti: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy Pozri Príloha D - Posúdenie plášťa a jadra projektu na strane 409 Podrobnejší opis možností hodnotenia plášťa a jadra.
Obytné - čiastočne a úplne vybavené		
CN2	Príslušné hodnotiace kritériá - Obydlia pre jednu rodinu a Obydlia pre viaceré rodiny	Obe možnosti: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy. Pozri Prílohu E – Uplatniteľnosť BREEAM New Construction na obydlia pre jednu rodinu a obydlia pre viaceré rodiny, čiastočne a úplne vybavené na str. 412, kde nájdete podrobnejší popis možností hodnotenia bytových domov.
Všeobecné		
CN3	Ak sa ďalšie opatrenia neuplatňujú. Pozri kritérium 3 na strane 355.	Vo všetkých prípadoch je na získanie kreditov za túto problematiku BREEAM potrebné využiť kvalifikovaného ekológa. Kvalifikovaný ekológ musí písomne poskytnúť minimálne tieto informácie: 1. Potvrdenie, že boli splnené kritériá 1 a 2 na strane 355 2. Vysvetlenie, koľko z dodatočných opatrení pre kritérium 3 na strane 355 je uplatniteľných a bolo dosiahnutých 3. Usmernenie, ako zabezpečiť dodatočné opatrenie 4 (ak je to možné). Ak ekológ kvalifikovaného potvrdí, že žiadne z dodatočných opatrení nie je uplatniteľné (vzhľadom na povahu lokality a jej okolia), za preukázanie súladu s kritériami 1 a 2 na strane 355 možno udeliť plný počet bodov.
Špecifické pre budovu		

Ref	Definície pojmov	Popis
CN4	Vzdelávanie (len predškolské a školské budovy). Dodatočné opatrenie 6: Priebežná podpora a poradenstvo	Mohlo by to mať formu stretnutí niekoľkokrát ročne s pracovnou skupinou zamestnancov, žiakov alebo študentov, ktorá by im pomohla plánovať práce na ochranu a zlepšenie životného prostredia alebo činnosti týkajúce sa ekológie v areáli školy alebo v jej blízkosti.

Metodológia

Žiadna.

Dôkazová dokumentácia

Kritériá	Predbežná fáza projektu	Záverečná fáza po výstavbe
1–3	Správa ekológa so zreteľom na informácie požadované v Usmernení 13 alebo kópia Usmernenia 13 vyplnená ekológom. A BUĎ Kópia plánu riadenia krajinných úprav a biotopov na stavenisku ALEBO Príslušná časť alebo ustanovenia stavebnej špecifikácie alebo zmluvy potvrdzujúce jej výstavbu a rozsah List od klienta potvrdzujúci záväzok vypracovať plán riadenia a jeho rozsah.	List od kvalifikovaného ekológa potvrdzujúci, že boli dodržané všetky príslušné právne predpisy týkajúce sa ochrany a zlepšovania životného prostredia. Kópia krajinných úprav a biotopu staveniska a biotopu danej lokality
Dodatočné opatrenia		
1	Príslušný oddiel alebo ustanovenia stavebnej špecifikácie alebo zmluvy alebo menovací dekrét zhotoviteľa.	Kontrola posudzovateľa alebo kópia príslušných častí stavebného denníka, ktoré uvádzajú podrobnosti o všetkých opatreniach alebo udalostiach, ktoré vykonala zodpovedná osoba za ochranu biodiverzity. Ak sa nevyžadovali alebo neprijali žiadne opatrenia, malo by to byť uvedené v denníku.
2	Plán školení alebo potvrdzujúci list od hlavného zhotoviteľa, v ktorom sa zaväzuje poskytnúť príslušné školenia ALEBO Kópiu ustanovenia špecifikácie, v ktorom sa vyžaduje, aby hlavný zhotoviteľ zaškolil pracovníkov na stavenisku.	Záznam o absolvovanom školení vrátane potrebných údajov.

Kritériá	Predbežná fáza projektu	Záverečná fáza po výstavbe
3	List od hlavného zhotoviteľa potvrdzujúci kritériá monitorovania a podávania správ o výstavbe ALEBO Kópiu ustanovenia špecifikácie, podľa ktorého je hlavný zhotoviteľ povinný vykonávať monitorovanie a podávať správy.	Správa o kontrole lokality od posudzovateľa BREEAM (alebo kvalifikovaného ekológa) a fotografický dôkaz potvrdzujúci existenciu navrhovaného biotopu.
4	Kópia navrhovaného plánu staveniska so zvýraznením nového ekologicky hodnotného biotopu a správa alebo list kvalifikovaného ekológa potvrdzujúci, že biotop podporuje príslušné akčné plány v oblasti biodiverzity.	Správa o kontrole lokality od posudzovateľa BREEAM (alebo kvalifikovaného ekológa) a fotografický dôkaz potvrdzujúci existenciu navrhovaného biotopu.
5	Správa kvalifikovaného ekológa alebo list potvrdzujúci opatrenia potrebné v súvislosti s plánovaním prác na stavenisku s cieľom minimalizovať rušenie. Program prác hlavného zhotoviteľa ALEBO Príslušná časť alebo ustanovenia stavebnej špecifikácie alebo zmluvy potvrdzujúce, že program prác na stavenisku minimalizuje vyrušovanie voľne žijúcich živočíchov v súlade s odporúčaniami kvalifikovaného ekológa.	List od kvalifikovaného ekológa alebo kópia jeho správy potvrdzujúca, že práce na stavenisku boli vykonané tak, aby sa minimalizovalo vyrušovanie voľne žijúcich živočíchov v súlade s jeho odporúčaniami.
6	Doklady od projektového tímu alebo skupiny pre voľne žijúcu zver potvrdzujúce: 1. Rozsah partnerstva 2. Podrobnosti a pôsobnosť skupiny pre faunu a flóru 3. Popis procesu pre trvalú podporu, ktorú sa skupina zaväzuje poskytovať partnerom. 4. Podrobnosti o doterajších stretnutiach a akciách	Dokumentácia od projektového tímu alebo skupiny pre ochranu voľne žijúcich zvierat, ktorá obsahuje požadované informácie o stretnutiach, opatreniach, poskytnutých radách a rámec budúcej podpory vrátane harmonogramu stretnutí a podujatí.

Dodatočné informácie

Relevantné definície

Biodiverzita

Biodiverzita je definovaná ako rozmanitosť života na Zemi. Zahŕňa všetky druhy, živočíchy, rastliny, huby, riasy, baktérie a biotopy, od ktorých sú závislé.

Akčný plán pre biodiverzitu

Plán, ktorý stanovuje konkrétne, merateľné, dosiahnuteľné, realistické a časovo ohraničené ciele ochrany druhov a biotopov.

Zodpovedná osoba za ochranu biodiverzity

Osoba formálne poverená hlavným zhotoviteľom zodpovednosťou za monitorovanie a ovplyvňovanie činností na stavenisku a minimalizáciu škodlivých vplyvov na biodiverzitu. Osoba musí mať dostatočné právomoci a znalosti v oblasti ekológie a stavebníctva a musí tiež tráviť dostatok času na stavenisku, aby mohla vykonávať túto úlohu. Zodpovedná osoba za ochranu biodiverzity nemusí byť ekológ alebo odborník na ekológiu. Môže to byť tá istá osoba, ktorá je zodpovedná za udržateľnosť v dokumente Man 03 Responsible construction practices na str. 56.

Miestna skupina expertov pre ochranu voľne žijúcich živočíchov

Miestnou skupinou expertov pre ochranu voľne žijúcich živočíchov by mohla byť miestna organizácia Wildlife Trust alebo iná skupina, ktorá sa podieľa na miestnych projektoch na ochranu alebo zlepšenie stavu voľne žijúcich živočíchov.

Relevantný kvalifikovaný ekológ (SQE)

Pozri LE 02 Ekologická hodnota staveniska a ochrana ekologických prvkov na strane 344

Ďalšie informácie

Usmernenie k prepojeniu ekologických správ s BREEAM je k dispozícii v Usmernení 13 na webovej stránke BREEAM.

Nižšie sú uvedené príklady toho, čo treba zahrnúť do dlhodobých plánov riadenia biotopov, druhov a prvkov biodiverzity:

1. Opis a hodnotenie prvkov, ktoré sa majú spravovať
2. Ekologické trendy a obmedzenia na stavenisku, ktoré by mohli ovplyvniť riadenie
3. Ciele a úlohy riadenia
4. Vhodné možnosti riadenia na dosiahnutie zámerov a cieľov
5. Predpisy pre riadiace opatrenia
6. Príprava harmonogramu práce (vrátane ročného pracovného plánu, ktorý sa môže predlžovať na obdobie piatich rokov)
7. Zamestnanci úradu alebo organizácie zodpovední za realizáciu plánu
8. Monitorovacie a nápravné opatrenia
9. Zdroje financovania a mechanizmy na zabezpečenie dlhodobo udržateľnej realizácie navrhovaného riadenia.

Rozsah informácií požadovaných pre každé stavenisko by mal byť taký, aký je potrebný na zabezpečenie účinného riadenia prítomných prvkov biodiverzity.

Znečistenie

Zhrnutie

Táto kategória sa zaoberá prevenciou a kontrolou znečistenia a odtoku povrchovej vody v súvislosti s lokalitou a využívaním budovy. Otázky v tejto časti sú zamerané na zníženie vplyvu budovy na okolité komunity a životné prostredie, ktorý vyplýva zo svetelného znečistenia, hluku, záplav a emisií do ovzdušia, pôdy a vody.

Sumárna tabuľka kategórie

Vydanie	Kredity	Zhrnutie kreditov
Pol 01 Dopad chladív	4	Zamedzenie alebo zníženie dopadov chladív prostredníctvom špecifikácie a prevencie alebo odhaľovania únikov.
Pol 02 Emisie NOx	2	Zníženie emisií NO_X pochádzajúcich zo systémov vykurovania priestorov a ohrevu vody v budove.
Pol 03 Odtok povrchovej vody	5	Rozvoj lokalít s nízkou pravdepodobnosťou záplav, kde návrh minimalizuje dopady záplav prostredníctvom starostlivého územného plánovania. Odtok povrchovej vody sa riadi tak, aby nebol horší ako situácia pred začatím stavby. Systémy prevencie znečistenia vodných tokov sú zavedené.
Pol 04 Skrátenie nočného času svetelného znečistenia	1	Vonkajšie svetelné znečistenie sa eliminuje efektívnym dizajnom alebo odstránením potreby nepotrebného vonkajšieho osvetlenia.
Pol 05 Zníženie hluku	1	Opatrenia na zníženie pravdepodobnosti rušenia v dôsledku hluku zo stacionárnych zariadení na stavbe.

Pol 01 Dopady chladív

(všetky budovy)

Počet dostupných kreditov	Minimálne normy
4	Nie

Cieľ

Znížiť úroveň emisií skleníkových plynov, ktoré vznikajú únikom chladív používaných na vykurovanie alebo chladenie budovy.

Kritériá hodnotenia

Táto požiadavka je rozdelená do dvoch častí:

- Budovy, ktoré nepoužívajú žiadne chladivá (vrátane pripojenia k systémom mimo lokality) (všetky dostupné kredity) ALEBO
- Pre budovy, v ktorých sa používajú chladivá:
  - Predpoklad
  - Potenciál poškodzovania ozónovej vrstvy (1 kredit)
  - Vplyv chladiva (1 až 2 kredity)
  - Odhaľovanie úniku (1 kredit)

Na preukázanie súladu sa vyžaduje:

Všetky dostupné kredity - chladivá sa nepoužívajú

1 Ak budova nevyžaduje používanie chladív v rámci inštalovaného zariadenia alebo systémov, alebo akéhokoľvek systému mimo objektu, ku ktorému je pripojená.

ALEBO, ak budova vyžaduje použitie chladív, všetky dostupné kredity je možné udeliť za nasledovných podmienok:

Predpoklad

2 Všetky systémy (s elektrickými kompresormi) musia spĺňať požiadavky normy EN 378:2008+A2:2012[74] (časti 2 a 3) alebo ISO 5149:201475 a v prípade inštalácie chladiacich systémov obsahujúcich amoniak sa musí dodržiavať Kódex postupov pre chladiace systémy s amoniakom Inštitútu pre chladenie[76]

Jeden kredit - potenciál poškodzovania ozónovej vrstvy (ODP)

3 Používané chladivá musia mať nulový potenciál poškodzovania ozónovej vrstvy.

Dva kredity - Dopad chladiva

4 Ak majú systémy využívajúce chladivá emisie CO_2-ekvivalentné priamemu účinku počas životného cyklu (DELC CO_2-eq) ≤ 100 kg CO_2-eq/kW chladiaceho alebo vykurovacieho výkonu. Na výpočet DELC CO_2-eq. pozri príslušné definície na strane 367 a Metodiku na strane 364. ALEBO

5 Ak sa na vykurovanie alebo chladenie budovy používajú klimatizačné alebo chladiace systémy, použité chladivá majú potenciál globálneho otepľovania (GWP) ≤ 10.

ALEBO

Jeden kredit - Dopad chladiva

6 Ak majú systémy využívajúce chladivá emisie CO_2-ekvivalentné priamemu účinku počas životného cyklu (DELC CO_2-eq) ≤ 1000 kg CO_2-eq/kW chladiaceho alebo vykurovacieho výkonu.
1000 kg CO_2-eq/kW chladiaceho alebo vykurovacieho výkonu.

Jeden kredit - Detekcia úniku

7 Ak majú systémy používajúce chladivá nainštalovaný trvalý automatizovaný systém na zisťovanie úniku chladiva, ALEBO ak je nainštalovaný zabudovaný automatizovaný diagnostický postup na zisťovanie úniku. Vo všetkých prípadoch musí byť nainštalovaný komplexný a odskúšaný systém na zisťovanie úniku chladiva , ktorý musí byť schopný nepretržite monitorovať úniky.

8 Systém musí byť schopný automaticky izolovať a zadržať zostávajúcu náplň chladiva v prípade detekcie úniku (pozri časť Ďalšie informácie na strane 368).

Kontrolné zoznamy a tabuľky

Žiadne.

Poznámky o súlade

Ref	Definície pojmov	Popis
Hrubá stavba a jadro (iba nebytové a rezidenčné inštitúcie)		
CN1	Príslušné hodnotiace kritériá	Len plášť: Táto otázka sa neuplatňuje. Plášť a jadro: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy Pozri Príloha D - Posúdenie plášťa a jadra projektu na strane 409 Podrobnejší opis možností hodnotenia plášťa a jadra.
CN1.1	Vyhýbanie sa potrebe chladiacich prostriedkov	Hrubá stavba a jadro: Ak je budova navrhnutá takým spôsobom, že prevádzka budovy nevyžaduje chladivo ani pripojenie na systémy mimo objektu a z toho dôvodu nie sú pri zriadení budovy stanovené žiadne systémy využívajúce chladivo, je možné štandardne prideliť všetky dostupné kredity.
Obytné budovy - čiastočne vybavené a plne vybavené		
CN2	Príslušné hodnotiace kritériá - Obydlia pre jednu rodinu a obydlia pre viaceré rodiny	Obidve možnosti: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy. Pozri Prílohu E – Uplatniteľnosť BREEAM New Construction na obydlia pre jednu rodinu a obydlia pre viaceré rodiny, čiastočne a úplne vybavené na str. 412, kde nájdete podrobnejší popis možností hodnotenia bytových domov.
Všeobecné		
CN3	Priemyselné budovy bez kancelárií a s neupravenými prevádzkovými priestormi	Táto problematika nebude zahrnutá do rozsahu posudzovania priemyselných jednotiek navrhnutých bez kancelárií a v prípade, že prevádzková plocha nebude upravovaná, t. j. nie sú určené na klimatizáciu ani neobsahujú chladiarenské zariadenie s chladiacim zariadením.

Ref	Definície pojmov	Popis
CN3.1	Nariadenia krajín o používaní látok poškodzujúcich ozónovú vrstvu (ODS)	Ak právne predpisy v hodnotenej krajine zakazujú používanie látok poškodzujúcich ozónovú vrstvu v nových chladiacich systémoch, kredit za používanie látok s nulovým potenciálom poškodzovania ozónovej vrstvy sa z hodnotenia vylúči. V čase písania tohto článku sú známe všetky európske krajiny, ktoré patria do tejto kategórie.
CN3.2	Náplň chladiva menšia ako 6 kg	V prípade inštalácií malých viacnásobných hermetických systémov, v ktorých je náplň chladiva v každej jednotke menšia ako 6 kg, sa štandardne udelí kredit za detekciu a obmedzenie úniku. Vychádza sa z toho, že riziko veľkého úniku chladiva v dôsledku poruchy systému je minimalizované, pretože v prípade úniku budú jednotlivé úniky z každého systému minimálne a tým pádom majú zariadenia na zisťovanie úniku v každom malom systéme len minimálny prínos. Poznámka: takéto riešenia môžu byť menej energeticky účinné a ako také môžu ovplyvniť získanie kreditov
podľa CN3.3	Špecifikácia viacerých systémov	Ak je v budove prevádzkovaný viac jeden klimatizačný alebo chladiaci systém, posudzovateľ musí získať príslušné technické údaje pre každý systém a zadať ich do kalkulačky Pol 01. Kalkulačka potom určí vážený priemer DELC pre viacnásobnú inštaláciu a kredity BREEAM sa môžu podľa toho udeliť alebo odobrať.
CN3.4	Zisťovanie úniku. Pozri kritériá 7 a 8 na predchádzajúcej strane.	Kritériá na zisťovanie úniku chladiva sa stále uplatňujú v prípadoch, keď je prítomný akýkoľvek typ netvrdého chladiva, t. j. aj keď chladivo spĺňa referenčné hodnoty DELC CO_2-eq podľa BREEAM. Výnimkou sú systémy, ktoré používajú prírodné a ekologické chladivá, ako je vzduch a voda (napríklad bromid lítny alebo vodné absorpčné chladiace zariadenia), a inštalácie malých viacnásobných hermetických systémov, na ktoré sa vzťahuje bod CN3.2 vyššie. Tieto typy systémov a chladív štandardne získajú kredit za detekciu úniku.
CN3.5	Údaje o ODP nie sú k dispozícii	Ak údaje o ODP pre určené chladivo nie sú k dispozícii, kredit sa nemôže štandardne udeliť.

Metodológia

Počet dosiahnutých kreditov Pol 01 BREEAM určí posudzovateľ pomocou kalkulačky BREEAM Pol 01.

Emisie CO_2-eq počas životného cyklu s priamym účinkom (DELC) na kW chladiaceho a vykurovacieho výkonu sa vypočítajú pomocou tejto rovnice:

$$\frac{[RLO+RLSR] \times GWP}{CC}$$

Kde:

Strata chladiva v prevádzke (RLO) = (Refcharge x $Sys_{op\text{-}life}$ x (L1 + L2 + S1 + S2))/100 Strata

chladiva v systéme (RLSR) = Refcharge x (1 - RefRecEff/100)

Kde:

1. Ref_{charge}: Náplň chladiva (kg)
2. $Sys_{op\text{-}life}$: Prevádzková životnosť systému (roky)
3. Ref_{RecEff}: Faktor účinnosti spätného získavania chladiva (%)
4. L1: Ročná miera úniku (% náplne chladiva)
5. L2: Ročný faktor uvoľňovania chladiva (% náplne chladiva)
6. S1: Ročné uvoľňovanie chladiva (% náplne chladiva)
7. S2: Faktor pravdepodobnosti katastrofickej poruchy (% úbytku náplne chladiva/rok)
8. GWP: Potenciál globálneho otepľovania chladiva
9. CC: Chladiaci alebo vykurovací výkon (kW).

Ak nie sú k dispozícii špecifické údaje systému, musia sa použiť nasledujúce predvolené hodnoty: $Sys_{op\text{-}life}$:

Projektovaná prevádzková životnosť systému (roky): pozri tabuľku 56 nižšie

Ref_{RecEff}: Faktor účinnosti spätného získavania chladiva (%) **95%**

L1: Ročná miera úniku (% náplne chladiva): pozri tabuľku 57 na nasledujúcej strane.

L2: Ročný faktor uvoľňovania chladiva (% náplne chladiva) **0,5** Ak systém nevyžaduje ročné prečistenie, použite nulu.

S1: Ročné uvoľňovanie chladiva (% náplne chladiva) **0,25** (platí v prípade, že systém je potrebné otvoriť na vykonanie ročného servisu. V prípade systémov, ktoré si nevyžadujú otvorenie, nedôjde k žiadnemu súvisiacemu ročnému uvoľneniu chladiva, preto by sa mala použiť predvolená hodnota nula)

S2: Faktor pravdepodobnosti katastrofickej poruchy (% úbytku náplne chladiva/rok) **1 %** (na základe miery zlyhania 1 zo 100 systémov).

Nasledujúce informácie musia pochádzať od mechanického a elektrického inžiniera projektového tímu alebo výrobcu systému:

- Druh systému
- Ref_{charge}: Náplň chladiva (kg)
- GWP: Potenciál globálneho otepľovania chladív
- Chladiaci alebo vykurovací výkon (kW).

Tabuľka 56: Predvolené hodnoty prevádzkovej životnosti systému

Druh systému	Predvolené hodnoty prevádzkovej životnosti systému (roky)
Chladiace zariadenia s malým a stredným výkonom	15
Veľkokapacitné chladiace zariadenia	20
Jednotný splitový systém	15
Systém s premenlivým prietokom chladiva (VRF)	15
Všetky ostatné systémy	10
Tieto údaje vychádzajú z údajov uvedených v časti LOT 6 pre klimatizačné jednotky a z usmernenia asociácie British Refrigeration Association (BRA) Metódy výpočtu TEWI (2006)[77]. Poznámka: Pri určovaní, či je špecifikovaný systém definovaný ako malý, stredný alebo veľký, by sa mali zohľadniť tieto skutočnosti: Veľkokapacitné chladiace zariadenie: odstredivý kompresor Stredne veľkokapacitné chladiace zariadenie: špirálový alebo skrutkový kompresor Malá kapacita chladiaceho zariadenia: špirálový kompresor.	

Tabuľka 57: Priemerná ročná miera úniku

Druh systému	Ročná miera úniku (% poplatku za rok)
Chladiarenské skladovacie a zobrazovacie systémy	
Integrované skrinky	3%
Splitové alebo kondenzačné jednotky	18%
Centralizované	19%
Klimatizačné systémy	
Jednotný splitový systém	15%
Malé chladiace zariadenia	10%
Stredné alebo veľké chladiace zariadenia	5%
Tepelné čerpadlá	6%
Tieto údaje vychádzajú z údajov uvedených v LOT 6 pre klimatizačné jednotky a tiež z tabuľky 2 informačnej poznámky k programom transformácie trhu pre komerčné chladenie č. 36 „Priame emisie chladiacich plynov“ (verzia 1.2). Číselné údaje vychádzajú z priemeru mier úniku zo štyroch samostatných štúdií uvedených v tabuľke 2 (ak je uvedené rozpätie, použila sa vyššia hodnota).	

Dôkazová dokumentácia

Kritériá	Predbežná fáza projektu	Záverečná fáza po výstavbe
Všetky	V prípade potreby nasledovné: 1. Potvrdenie neprítomnosti chladiva vo vývoji 2. Kópia ustanovenia špecifikácie alebo list od inžiniera M&E alebo výrobcu systému potvrdzujúci príslušný typ chladiaceho zariadenia a informácie o systéme 3. Vyplnená kópia kalkulačky BREEAM Pol 01.	Ako fáza návrhu. Inšpekcia budovy alebo staveniska alebo výkresy skutočného stavu. Informácie výrobcu.

Dodatočné informácie

Relevantné definície

Ekvivalent oxidu uhličitého s priamym účinkom (DELC)

Miera vplyvu na globálne otepľovanie vyplývajúca z emisií chladiva (v prípade tohto hodnotenia BREEAM) zo zariadenia do atmosféry počas jeho životnosti (jednotky: kg CO_2-eq). Výpočet zahŕňa odhad celkového uvoľneného množstva chladiva za obdobie prevádzky a následný prepočet na ekvivalentnú hmotnosť oxidu uhličitého. Ak sa v systéme používa niekoľko rôznych chladív, napr. primárne chladivo a sekundárne chladivo alebo kaskádový systém, vykonajú sa individuálne výpočty pre všetky chladivá, ktoré prispievajú k priamemu účinku (opis výpočtu DELC nájdete v časti Metodika na strane 364).

Potenciál globálneho otepľovania

GWP je definovaný ako index potenciálu globálneho otepľovania, ktorý má chemická látka vo vzťahu k 1 jednotke oxidu uhličitého, primárneho skleníkového plynu. Pri určovaní indexu GWP chladiva by sa mala použiť metodika Medzivládneho panelu pre zmenu klímy (IPCC) s použitím 100-ročného integrovaného časového horizontu (ITH).

Potenciál poškodenia ozónu.

ODP je index pomeru relatívneho množstva poškodenia ozónovej vrstvy spôsobeného konkrétnou látkou k vypočítanému poškodeniu pre referenčný plyn CFC 11 (ODP = 1,0).

Látky poškodzujúce ozónovú vrstvu (ODS)

„Látky, o ktorých je známe, že poškodzujú stratosférickú ozónovú vrstvu. Medzi látky poškodzujúce ozónovú vrstvu kontrolované podľa Montrealského protokolu a jeho dodatkov patria chlórfluórované uhľovodíky (CFC), hydrochlórfluórované uhľovodíky (HCFC), halóny, metylbromid (CH3Br),tetrachlórmetán (CCl4), metylchloroform (CH3CCl3), hydrobrómfluórované uhľovodíky (HBFC) a brómchlórmetán (CH2BrCl).“, prevzaté zo správy IPCC/TEAP, Special Report on Safeguarding the Ozone Layer and the Global Climate System (Osobitná správa o ochrane ozónovej vrstvy a globálneho klimatického systému), Cambridge University, 4.

Zisťovanie úniku chladiva

Automatizovaný trvalo nainštalovaný viacbodový snímací systém určený na nepretržité monitorovanie atmosféry v blízkosti chladiaceho zariadenia a v prípade detekcie spustí alarm. Alarm môže byť vybavený nasávacím systémom alebo viacerými snímacími hlavicami prepojenými s centrálnou poplachovou jednotkou alebo systémom BMS. K dispozícii sú rôzne typy senzorov vrátane infračervených, polovodičových alebo elektrochemických.

Spätné získavanie chladiva

Proces odstraňovania chladiva zo systému a jeho uskladnenia vo vzduchotesnej nádobe.

Vypínanie čerpadla chladiva

Špecifikácia automatického vypínania chladiva môže ďalej obmedziť potenciálne straty a škody na životnom prostredí a mať následné ekonomické výhody pre prevádzkovateľa budovy. Podľa zákona Spojeného kráľovstva o ochrane životného prostredia z roku 1990 sú nežiaduce chladivá a oleje z chladiacich systémov klasifikované ako kontrolovaný alebo nebezpečný odpad. Ich vypúšťanie do životného prostredia je nielen trestným činom, ale existujú aj postupy týkajúce sa prepravy, skladovania, prevodu vlastníctva a konečnej likvidácie. V článku 16 nariadenia ES č. 2037/2000 sa uvádza, že použité CFC a HCFC sa musia zhodnotiť na účely zneškodnenia, recyklácie alebo opätovného spracovania.

Komplexný a odskúšaný systém detekcie úniku chladiva

Zvyčajne sa definuje ako výrobok uvedený v zozname výrobkov energetických technológií so zvýšeným kapitálovým príspevkom (ECA)78 (alebo v rovnocennom zozname). Ak systém nie je uvedený na zozname výrobkov energetických technológií EDA alebo rovnocenného zoznamu, projektový tím musí posudzovateľovi preukázať, že uvedený systém spĺňa zásady schémy, pokiaľ je to možné.

Biela technika malého rozsahu

Sem patrí biela technika pre domácnosť a mala by tiež zahŕňať aj malé individuálne vitríny, napríklad vitríny na nápoje v malých maloobchodných predajniach.

Systémy používajúce chladivá

Kritériá tohto vydania sa vzťahujú na klimatizačné a chladiace systémy používané na vykurovanie alebo chladenie budov na nasledujúce účely bez ohľadu na množstvo chladiva v systéme (kg):

- Komfortné chladenie alebo vykurovanie priestoru (vrátane hodnotenia chladív v tepelných čerpadlách)
- Chladiarenské sklady vrátane komerčných vitrín na potraviny a nápoje, okrem bielej techniky malého rozsahu (pozri definíciu vyššie)
- Procesné chladenie zaťaženia, napr. servery, IT zariadenia
- Zariadenia mimo lokality, ako sú systémy diaľkového vykurovania alebo chladenia.

Chladivo

Existujú tri hlavné zložky chladív:

1. Chladivá s obsahom hydrogenovaných fluórovaných uhľovodíkov (HFC) sa skladajú z vodíka, fluóru a uhlíka. Keďže nepoužívajú atóm chlóru (ktorý sa používa vo väčšine chladív), je známe, že sú jedny z najmenej škodlivých pre ozónovú vrstvu Zeme.
2. Chladivá s obsahom hydrogenovaných chlórfluórovaných uhľovodíkov (HCFC) sa skladajú z vodíka, chlóru, fluóru a uhlíka. Tieto chladivá obsahujú minimálne množstvo chlóru; nie sú tak škodlivé pre životné prostredie ako niektoré iné chladivá.
3. Chlorofluorouhľovodíkové chladivá (CFC) obsahujú chlór, fluór a uhlík. Tieto chladivá obsahujú veľké množstvo chlóru, takže sú známe ako najnebezpečnejšie pre ozónovú vrstvu.

Používanie CFC a HCFC ako chladív je regulované v rámci Montrealského protokolu. Boli zavedené programy postupného vyraďovania, na základe ktorých sa tieto látky už nepoužívajú ako chladivá vo všetkých nových zariadeniach a vo väčšine existujúcich zariadení. Priemysel v súčasnosti uprednostňuje náhradu HFC, ktoré často výrazne prispievajú ku globálnemu otepľovaniu. Chladivá na báze uhľovodíkov a amoniaku majú nízky alebo nulový index GWP, a preto sú preferovanými dlhodobými možnosťami. Tie sú v súčasnosti bežne dostupné a sú platnou alternatívou k HFC vo všetkých budovách za predpokladu, že sa plne dbá na otázky zdravia a bezpečnosti. Program OSN pre životné prostredie (UNEP) prevádzkuje Centrum pomoci pre HCFC, ktoré obsahuje informácie o riadení a postupnom vyraďovaní HCFC a o alternatívach k HCFC v sektore chladenia a klimatizácie.

Iné informácie

Automatická izolácia a zadržiavanie chladiva

Každý systém, ktorý izoluje a zadržiava chladivo v systéme tak, aby sa minimalizoval únik do atmosféry v prípade poruchy systému. Príkladom systému, ktorý by mohol spĺňať kritérium 8 na strane 363, by bol systém, ktorý iniciuje automatické vypnutie a odčerpanie chladiva do samostatnej skladovacej nádrže.

Bežné chladivá

Tabuľka 58: Zoznam niektorých bežných typov chladív s nízkym indexom GWP

R-Číslo	Chemický názov	GWP 100 ročné
R-30	Dichlórmetán	9
R-170	Etán	3
R-290	Propán	3
R-600	Bután	3
R-600a	Izobután	3
R-702	Vodík	5,8

R-Číslo	Chemický názov	GWP 100 ročné
R-717	Amoniak	0
R-718	Voda	<1
R-729	Vzduch (dusík, kyslík, argón)	0
R-744	Oxid uhličitý	1
R1150	Etylén	3
R-1234yf	2,3,3,3-tetrafluórpropén	>1
R-1270	Propylén	3
Zdroje: Program OSN pre životné prostredie (UNEP) „Správa Výboru pre technické možnosti chladenia, klimatizácie a tepelných čerpadiel za rok 2010“ (strany 29-30). EN 378-1:2008+A2:2012: Chladiace systémy a tepelné čerpadlá - Požiadavky na bezpečnosť a ochranu životného prostredia Časť 1: Základné požiadavky, definície, klasifikácia a kritériá výberu - príloha E. Piata hodnotiaca správa Medzivládneho panelu o zmene klímy, kapitola 8, „Antropogénne a prírodné radiačné vplyvy“, 2013. „Globálne environmentálne vplyvy vodíkového hospodárstva“, Derwent *a kol.*, 2006.		

Vzorec použitý na výpočet emisií CO_2-eq počas životného cyklu s priamym účinkom v systéme BREEAM je založený na metóde výpočtu celkového ekvivalentného vplyvu na otepľovanie (TEWI) pre nové stacionárne chladiace a klimatizačné systémy. TEWI je miera vplyvu zariadenia na globálne otepľovanie, ktorá zohľadňuje priame emisie (ako sa hodnotí v tejto časti BREEAM) a nepriame emisie, ktoré vznikajú v dôsledku energie spotrebovanej na prevádzku zariadenia (ktorá sa hodnotí v časti BREEAM o energii).

Ďalšie podrobnosti nájdete v norme EN 378-1[79] a v usmernení Britskej chladiarenskej asociácie (BRA) Metódy výpočtu TEWI. Publikácia BRA obsahuje aj sektorové uvoľňovacie faktory pre nové systémy navrhnuté podľa noriem osvedčených postupov.

REAL Zero

REAL Zero bol projekt vedený Spojeným kráľovstvom, ktorého cieľom bolo preskúmať príčiny a riešenia úniku chladiva s ohľadom na nariadenia EÚ o F-plynoch. Tento projekt spojil odborné znalosti z rôznych odvetví a poskytol praktické príručky a brožúry o odbornej príprave. Následne bol aktualizovaný a rozvinutý do podoby európskeho programu elektronického vzdelávania známeho pod názvom REAL Skills.

Ďalšie informácie vrátane usmernení, kalkulačiek, nástrojov a informácií o prípadových štúdiách nájdete na: http://www.realskillseurope.eu/

Chladivá s potenciálom poškodzovania ozónovej vrstvy

Chladivá CFC aj HCFC sú v súčasnosti prísne kontrolované alebo sa majú v dohľadnej budúcnosti vyradiť z používania vo všetkých signatárskych krajinách Montrealského protokolu o látkach, ktoré poškodzujú ozónovú vrstvu, pričom BREEAM uznáva len chladivá, ktoré majú nulový index ODP. V tabuľke 59 na nasledujúcej strane sú uvedené aktuálne hodnoty ODP pre celý rad dostupných látok, ktoré môžu fungovať ako chladivá; posudzovatelia by ju mali použiť na overenie indexu ODP určeného chladiva. Látky, ktoré nie sú uvedené v tomto zozname, by sa mali predložiť kancelárii BREEAM, aby sa mohol stanoviť príslušný údaj.

Poznámka: V tejto tabuľke nie sú uvedené látky, ktoré sa zvyčajne nepoužívajú ako chladivá v budovách.

Tabuľka 59: Chladivá s potenciálom poškodzovania ozónovej vrstvy

Typ chladiva	Potenciál poškodenia ozónu.
R11 (CFC-11)	1,00
R12 (CFC-12)	1,00
R113 (CFC-113)	0,80
R114 (CFC-114)	1,00
R115 (CFC-115)	0,60
R125 (CFC-125)	0,00
Halon-1211	7,90
Halon-1301	15,90
Halon-2402	6,00
Amoniak	0,00
R22 (HCFC-22)	0,05
R123 (HCFC-123)	0,02
R134a (HFC-134a)	0,00
R124 (HCFC-124)	0,02
R141b (HCFC-141b)	0,11
R142b (HCFC-142b)	0,07
R143a (HFC-143a)	0,00
R32 (HCFC-32)	0,00
R407C (HFC-407)	0,00
R152a (HFC-152a)	0,00
R404A (zmes HFC)	0,00
R410A (zmes HFC)	0,00
R413A (zmes HFC)	0,00

Typ chladiva	Potenciál poškodzovania ozónovej vrstvy
R417A (zmes HFC)	0,00
R500 (CFC/HFC)	0,74
R502 (HCFC/CFC)	0,33
R507A (HFC azeotrop)	0,00
R290 (propán HC290)	0,00
R600 (bután HC600)	0,00
R600a (izobután HC600a)	0,00
R290/R170 (HC290/HC170)	0,00
R1270 (propén HC1270)	0,00
Program OSN pre životné prostredie (UNEP) - „Správa Výboru pre technické možnosti chladenia, klimatizácie a tepelných čerpadiel za rok 2010“ (strany 29-30). EN 378-1:2008+A2:2012: Chladiace systémy a tepelné čerpadlá - Požiadavky na bezpečnosť a ochranu životného prostredia Časť 1: Základné požiadavky, definície, klasifikácia a kritériá výberu - príloha E.	

Pol 02 Emisie NOx

(všetky budovy)

Počet dostupných kreditov	Minimálne normy
2	Žiadne

Cieľ

Prispieť k zníženiu lokálnych úrovní emisií NOx prostredníctvom využívania nízkoemisných zdrojov tepla v budove.

Kritériá hodnotenia

Na preukázanie súladu sa vyžaduje:

Dva kredity (všetky typy budov okrem priemyselných)

1 Ak má zariadenie inštalované na uspokojenie potreby tepla a teplej vody v budove za bežných prevádzkových podmienok úroveň emisií NOx (meranú na suchom základe pri 0 % prekročení O_2) takto:

NO_X pre vykurovanie a teplú vodu (mg/kWh)	Kredity
≤ 56 mg/kWh	1 kredit
≤ 40 mg/kWh	2 kredity
Poznámka pre obytné budovy: Každé samostatné obydlie musí spĺňať požiadavky.	

Dva kredity (len priemyselné typy budov)

NO_X pre vykurovanie a teplú vodu (mg/kWh)	Kredity
Kancelárske a pridružené priestory ≤ 56 mg/kWh	1 kredit
Prevádzkové priestory≤ 56 mg/kWh	1 kredit

2 Prostredníctvom nástroja na hodnotenie a podávanie správ BREEAM nahláste priame a nepriame emisie NOx v mg/kWh a spotrebu energie v kWh/m²/rok, ktoré vznikajú v systémoch inštalovaných na pokrytie požiadaviek budovy na vykurovanie, chladenie a prípravu teplej vody.

Kontrolné zoznamy a tabuľky

Žiadne.

Poznámky o súlade

Ref	Definície pojmov	Popis
Hrubá stavba a jadro (iba nebytové a rezidenčné inštitúcie)		
CN1	Príslušné hodnotiace kritériá	Len plášť: Táto otázka sa neuplatňuje. Plášť a jadro: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy Pozri Príloha D - Posúdenie plášťa a jadra projektu na strane 409 Podrobnejší opis možností hodnotenia plášťa a jadra.
Obytné budovy - čiastočne vybavené a plne vybavené		
CN2	Príslušné hodnotiace kritériá - Obydlia pre jednu rodinu a obydlia pre viaceré rodiny	Obidve možnosti: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy. Pozri Prílohu E – Uplatniteľnosť BREEAM New Construction na obydlia pre jednu rodinu a obydlia pre viaceré rodiny, čiastočne a úplne vybavené na str. 412, kde nájdete podrobnejší popis možností hodnotenia bytových domov.
Všeobecné		
CN3	Nové prístavby na rozšírenie existujúcich budov	Ak je potreba vykurovania/ohrevu teplej vody pre novú prístavbu uspokojovaná existujúcim systémom, potom sa úroveň emisií NO_x pre existujúci systém musí posúdiť podľa kritérií tejto oblasti.
CN3.1	Údaje o NO_x poskytnuté v rôznych jednotkách	Ak sú údaje o NO_x uvedené v iných jednotkách alebo na úrovni prebytku kyslíka vyššej ako nula, je potrebné požiadať výrobcu alebo dodávateľa o ich prepočet, aby boli v súlade s kritériami BREEAM. Posudzovateľ môže prípadne upraviť údaj pomocou príslušných korekčných faktorov uvedených v *Metodike na* strane 375. Ak sa používajú systémy kombinovanej výroby tepla a elektrickej energie (KVET), tieto konverzné faktory sa nemôžu použiť a informácie sa musia získať od výrobcu systému.
CN3.2	Elektrina zo siete	Vykurovacie systémy napájané elektrickou energiou zo siete možno považovať za systémy s nulovými emisiami NOx. Ak je všetko vykurovanie v budove zabezpečené elektrickou energiou zo siete, kredity sa môžu udeliť štandardne. Dôvodom je cieľ tejto problematiky, ktorým je zlepšenie kvality ovzdušia na lokálnej úrovni.
podľa CN3.3	Elektrická energia z obnoviteľného zdroja	Ak elektrická energia používaná vykurovacím systémom pochádza z obnoviteľného zdroja s nulovými emisiami, ako sú fotovoltaické, veterné a iné zdroje, nevznikajú žiadne emisie. Tento zdroj vykurovania sa preto môže považovať za zdroj s nulovými emisiami NO_x.
CN3.4	Kombinovaná výroba tepla a elektrickej energie	Pokyny na výpočet úrovní emisií NO_x z kogenerácie nájdete v časti Ďalšie informácie na strane 376.
CN3.5	Rekuperácia tepla	Na účely tejto problematiky možno rekuperáciu tepla považovať za zariadenie s nulovými emisiami NO_x.

Ref	Definície pojmov	Popis
CN3.6	Otvorené dymovody	Za vykurovacie systémy s otvoreným dymovodom alebo teplovodné systémy nemožno udeliť žiadne kredity.
CN3.7	Referenčné ohrievače vody a ohrievače na odbernom mieste	Ak sa dá preukázať, že ohrev vody predstavuje menej ako 10 % celkovej spotreby energie v budove, tieto kredity sa môžu udeliť výlučne na základe emisií NO_X z vykurovania priestorov.
CN3.8	Viac ako jeden vykurovací systém	Ak je špecifikovaný viac ako jeden vykurovací systém, pozri Dodatočné informácie na strane 376, kde nájdete pokyny na výpočet úrovní emisií.
CN3.9	Hodnotenie a vykazovanie emisií NO_X z chladenia budovy	V súčasnosti sa v rámci emisie Pol 02 neposudzujú a nepriznávajú kredity za úrovne emisií NOx súvisiace s požiadavkami budov na chladenie. Na uľahčenie možného budúceho porovnávania tohto druhu a zosúladenia s európskymi normami o udržateľnosti stavebných prác sa v rámci systému BREEAM vyžaduje, aby sa ako podmienka získania akýchkoľvek kreditov za túto otázku uvádzali priame aj nepriame emisie NOx, ktoré sú výsledkom plnenia požiadaviek na vykurovanie, chladenie a prípravu teplej vody v budove. V prípade nepriamych emisií ide predovšetkým o emisie spojené s elektrickou energiou zo siete, kde je elektrická energia zo siete zdrojom energie pre požiadavky budovy na vykurovanie, chladenie alebo prípravu teplej vody. Priame$_{emisie}$ NOx sú tie, ktoré vznikajú pri spaľovaní paliva na mieste alebo v posudzovanej budove, aby vyhoveli požiadavkám na vykurovanie, chladenie alebo prípravu teplej vody, napríklad prostredníctvom kotla na plyn, olej alebo biomasu.
Špecifické pre druh budovy		
CN4	Priemyselné kancelárie alebo prevádzkové oblasti nie sú prítomné	**Prvý kredit** Ak je posudzovaná budova navrhnutá bez kancelárskych priestorov, prvý kredit sa neudeľuje. Jeden kredit je preto k dispozícii, ak je splnená referenčná hodnota pre prevádzkovú oblasť. **Druhý kredit** Ak je prevádzková plocha posudzovanej budovy navrhnutá ako neupravená, druhý kredit sa neudeľuje. Jeden kredit je preto k dispozícii, ak je splnená referenčná hodnota pre kancelársky priestor. Ak sa v prevádzkovom priestore nenachádza kancelársky priestor ani vykurovanie, táto oblasť sa neposudzuje.
CN4.1	Obytné budovy: Sekundárne systémy vykurovania vody alebo priestoru	Ak sekundárny systém vykurovania priestoru alebo ohrevu vody zabezpečuje menej ako 8 % kombinovanej potreby tepla na vykurovanie priestoru a teplej vody v obydlí, môže sa z hodnotenia vynechať. Zahrnutie vykurovacieho systému s nízkymi emisiami NOx, ktorý dodáva menej ako 8 % kombinovanej potreby, však môže znížiť priemerné hodnoty NOx. V takomto prípade je zaradenie sekundárneho systému na rozhodnutí developera a posudzovateľa.
CN4.2	Obytné budovy: Výnimky po ukončení výstavby	Ak majú byť systémy komunálneho vykurovania určené na zásobovanie posudzovaného obydlia uvedené do prevádzky v primeranom čase po dokončení daného obydlia, potom by mali byť zdrojom tepelnej energie posudzovaným v rámci tejto otázky pre NOx, a nie zdrojom dočasnej dodávky tepla (čo by sa malo tiež uviesť). Komunálny systém (napr. kogenerácia, diaľkové vykurovanie atď.) musí byť zamýšľaným primárnym zdrojom energie na vykurovanie obydlia. Doklady potvrdzujúce, že uvedenie takéhoto zariadenia do prevádzky sa uskutoční v primeranej lehote, sa musia poskytnúť vo forme záväzkov developera a inej príslušnej technickej dokumentácie, ako sú miestne stratégie služieb; táto primeraná lehota môže byť až 18 mesiacov od dokončenia obydlia.

Metodológia

Výpočet úrovní emisií NO_X zo systémov kombinovanej výroby elektriny a tepla (KVET)

Ak sú špecifikované systémy kombinovanej výroby elektriny a tepla, je potrebné pri posudzovaní tejto otázky zohľadniť len emisie NOx súvisiace s teplom.

Emisie NO_X spojené s výrobou tepla by sa mali vypočítať podľa tohto vzorca:

$$X = A \times \left(\frac{B}{B+C}\right)$$

Kde:

Pojem	Popis
X	Emisie NO_X na jednotku vyrobeného tepla (mg/kWh tepla).
A	Emisie NO_X na jednotku vstupného paliva (mg/kWh vstupného paliva).
B	Tepelný výkon (kW).
C	Elektrický výkon (kW).

Uvedená metodika určuje čisté emisie NO_X z elektriny vyrobenej v kombinovanej výrobe elektriny a tepla v porovnaní s centrálnou výrobou elektriny a priraďuje toto množstvo k výrobe tepla. Ak je x vypočítané ako záporné, predpokladá sa, že je nulové.

Výpočet priemerných úrovní emisií NO_X z viacerých systémov

Ak kogeneračný alebo iný typ vykurovacieho systému funguje v spojení s iným systémom, mala by sa použiť priemerná miera emisií NO_X na základe výkonu každého zdroja, t. j. vynásobte emisie každého systému percentom potreby tepla, ktoré dodáva, a tieto hodnoty spočítajte.

Ak existuje viacero zdrojov výroby tepla, priemerná miera emisií NOx by sa mala vypočítať na základe pomeru tepelného výkonu (kW) z každého zdroja tepla.

Pre takéto prípady možno použiť nasledujúci vzorec:

$$NOx_{avg} = N_1 \times \left(\frac{H_1}{H_T}\right) + N_2 \times \left(\frac{H_2}{H_T}\right) \ldots + N_n \times \left(\frac{H_n}{H_T}\right)$$

Kde:

Pojem	Popis
NOx_{avg}	Priemerné hodnoty NO_X
N_1	Miera emisií NO_X pre zdroj 1

Pojem	Popis
N_2	Miera emisií NO_X pre zdroj 2
N_n	Miera emisií NO_X pre zdroj n
H_T	Celkový menovitý výkon zo všetkých zdrojov
H_1	Menovitý výstupný výkon zo zdroja 1
H_2	Menovitý výstupný výkon zo zdroja 2
H_n	Menovitý výstupný výkon zo zdroja n

Dôkazová dokumentácia

Kritériá	Predbežná fáza projektu	Záverečná fáza po výstavbe
Všetky	Príslušná časť alebo ustanovenia špecifikácie budovy alebo zmluvy. Podrobnosti o výrobku od výrobcu. Výpočty.	Ako fáza návrhu. správu a fotografie.

Dodatočné informácie

Relevantné definície

Schválený softvér na výpočet energie v budovách

Pozri vydanie BREEAM

Emisie NO_X

Emisie NO_X sú znečisťujúce plyny vznikajúce pri spaľovaní fosílnych palív. NO_X reagujú s teplom a slnečným žiarením a vytvárajú ozón, ktorý môže spôsobiť vážne dýchacie problémy. Reaguje tiež s vodou za vzniku kyslé dažde, ktoré majú škodlivý vplyv na ekosystémy. Na účely BREEAM sa úrovne emisií NO_X vyžadujú v jednotkách mg/kWh, merané na suchom základe pri 0 % prebytku kyslíka.

Prevodné koeficienty

Výrobcovia by mali byť požiadaní, aby poskytli údaje o emisiách NO_X v mg/kWh, merané na suchom základe. Ak to nie je možné, posudzovateľ môže použiť nasledujúce konverzné faktory na prepočet údajov v časticiach na milión (ppm), mg/MJ, mg/m³ alebo mokrých NO_X. Je potrebné poznamenať, že tieto konverzné faktory predpokladajú najhorší prípad účinnosti a pravdepodobne poskytujú konzervatívne predpovede. To môže mať za následok zníženie počtu dosiahnutých kreditov. Upozorňujeme, že tieto prepočítavacie koeficienty sa neuplatňujú, ak sa používajú systémy kombinovanej výroby tepla a elektrickej energie (KVET). Ďalšie podrobnosti o posudzovaní systémov KVET v tejto otázke nájdete v nižšie uvedených postupoch výpočtu.

1. Údaje v mg/m³ by sa mali vynásobiť koeficientom 0,859, aby sa emisie prepočítali na mg/kWh80. Prepočet môže byť potrebný aj v prípade údajov, ktoré nie sú vypočítané pri 0 % prebytku kyslíka
2. .Údaje v ppm by sa mali vynásobiť koeficientom 1,76, aby sa emisie prepočítali na mg/kWh. Konverzia môže tiež Prepočet môže byť potrebný aj v prípade údajov, ktoré nie sú vypočítané pri 0 % prebytku kyslíka
3. Údaje v mg/MJ by sa mali vynásobiť číslom 3,6, aby sa emisie prepočítali na mg/kWh (1 kWh = 3,6 MJ). Prepočet môže byť potrebný aj v prípade údajov, ktoré nie sú vypočítané pri 0 % prebytku kyslíka

.Konverzný faktor mokrých NO_X

Kritériá tohto vydania sú založené na hodnotách suchých NOx, takmer všetci výrobcovia uvádzajú emisie merané na suchom základe. Ak sú však uvedené údaje o mokrých emisiách NO_X, je potrebné ich prepočítať na suché. Na určenie konverzného faktora mokrých NO_X by sa mal použiť nasledujúci vzorec[81]:

Konverzný faktor c = 100/(100-y)

Kde y je % obsah vodnej pary nameraný v plyne. Tento údaj by sa mali získať od výrobcu.

Korekcia nadbytku kyslíka

Ak výrobca uvádza emisie NO_X v mg/m³ alebo ppm, malo by sa stanoviť, pri akom percente nadbytku kyslíka boli tieto emisie namerané. Čím väčšie je množstvo prebytočného kyslíka v spalinách v čase merania, tým viac sú emisie NO_X „zriedené“. Preto je dôležité prepočítať všetky emisie späť na 0 % prebytku kyslíka. Na účely systému BREEAM možno použiť nasledujúce konverzné faktory pre najčastejšie používané sadzby poskytované výrobcami:

Tabuľka 60: Konverzné faktory prebytočného kyslíka

% prebytok O_2	Konverzia (c)
3%	x 1,17
6%	x 1,40
15%	x 3,54

Konverzný faktor c = 20,9/(20,9-y)

Kde x = % prebytku O_2 (NIE prebytku vzduchu) a 20,9 je percento O_2 vo vzduchu.

Ďalšie informácie

Nasledovné systémy môžu mať problémy s dosiahnutím kreditov v tejto oblasti:

Diaľkové vykurovanie

Systémy diaľkového vykurovania, ktoré spaľujú odpad, majú zvyčajne vyššie emisie NOx, ako sú úrovne stanovené na dosiahnutie akýchkoľvek kreditov BREEAM.

Biomasa

Systémy využívajúce biomasu sú uznávané ako systémy, ktoré znižujú vplyv vyčerpania fosílnych palív tým, že využívajú obnoviteľný zdroj paliva (za predpokladu, že sa získava udržateľným spôsobom). Biomasa však môže produkovať značné množstvo NO_X, a preto nemusí získať tento kredit. Môžu však získať uznanie v energetickej časti BREEAM.

Pol 03 Odtok povrchovej vody (všetky budovy)

Počet dostupných kreditov	Minimálne normy
5	Žiadne

Cieľ

Predchádzať, znižovať a odďaľovať odvádzanie dažďových zrážok do verejnej kanalizácie a vodných tokov, čím sa minimalizuje riziko a vplyv lokálnych povodní na mieste a mimo neho, znečistenie vodných tokov a iné environmentálne škody.

Kritériá hodnotenia

Táto otázka je rozdelená do troch častí:

- Riziko povodní (2 kredity)
- Odtok povrchových vôd (2 kredity)
- Minimalizácia znečistenia vodných tokov (1 kredit)

Až dva kredity - odolnosť voči povodniam

Dva kredity - Nízke povodňové riziko

1 Ak sa v posúdení povodňového rizika (FRA) potvrdí, že výstavba sa nachádza v záplavovej zóne, ktorá je definovaná ako zóna s nízkou ročnou pravdepodobnosťou povodne (v súlade s aktuálnymi osvedčenými postupmi na národnej úrovni) Správa FRA musí zohľadňovať všetky súčasné a budúce zdroje povodní (pozri CN3.2 na strane 382).

Jeden kredit - stredné alebo vysoké povodňové riziko

2 Ak sa v analýze FRA pre konkrétnu lokalitu potvrdí, že výstavba sa nachádza v záplavovej zóne, ktorá je definovaná ako zóna so strednou alebo vysokou ročnou pravdepodobnosťou povodne, a nenachádza sa vo funkčnom záplavovom území (v súlade s aktuálnymi osvedčenými postupmi na národnej úrovni). Správa FRA musí zohľadňovať všetky súčasné a budúce zdroje povodní (pozri CN3.2 na strane 382).

3 Na zvýšenie odolnosti zástavby voči povodniam je potrebné dosiahnuť jednu z týchto podmienok:

3.a Prízemie budovy a prístup k budove aj k pozemku sú navrhnuté (alebo zónované) tak, aby boli aspoň 600 mm nad návrhovou hladinou záplavy v záplavovej zóne, v ktorej sa posudzovaná stavba nachádza (pozri CN3.5 na strane 383) ALEBO

3.b Konečný návrh budovy a širšieho územia vychádza z odporúčaní príslušného konzultanta. príslušný konzultant.

Dva kredity - Odtok povrchovej vody

Predpoklad

4 Na vykonanie, preukázanie alebo potvrdenie súladu výstavby s týmito kritériami sa vymenuje príslušný konzultant:

Jeden kredit

5 Ak sú špecifikované opatrenia na odvodnenie, ktoré zabezpečia, aby maximálna rýchlosť odtoku z lokality do vodných tokov (prírodných alebo komunálnych) nebola pre zastavanú lokalitu vyššia ako pre lokalitu pred zastavaním. To by malo byť v súlade s udalosťami s 1-ročnou a 100-ročnou dobou návratnosti.

6 Existujú príslušné zmluvy o údržbe týkajúce sa vlastníctva, dlhodobej prevádzky a údržby všetkých špecifikovaných udržateľných odvodňovacích systémov (SuDS).

7 Výpočty zahŕňajú príspevok na zmenu klímy a mal by byť vykonaný v súlade s platnými usmerneniami o osvedčených postupoch plánovania (pozri príslušné definície na strane 388).

Jeden kredit

8 Ak nedôjde k zaplaveniu nehnuteľnosti v prípade zlyhania miestneho odvodňovacieho systému (spôsobeného buď extrémnymi zrážkami, alebo nedostatočnou údržbou); A

BUĎ

9 Návrh opatrení na odvodnenie je špecifikovaný tak, aby sa zabezpečilo, že objem odtoku po ukončení výstavby počas životnosti nebude väčší, ako by bol pred výstavbou posudzovanej lokality pre 100-ročný 6-hodinový jav, vrátane zohľadnenia zmeny klímy (pozri kritérium 14 nižšie).

10 Akémukoľvek dodatočnému predpokladanému objemu odtoku pre tento jav sa zabráni, ak objem odtečie z lokality pomocou infiltrácie alebo iných techník SuDS.

ALEBO (len v prípade, že nie je možné splniť kritériá 9 a 10 uvedené vyššie pre tento zápočet):

11 Odôvodnenie príslušného konzultanta, v ktorom sa uvádza, prečo nie je možné dosiahnuť uvedené kritériá, t. j. ak infiltrácia alebo iné techniky SuDS nie sú technicky realizovateľné .

12 Odvodnenie návrh opatrenia sú špecifikované tak, aby zabezpečiť aby špičková rýchlosť odtoku po výstavbe je znížila na limitujúcu hodnotu odtoku. Limitný prietok je definovaný ako najvyšší prietok z nasledujúcich možností:
- 12.a 1-ročný špičkový prietok pred výstavbou; ALEBO
- 12.b Priemerný ročný prietok Qbar; ALEBO
- 12.c 2L/s/ha.

Vezmite na zreteľ, že pre 1-ročný špičkový prietok platí kritérium 1-ročnej doby návratnosti (ako je opísané v kritériách špičkového odtoku vyššie).

13 Sú uzavreté príslušné zmluvy o údržbe, ktoré sa týkajú vlastníctva, dlhodobej prevádzky a údržby všetkých špecifikovaných systémov na ochranu životného prostredia.

14 V prípade oboch možností musia uvedené výpočty zahŕňať príspevok na zmenu klímy ; mal by sa vykonať v súlade s platnými usmerneniami o osvedčených postupoch plánovania .

Dva kredity - odtok povrchovej vody - len pre jednotlivé obydlia

V prípade samostatných domov by sa namiesto vyššie uvedených kritérií pre odtok povrchovej vody mali uplatňovať nižšie uvedené kritériá (viac informácií nájdete na CN2.1 na strane 381).

15 Je splnené jedno z týchto kritérií:
- 15.a Zníženie nepriepustnej plochy o 50 % alebo viac oproti existujúcim nepriepustným spevneným plochám, ALEBO
- 15.b V prípade, že všetok odtok zo strechy pre zrážky s hĺbkou do 5 mm zo všetkých nových a existujúcich častí budovy bol spravovaný na mieste pomocou metód kontroly zdrojov.

ALEBO

Jeden kredit - Odtok povrchovej vody - len pre jednotlivé obydlia

16 Je splnené jedno z týchto kritérií:
- 16.a V dôsledku novej výstavby nedôjde k zvýšeniu nepriepustných plôch, ALEBO
- 16.b Ak v dôsledku novej výstavby dôjde k zvýšeniu nepriepustných plôch, musia byť splnené tieto podmienky:

16.b.i Spevnené plochy - ak sa v dôsledku novej výstavby rozšíria alebo zväčšia spevnené plochy a tým sa zvýši celková nepriepustná plocha, spevnená plocha musí byť priepustná alebo musí byť vybavená systémom SuDS na mieste, ktorý umožní úplnú infiltráciu dodatočného objemu, aby sa dosiahol rovnaký konečný výsledok. Priepustný spevnený povrch musí zahŕňať všetky chodníky a verejné cesty, parkoviská, príjazdové cesty a cesty, ktoré nie sú prístupné verejnosti, ale môže vylúčiť malé záhradné cestičky, ktoré budú odtekať na prirodzene priepustný povrch.

16.b.ii Budova (novostavba alebo prístavba) - ak sa zväčší plocha budovy , ktorá sa rozšíri na všetky predtým priepustné povrchy, musí sa dodatočný odtok spôsobený plochou novostavby alebo prístavby riešiť na mieste pomocou vhodnej techniky SuDS pre zrážky s hĺbkou do 5 mm.

Jeden kredit - Minimalizácia znečistenia vodných tokov

17 Zo zastavaného územia sa nevypúšťajú žiadne zrážky do 5 mm (potvrdené príslušným expertom).

18 V oblastiach s nízkym rizikom zdroja znečistenia vodného toku sa zabezpečí primeraná úroveň úpravy na zabránenie znečistenia pomocou vhodných techník SuDS.

19 V prípade vysokého rizika kontaminácie alebo úniku látok, ako je benzín a olej (pozri CN3.17 na strane 385), sa do systémov odvádzania povrchových vôd inštalujú odlučovače (alebo ekvivalentný systém).

20 Ak sa v budove nachádzajú priestory na skladovanie chemikálií alebo kvapalných plynov, na odtokovom systéme staveniska sa namontujú ochranné prostriedky (t. j. uzatváracie ventily), aby sa zabránilo úniku chemikálií do prírodných vodných tokov (v prípade úniku alebo poruchy obalu).

21 Komplexný a aktuálny plán odvodnenia lokality bude k dispozícii pre užívateľov budovy alebo lokality.

22 Musia byť uzavreté príslušné zmluvy o údržbe, ktoré sa týkajú vlastníctva, dlhodobej prevádzky a údržby všetkých špecifikovaných systémov na ochranu životného prostredia.

Kontrolné zoznamy a tabuľky

Žiadne.

Poznámky o súlade

Ref	Definície pojmov	Popis
Hrubá stavba a jadro		
CN1	Príslušné hodnotiace kritériá	Obidve možnosti: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy Pozri Príloha D - Posúdenie plášťa a jadra projektu na strane 409 Podrobnejší opis možností hodnotenia plášťa a jadra.
Obytné budovy - čiastočne vybavené a plne vybavené		

Ref	Definície pojmov	Popis
CN2	Príslušné hodnotiace kritériá - Obydlia pre jednu rodinu	**Kritériá 1 až 3 na strane 378 - Odolnosť voči povodniam** Obidve možnosti: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy. **Kritériá 4 až 16 na strane 379 - Odtok povrchovej vody** Obidve možnosti: Uplatňujú sa len kritériá pre samostatné obydlie 15 na strane 379 alebo 16 na strane 379. Kritériá **17 až 16 na strane 379** - **Minimalizácia znečistenia vodných tokov** Obidve možnosti: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy Pozri Prílohu E – Uplatniteľnosť BREEAM New Construction na obydlia pre jednu rodinu a obydlia pre viaceré rodiny, čiastočne a úplne vybavené na str. 412, kde nájdete podrobnejší popis možností hodnotenia bytových domov.
CN2.1	Príslušné hodnotiace kritériá - Obydlia pre viaceré rodiny	**Kritériá 1 až 3 na strane 378 - Odolnosť voči povodniam** Obidve možnosti: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy. **Kritériá 4 až 16 na strane 379 - Odtok povrchovej vody** Obidve možnosti: Uplatňujú sa len kritériá 4 až 14 na strane 379. Kritériá **17 až 16 na strane 379** - **Minimalizácia znečistenia vodných tokov** Obidve možnosti: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy Pozri Prílohu E – Uplatniteľnosť BREEAM New Construction na obydlia pre jednu rodinu a obydlia pre viaceré rodiny, čiastočne a úplne vybavené na str. 412, kde nájdete podrobnejší popis možností hodnotenia bytových domov.
Všeobecné		
CN3	Alternatívne normy a odporúčania príslušného štatutárneho orgánu. Pozri kritériá 1 a 2 na strane 378.	Kredity nebudú udelené, ak posudzovaný projekt postupoval v rozpore s odporúčaním regulačného orgánu z dôvodu, že dôsledky povodní sú príliš veľké (to zahŕňa aj odporúčanie vydané regulačným orgánom, aj keď takéto odporúčanie nemôže byť alebo nie je zákonom uplatňované). Ak miestny orgán (alebo iný štatutárny orgán) stanovil prísnejšie kritériá ako tie, ktoré sú uvedené vyššie, musia byť splnené, aby sa dosiahli príslušné kredity.
CN3.1	Kontaminované lokality. Pozri kritériá 5-16.	Pri návrhoch odvodnenia lokalít sa musia zohľadniť právne predpisy týkajúce sa kontaminácie, v mnohých prípadoch je však možné aj na kontaminovaných pozemkoch inštalovať určité techniky SuDS. Viac informácií nájdete v časti Ďalšie informácie na strane 392.
Odolnosť voči povodniam		

Ref	Definície pojmov	Popis
CN3.2	Zdroje záplav. Pozri kritériá 1 a 2 na strane 378.	V posúdení povodňového rizika (FRA) sa musí podrobne uviesť riziko povodní z týchto zdrojov: 1. Fluviálne (rieky) 2. Príliv 3. Povrchová voda: odtok z priľahlých pozemkov (mestských alebo rurálnych) 4. Podzemná voda: najčastejšie v nízko položených oblastiach, ktoré sú podložené priepustnými horninami (vodonosné vrstvy) 5. Kanalizácia: kombinovaná, splašková alebo povrchová kanalizácia 6. Nádrže, kanály a iné umelé zdroje. Ďalšie informácie nájdete v časti Ďalšie informácie na strane 392, kde sú uvedené podrobnejšie informácie o uvedených zdrojoch záplav. Obsah FRA by mal vychádzať z historických trendov, ale mal by tiež zohľadniť predpokladané zmeny klímy, ktoré môžu mať v budúcnosti vplyv na povodňové riziko v danej lokalite.
podľa CN3.3	Funkčné záplavové územie. Pozri kritérium 3 na strane 378.	Kredit BREEAM za umiestnenie staveniska v záplavovej zóne so „strednou alebo vysokou ročnou pravdepodobnosťou“ nemožno udeliť, ak sa budova nachádza vo funkčnej záplavovej oblasti. To je definované v aktuálnych osvedčených postupoch národných usmernení pre územné plánovanie v každej krajine.
CN3.4	Protipovodňová ochrana. Pozri kritériá 1-2. a 3 na strane 378.	**Protipovodňová ochrana tretích strán** Existuje mnoho krajinných prvkov, ktoré sú vo vlastníctve tretích strán a ktoré vzhľadom na svoju polohu štandardne fungujú ako protipovodňová ochrana, napr. diaľnice, železničné násypy, múry atď. Dá sa predpokladať, že takéto násypy zostanú na mieste počas celej doby výstavby, pokiaľ posudzovateľ alebo projektový tím nemá dôvod domnievať sa, že je to inak. V prípade stien je potrebné získať záruku, že stena pravdepodobne zostane zachovaná počas projektovanej životnosti budovy. **Existujúce protipovodňové opatrenia** Pre oblasti chránenej existujúcou protipovodňovou ochranou (navrhnutou tak, aby odolala určitému rozsahu povodne) je možné udeliť príslušný počet kreditov za povodňové riziko, ak ochrana znižuje riziko na „nízke“ alebo „stredné“ a sú splnené tieto podmienky: 1. Výstavba sa nenachádza v oblasti, kde by sa mali vybudovať alebo sa už vybudovali nové protipovodňové opatrenia s cieľom minimalizovať riziko záplav v lokalite a jej okolí výlučne na účely výstavby alebo jej širšieho územného plánu. 2. Príslušná agentúra potvrdzuje, že v dôsledku takýchto obranných opatrení sa riziko výskytu povodňovej udalosti sa znižuje na nízke alebo stredné riziko. Ak toto potvrdenie nie je poskytnuté, kredity sa neudelia. Miestny alebo regionálny úrad štatutárneho orgánu môže poskytnúť viac informácií o existujúcej ochrane v oblasti, v ktorej sa posudzovaný projekt nachádza.

Ref	Definície pojmov	Popis
CN3.5	Prahová hodnota 600 mm. Pozri kritérium 3.a na strane 378.	Pripúšťa sa, že v prípade budov nachádzajúcich sa v záplavových zónach so stredným a vysokým rizikom, môže dôjsť k zaplaveniu parkoviska a prístupu na pozemok, a teda k poklesu pod hranicu 600 mm. V takýchto prípadoch je stále možné dosiahnuť kredit za predpokladu, že sa dá zachovať bezpečný prístup na pozemok a prízemie budovy (t. j. 600 mm nad návrhovou úrovňou povodne), aby sa v prípade povodne budova a pozemok nestali „ostrovom“. Ak bola výstavba povolená a úroveň terénu topografie alebo infraštruktúry bezprostredne susediacej s lokalitou klesne pod hranicu 600 mm, kredit sa môže udeliť za predpokladu, že neexistujú iné praktické riešenia prístupu k lokalite nad touto úrovňou a posudzovaná budova a prístup k nej spĺňajú kritériá hodnotenia. Maximálne veľká časť vonkajšej plochy lokality (alebo podľa požiadaviek príslušného zákonného orgánu) by mala byť navrhnutá na úrovni prahovej hodnoty alebo nad ňou. V prípade budov nachádzajúcich sa v zónach so stredným alebo vysokým povodňovým rizikom musia byť všetky plochy používané na skladovanie citlivých, historických, nebezpečných, cenných materiálov a materiálov podliehajúcich skaze, napr. rádioaktívnych materiálov, mikrobiologických zariadení, serverovní, knižníc atď., umiestnené nad prahovou hranicou 600 mm.
CN3.6	Rozsah požadovaných informácií v správe o posúdení vplyvu na životné prostredie v prípade menších lokalít. Pozri kritériá 1 a 2 na strane 378.	V prípade menších lokalít, napr. s rozlohou menšou ako 1 ha (10 000 m²), rozsah požadovaných informácií v analýze FRA závisieť od veľkosti lokality a rozmiestneniu budov v tejto lokalite. V prípade malej lokality s relatívne jednoduchým rozmiestnením budov stačí aj stručná správa. V prípade väčších lokalít s vyššou hustotou zástavby by bolo vhodné podrobnejšie posúdenie. V prípade malých jednoduchých lokalít (2000 m² a menej) by prijateľnou FRA mohla byť stručná správa vypracovaná technikom zhotoviteľa, ktorá potvrdzuje riziko záplav zo všetkých zdrojov záplav vrátane informácií získaných od vodárenskej spoločnosti alebo prevádzkovateľa kanalizácie, iných príslušných zákonných orgánov, prieskumu na mieste a miestnych znalostí.
Odtok povrchovej vody		
CN3.7	Lokality s mnohými budovami	Ak je posudzovaná budova súčasťou väčšieho komplexu budov, existuje niekoľko možností posúdenia kreditov za odtok povrchovej vody: 1. Jednotlivé budovy a s nimi súvisiace spevnené plochy môžu byť posudzované samostatne, ak je odtok vyriešený samostatne v každej budove (t. j. každá budova má vlastné vyhradené čiastkové povodie, ktoré slúži len tejto budove). 2. Pri posudzovaní odtoku z viacerých budov (vrátane obytných a neobytných budov) sa musí brať do úvahy odtok z miestneho čiastkového povodia, ktoré slúži všetkým týmto obydliam alebo budovám. Vezmite do úvahy, že proporcionálne rozdelenie sa nemôže použiť na výpočet percenta odtoku odvádzaného do miestneho čiastkového povodia vypočítaného len pre posudzovanú budovu. 3. Súlad je možné posúdiť v rámci celého projektu. Bez ohľadu na to, aký prístup sa zvolí na preukázanie súladu, musí sa zvoliť jednotný spôsob výpočtov rýchlosti odtoku a objemu odtoku.

Ref	Definície pojmov	Popis
CN3.8	Vypúšťanie do mora alebo prílivových ústí riek	Kritériá maximálnej rýchlosti odtoku a objemu odtoku sa môžu štandardne považovať za splnené, ak lokalita vypúšťa dažďovú vodu priamo do prílivového ústia rieky alebo do mora. Ak majú byť tieto kritériá štandardne udelené, musí lokalita odvádzať odpadovú vodu priamo do prílivového ústia rieky alebo do mora. Zvyčajne to znamená, že odvodňovacie potrubia odvádzajú iba odtok z lokality a že by pred odtokom do mora nemusia prechádzať cez súkromné pozemky mimo hranice zástavby. Definíciu prílivového ústia nájdete v časti Relevantné definície na strane 388.
CN3.9	Žiadna zmena nepriepustnej plochy	Ak sa umelá nepriepustná plocha odvádzajúca vodu do vodného toku (prírodného alebo komunálneho) zmenšila alebo zostala po výstavbe nezmenená, kredity za splnenie požiadaviek na špičkovú a objemovú rýchlosť povrchového odtoku budú štandardne udelené. Výpočty prietoku nie je potrebné predkladať. Namiesto toho by sa mali predložiť výkresy jasne zobrazujúce stav pred výstavbou a po výstavbe pokiaľ ide nepriepustné plochy lokality odvádzajúce vodu do vodného toku. Je potrebné uviesť aj údaje (najlepšie na výkresoch), ktoré porovnávajú plochy odvodnených nepriepustných povrchov pred výstavbou a po výstavbe. V tomto prípade sa musí vykonať posúdenie povodňového rizika a realizujú sa zistené možnosti zníženia odtoku povrchovej vody.
CN3.10	Obmedzenie prietoku pri vypúšťaní. Pozri kritérium 12 na strane 379	V prípade kreditov za odtok povrchovej vody, kde by si hraničný prietok pri vypúšťaní vyžadoval prietok menší ako 5 l/s v mieste vypúšťania, sa môže v prípade potreby použiť prietok do 5 l/s, aby sa znížilo riziko upchatia.
CN3.11	Komunikácie a nepriepustné plochy	Ak sa budujú nové nepriepustné komunikácie vrátane tých, ktoré sú určené na výstavbu zmiešaných budov, všetky nové nepriepustné plochy sa musia zahrnúť do výpočtov na preukázanie súladu s kritériami špičkovej rýchlosti odtoku a objemu odtoku. Ak sú budovy postavené vedľa existujúcich komunikácii alebo ak sa vybudujú vyhovujúce komunikácie, nepriepustná plocha komunikácie sa nemusí zahrnúť do výpočtov.
CN3.12	Opustené miesta. Pozri kritériá 5 na strane 379, 7 na strane 379, 11 na strane 379, 12 a 14 na strane 379.	Ak je lokalita opustená viac ako päť rokov, príslušný expert musí posúdiť predchádzajúcu odvodňovaciu sieť a stanoviť pravdepodobné prietoky a objemy. Na tento účel je potrebné použiť osvedčené simulačné modelovanie na určenie 1-ročného a 100-ročného špičkového prietoku v príslušných miestach vypúšťania. Na dokončenie výpočtov bude potrebná návšteva miesta pred začatím výstavby, pokiaľ nie sú k dispozícii presné údaje z predchádzajúceho prieskumu. Výsledná odborná správa sa potom môže použiť na určenie objemu a rýchlosti odtoku pred výstavbou. Bez tohto odborného vstupu sa musí lokalita považovať za zelenú plochu pred výstavbou, pričom sa pri výpočte odtoku z lokality pred výstavbou predpokladá pôdny typ 5.

Ref	Definície pojmov	Popis
CN3.13	Vnútroštátne usmernenia o osvedčených postupoch pri navrhovaní systémov SuDS a systémov zberu dažďovej vody	Pozri Zoznam schválených noriem a váh (ASWL), kde nájdete príslušné zverejnené národné osvedčené postupy v krajine hodnotenia. Prípadne preukážte uplatniteľnosť takto : Navrhované dokumenty sa vzťahujú na minimálne požiadavky stanovené v zozname schválených noriem a váh; ALEBO Ak pre danú krajinu neexistujú príslušné usmernenia, mal by projektový tím preukázať súlad s britskými alebo európskymi normami, ktoré sú uvedené v každom príslušnom referenčnom liste krajiny.
Minimalizácia znečistenia vodných tokov		
CN3.14	5 mm na minimalizáciu znečistenia vodných tokov. Pozri kritérium 17 na strane 380.	V určitých lokalitách sa môže stať, že prvým 5 mm zrážok nebude možné úplne zabrániť, aby odtiekli z lokality. V takomto prípade musí systém navrhnúť primerane kvalifikovaný odborník , aby sa zabezpečilo, že zámer tohto kritéria bol splnený v čo najväčšej možnej miere, a poskytnúť odôvodnenie, prečo sa kritérium nedalo na mieste plne dosiahnuť. Ak je takéto odôvodnene opodstatnené, kredity za kvalitu vody je možné udeliť za predpokladu, že boli splnené všetky ostatné príslušné kritériá.
CN3.15	Požiadavka 5 mm - riešenia na konci potrubia. Pozri kritérium 17 na strane 380.	Riešenia na konci potrubia, ako sú rybníky a nádrže, sa budú považovať za vyhovujúce kritériám 5 mm len vtedy, ak sa pomocou metód kontroly zdroja a kontroly lokality dosiahne hlavná kontrola odtoku, ktoré zabránia vypúšťaniu prvých 5 mm zrážok.
CN3.16	Požiadavka 5 mm - zelené strechy. Pozri kritérium 17 na strane 380.	Zelené strechy možno považovať za vyhovujúce tejto požiadavke v prípade dažďa, ktorý dopadá na ich povrch. Na udelenie tohto kreditu je však stále potrebné preukázať, že 5 mm zrážok zo všetkých ostatných spevnených plôch na stavenisku je odstránených.
CN3.17	Oblasti, ktoré sú zdrojom znečistenia. Pozri kritériá 19 a 20 na strane 380.	Na účely posúdenia kreditu za znečistenie vodného toku sa za plochu, ktorá predstavuje riziko znečistenia vodného toku, považujú plochy na manévrovanie vozidiel, parkoviská, zariadenia na likvidáciu odpadu, zásobovacie a skladovacie zariadenia alebo plochy závodu.
CN3.18	Rozšírenie alebo doplnenie budovy v existujúcej lokalite	Ak sa posudzuje individuálna stavba v existujúcej lokalite, t. j. výstavba na mieste, kritériá znečistenia vodných tokov sa vzťahujú na oblasti v zóne výstavby, ktoré predstavujú riziko znečistenia, ako aj na všetky oblasti mimo zóny výstavby, ktoré sú ovplyvnené novými prácami, t. j. odtokom na navrhovanú stavbu alebo z nej.
CN3.19	Vhodná úroveň úpravy. Pozri kritériá 15-18.	Vo všetkých prípadoch by mal príslušný expert na základe svojho odborného úsudku určiť najvhodnejšiu stratégiu na minimalizáciu znečistenia vodného toku.
CN3.20	Strešná zeleň. Pozri kritériá 20, 21 a 15 na strane 379.	V prípade rizika znečisťujúcich látok, ako je napríklad benzín alebo olej , je potrebné zvážiť priestor pre rastliny na streche. Chladivá sa v rámci tohto problému neposudzujú z hľadiska znečistenia, pretože hlavné riziko znečistenia predstavuje ovzdušie, a nie vodný tok.

Ref	Definície pojmov	Popis
CN3.21	Systém priepustnej dlažby	Ak možno preukázať, že sa použil systém priepustnej dlažby navrhnutý tak, aby zadržiaval kaly a rozkladal oleje, potom spĺňa kritériá hodnotenia na minimalizáciu znečistenia vodných tokov na parkoviskách a prístupových cestách.
CN3.22	Dielenské priestory v maloobchodných budovách	Ak sú určené plochy dielní, mali by sa posúdiť z hľadiska vyššie uvedených požiadaviek (minimalizácia znečistenia vodných tokov). Je to spôsobené okolnosťami, keď určitá forma servisu vozidiel môže byť súčasťou autosalónu alebo iného typu maloobchodného priestoru.

Metodológia

Výpočet maximálnej rýchlosti odtoku

Od posudzovateľa sa nevyžaduje, aby vykonával akékoľvek výpočty. Príslušný expert by mal predložiť výpočty, aby preukázal, že odvodňovacie zariadenia boli navrhnuté správne. Ďalšie pokyny na výpočet maximálnej rýchlosti odtoku pre rôzne lokality a situácie zahŕňajú:

1. Príručka SuDS 82·
2. Predbežné riadenie odtoku zrážkových vôd pre výstavby.
3. Národné usmernenie alebo vyhlásenie o plánovacej politike pre konkrétnu krajinu.
4. Správa IH Report 124, Odhad povodní pre malé povodia (Marshall a Bayliss, 1994).
5. Príručka na odhad povodní (Centrum pre ekológiu a hydrológiu, 1999) 83.

Lokality na zelenej lúke s rozlohou menšou ako 50 ha

Výpočet odtokových pomerov na zelenej lúke musí byť v súlade so správou IH Report 124, Odhad povodní pre malé povodia (Marshall a Bayliss, 1994). Musí sa dodržiavať metóda pomerného rozdelenia veľkosti povodia, ktorá je podrobne opísaná v tabuľke 4.2 v Príručke SuDS, CIRIA C697 (2007).

Lokality na zelenej lúke s rozlohou 50 ha až 200 ha

Výpočet odtokových pomerov na zelenej lúke musí byť v súlade so správou IH Report 124, Odhad povodní pre malé povodia (Marshall a Bayliss, 1994). Príručka na odhad povodní (Centrum pre ekológiu a hydrológiu, 1999) sa môže použiť ako alternatíva pre tieto lokality, ak sa to uprednostňuje, ale len ak sa povodie považuje za vhodné na jej použitie.

Lokality na zelenej lúke s rozlohou viac ako 200 ha

Výpočet odtokových pomerov na zelenej lúke musí byť v súlade s Príručkou na odhad povodní (Centrum pre ekológiu a hydrológiu, 1999) a všetkými následnými aktualizáciami. Ak sa Príručka na odhad povodní nepovažuje za vhodnú pre daný projekt, môže sa použiť správa IH Report 124.

Lokality na hnedej zóne

Výpočet miery odtoku z hnedých zón by mal byť nasledovný:

- Ak je existujúce odvodnenie známe, malo by sa modelovať pomocou osvedčeného simulačného modelovania s cieľom určiť jednoročný a 100-ročný maximálny prietok v miestach vypúšťania (bez toho, aby sa umožnilo preťaženie systému nad úrovňou, ktoré by spôsobilo väčšie prietoky v miestach vypúšťania).
- Ak systém nie je známy, potom by sa mal odtok z hnedých zón vypočítať pomocou modelov odtoku zo zelenej lúky opísaných vyššie, ale s typom pôdy 5.

Obmedzenie prietoku pri vypúšťaní.

Limitné vypúšťanie pre každý bod vypúšťania by sa malo vypočítať ako prietoky z už zastavaného územia. Výpočet by mal zahŕňať celkový prietok z celkovej plochy lokality, ktorá sa napája na miesto vypúšťania (v prípade potreby by mal zahŕňať časti stavby hodnotené podľa BREEAM aj časti stavby nehodnotené podľa BREEAM). Miesto vypúšťania je definované ako miesto vypúšťania do vodného toku alebo kanalizácie (vrátane riek, potokov, priekop, odvodňovacích kanálov, zárezov, priepustov, hrádzí, stavidiel, verejnej kanalizácie a priechodov, ktorými preteká voda, pozri príslušné definície na nasledujúcej strane). Ak je výsledkom tohto výpočtu špičkový prietok menší ako 5 l/s, môže sa hraničný prietok zvýšiť až na úroveň najviac 5 l/s v mieste vypúšťania z lokality, aby sa znížilo riziko upchatia.

Napríklad, ak by prietok pri 1-ročných a 100-ročných udalostiach bol 4 l/s a 7 l/s, potom by hraničné prietoky boli 5 l/s a 7 l/s. Podobne, ak by bol výsledok 2 l/s a 4 l/s, potom by sa na oba body vypúšťania mohla použiť maximálna hraničná rýchlosť vybitia 5 l/s.

Na dosiahnutie vyšších celkových limitných hodnôt vypúšťania nie je možné lokalitu rozdeliť. Je však prístupné, že ak niektoré lokality vyžadujú viac ako jedno miesto vypúšťania v dôsledku miestnej topografie alebo existujúcej okolitej odvodňovacej infraštruktúry, je možné limitný prietok vypúšťania zvýšiť na úroveň najviac 5 l/s v každom bode vypúšťania. Posudzovateľ by si mal vyžiadať dôkazy o tom, že počet vypúšťacích miest je potrebný buď z dôvodu topografie, alebo z dôvodu obmedzení infraštruktúry, alebo z oboch dôvodov. Podkladom preukazujúcim tieto dôvody môže byť topografická mapa a vysvetlenie príslušného experta, prečo je potrebných viacero miest vypúšťania, s uvedením, že nie je možné mať menej miest vypúšťania.

100- ročná udalosť so špičkovou rýchlosťou: nadmerný objem odtoku

Akumulácia nadbytočných prietokov zo 100-ročnej udalosti nemusí byť nevyhnutne obsiahnutá v rámci odvodňovacieho systému alebo prvkov SuDS (prvky určené výlučne na účely odvodňovania). Ak je to vhodné, uskladnenie časti alebo celého tohto objemu možno dosiahnuť pomocou dočasného zaplavenia povrchových plôch, ako je napríklad ihrisko. Osobitnú pozornosť treba venovať smerovaniu nadzemného toku. Povodňové prietoky a dočasné zadržiavanie povodňovej vody na povrchu nesmú byť príliš časté, ktoré by obťažovali obyvateľov a ostatných užívateľov.

Dôkazová dokumentácia

Kritériá	Predbežná fáza projektu	Záverečná fáza po výstavbe
Riziko záplav		
1– 3	Hodnotenie povodňového rizika. Projektová výkresová dokumentácia. V prípade potreby je potrebné získať potvrdenie od príslušného regulačného orgánu potvrdzujúca zníženú ročnú pravdepodobnosť záplav v dôsledku existujúcich protipovodňových opatrení.	Posúdenie povodňového rizika aktualizované podľa potreby. Vykonávacie výkresy Potvrdenie, že základ hodnotenia povodňového rizika sa nezmenil, ak od vykonania hodnotenia povodňového rizika uplynulo viac ako päť rokov.
Odtok povrchovej vody		

Kritériá	Predbežná fáza projektu	Záverečná fáza po výstavbe
4–16	Posudok príslušného experta potvrdzujúci, že má príslušnú kvalifikáciu v súlade s definíciou BREEAM. Správa konzultanta obsahujúca všetky informácie potrebné na preukázanie súladu s požiadavkami.	Podklady potvrdzujúce, že pre všetky inštalované riešenia SuDS boli stanovené povinnosti údržby. A BUĎ Písomné potvrdenie od developera alebo príslušného konzultanta, že riešenia posúdené vo fáze návrhu boli realizované ALEBO V prípade zmeny návrhu, je potrebné poskytnúť dokumentáciu obsahujúcu informácie po výstavbe a skutočného stavu realizácie stavby určenú pre posúdenie vo fáze návrhu.
Minimalizácia znečistenia vodných tokov		
17–22	Projektové výkresy alebo príslušné časti alebo ustanovenia špecifikácie stavby alebo zmluvy znázorňujúce: 1. Oblasti lokality s vysokým a nízkym rizikom 2. Špecifikáciu systémov SuDS, systémov kontroly zdrojov, odlučovačov oleja alebo benzínu a uzatváracích ventilov podľa potreby.	Inšpekciu budovy alebo staveniska s fotografiami. A BUĎ Písomné potvrdenie od developera alebo príslušného konzultanta, že riešenia posúdené vo fáze návrhu boli realizované ALEBO V prípade zmeny návrhu, je potrebné poskytnúť dokumentáciu obsahujúcu informácie po výstavbe a skutočného stavu realizácie stavby určenú pre posúdenie vo fáze návrhu.

Dodatočné informácie

Upozorňujeme, že táto časť bude revidovaná po nadobudnutí účinnosti Národných noriem pre udržateľné odvodňovanie a súvisiacich predpisov.

Relevantné definície

Vyhovujúce komunikácie

Na účely BREEAM je „vyhovujúca“ komunikácia taká, za ktorú je zodpovedná správa ciest, pokiaľ ide o inštaláciu a údržbu odvodnenia povrchových vôd, ktoré odvádzajú vodu len zo samotnej komunikácie. To znamená, že aby sa na odvodňovaciu sieť vzťahovala definícia „vyhovujúca“, nesmie byť priamo napojená na žiadnu inú odvodňovaciu sieť (napr. zo súkromnej zástavby) a musí odvádzať len odtok z vyhovujúcej komunikácie. V prípade, že odvodnenie v rámci komunikácie bude odvádzať vodu ako z komunikácie tak aj z obytných domov, nepovažuje sa za „vyhovujúcu“ komunikáciu. V tomto prípade musí návrh odvodnenia zohľadňovať odtok z komunikácie.

Príslušný expert

Expert či expertka s kvalifikáciou a skúsenosťami v oblasti návrhu opatrení SuDS a protipovodňových opatrení a výpočtov maximálnej rýchlosti odtoku. Ak sa vyžadujú komplexné výpočty a preventívne opatrenia proti povodniam, musí sa jednať o odborného hydrotechnického inžiniera či inžinierku.

Príslušný regulačný orgán

Ide o štátneho alebo súkromného regulátora, ktorého povinnosťou je vykonávať funkciu schvaľovania plánovania projektu.

Povodie

Plocha, ktorá prispieva k prietoku povrchovej vody do odvodňovacieho bodu na odvodňovacom kanáli alebo vodnom toku. Možno ho rozdeliť na čiastkové povodia.

Aktuálne usmernenia k osvedčeným postupom plánovania

Dokument by mal obsahovať nezávisle zverejnené údaje o zohľadnení klimatických zmien (na základe obdobia minimálne 100 rokov) podľa ročnej pravdepodobnosti záplav v danej oblasti.

Návrhová úroveň povodne

Maximálna odhadovaná hladina vody počas očakávanej búrky. Návrhovú úroveň povodne pre lokalitu možno určiť buď na základe známych historických údajov, alebo na základe modelu pre konkrétnu lokalitu.

Návrh búrky

Historické alebo fiktívne poveternostné podmienky s danou ročnou pravdepodobnosťou, na základe ktorých sa posudzuje vhodnosť navrhovaného rozvoja a navrhujú sa prípadné zmierňujúce opatrenia.

Miesto vypúšťania

Miesto vypúšťania je bod, v ktorom odtok z lokality opúšťa hranicu lokality a vteká do vodného toku.

Protipovodňové opatrenia

Protipovodňové opatrenia úplne neodstránia riziko povodní, ale znížia ho. Výstavba v oblastiach, kde sa nachádzajú protipovodňové opatrenia (a sú vhodne navrhnuté tak, aby odolali určitému rozsahu povodne), je preto vhodnejšia ako výstavba v oblastiach so stredným alebo vysokým rizikom bez opatrení. Pre účely tejto oblasti je však stále vhodnejšie stavať v miestach s nízkym rizikom, ako podporovať výstavbu nových protipovodňových opatrení v miestach s vyšším rizikom záplav len kvôli novej výstavbe.

Povodňová udalosť

Povodňová udalosť charakterizovaná kulminačnou hladinou alebo prietokom alebo hydrogramom hladiny alebo prietoku.

Pravdepodobnosť povodne

Odhadovaná pravdepodobnosť výskytu povodne danej veľkosti v určitom časovom období. Napríklad 100-ročná povodeň má 1 % pravdepodobnosť výskytu v danom roku.

Riziko záplav

Kombinácia pravdepodobnosti povodne a rozsahu potenciálnych následkov povodne.

Hodnotenie povodňového rizika.

Štúdia na posúdenie rizika zaplavenia lokality a na posúdenie vplyvu, ktorý budú mať akékoľvek zmeny alebo rozvoj v lokalite na povodňové riziko v lokalite a inde. Posúdenie povodňového rizika (FRA) by sa malo vypracovať v súlade s príslušnou územnou plánovacou politikou a technickými usmerneniami. Potvrdenie musí byť založené na historických, geologických a geomorfologických údajov (napr. nadmorská výška) a musí zohľadňovať všetky zdroje záplav. Správa o hodnotení vplyvu na životné prostredie musí zohľadňovať budúce zmeny klímy a v prípade potreby podrobne uvádzať všetky potrebné adaptačné opatrenia. V prípade, že od vykonania FRA uplynulo viac ako päť rokov, bude potrebné preukázať, že základ FRA sa za ten čas nezmenil.

Zadržiavanie vody počas záplav

Dočasné zadržiavanie prebytočného odtoku alebo prietoku rieky v rybníkoch, nádržiach, rezervoároch alebo v záplavovom území počas povodne.

Lokality na zelenej lúke

Miesto, na ktorom sa nikdy nestavalo alebo ktoré zostalo neporušené päť rokov alebo viac.

Miera vyčerpania zelených lúk

Rýchlosť odtoku z lokality v nezastavanom a teda nenarušenom stave.

Tvrdé povrchy

Patria sem strechy, parkoviská, prístupové cesty, chodníky, zásobovacie a servisné dvory a vonkajšie spevnené plochy. Chodníky pre peších so šírkou menšou ako 1,5 m, ktoré majú voľný odtok do mäkkých upravených plôch na oboch stranách, môžu byť vylúčené.

Prestup

Prestup vody do priepustného povrchu, ako je pôda, priepustná dlažba a vsakovacie kanály.

Limitný prietok

Limitný prietok vyplýva z vypočítaného prietoku pred výstavbou v mieste vypúšťania.

Úroveň čistenia kontaminácie

Ak sa používa v kontexte jednej, dvoch alebo troch úrovní čistenia povrchových vôd, úroveň čistenia kontaminácie sa určí na základe počtu komponentov SuDS v sérii, cez ktoré prechádza odtok z pôvodného povrchu, na ktorý spadli zrážky, do miesta vypúšťania. Ak má komponent SuDS viac ako jeden proces čistenia, môže sa považovať za komponent poskytujúci viac ako jednu úroveň čistenia. V tomto prípade by ste mali požiadať o radu kanceláriu BREEAM.

Oblasti s nízkym rizikom (vzhľadom na znečistenie vodných tokov)

Oblasti s nízkym rizikom možno definovať ako oblasti, kde je riziko kontaminácie alebo úniku látok, ako je benzín a olej, znížené. Na účely tejto požiadavky možno strechy a malé parkoviská považovať za oblasti s nízkym rizikom.

Špičková rýchlosť odtoku (označovaná ako Qp [m 3/s])

Ide o najvyšší prietok z vymedzeného povodia za predpokladu, že zrážky sú rovnomerne rozložené v povodí, pričom sa celé povodie považuje za jednu jednotku a odhaduje sa prietok len v najspodnejšom bode povodia.

Pred výstavbou

Stav posudzovanej lokality bezprostredne pred jej kúpou objednávateľom alebo developerom (alebo, ak objednávateľ vlastní alebo obýva lokalitu už niekoľko rokov, jej súčasný stav).

Qbar

Odhad priemerného ročného prietoku z povodia (pozri správu IH124 Odhady povodní pre malé povodia).

Odvádzanie dažďovej vody

Odvádzanie dažďovej vody je dažďová voda, ktorá odteká z miesta výstavby do vodných tokov a kanalizácie. Označuje sa aj ako odtok.

Odtok

Zvyčajne ide o dažďovú vodu, ale môže to byť aj podzemná voda alebo prepad z kanalizácie a iných zdrojov.

Prevádzkovateľ kanalizácie

Ide o orgán, zvyčajne vodárenskú spoločnosť, ktorá je zo zákona zodpovedná za kanalizáciu a odvádzanie odpadových vôd a tiež za povrchové vody zo striech a dvorov objektov.

Vsakovacie zariadenie

Podpovrchová štruktúra určená na podporu infiltrácie povrchovej vody do pôdy. Všeobecne platí, že vsakovacie zariadenia môžu byť plytké a široké - ako pokrývka pod priepustnou dlažbou, alebo hlbšie štruktúry. Pri odvodňovaní ciest a parkovísk by sa nemalo používať hlbšie bodové vsakovanie; plytké štruktúry, ktoré zabezpečujú infiltráciu extenzívnym spôsobom (vsakovacie priekopy a priepustná dlažba), nepotrebujú odlučovače ropných látok.

Sekvencia riadenia SuDS

Prístup k návrhu odvodnenia, ktorý kombinuje sekvenciu vhodných štruktúr na odvodnenie povrchových vôd s využitím systémov SuDS na riadenie odtoku s cieľom upraviť prietok, znížiť objem odtoku a obmedziť rýchlosť odtoku, aby sa minimalizoval vplyv človeka na životné prostredie. Ďalšie výhody spojené s prevádzkou a údržbou, ekológiou a občianskou vybavenosťou sú aspekty, ktoré sa zohľadňujú pri navrhovaní systému riadenia. Sekvencia riadenia zahŕňa hierarchiu techník:

1. Kontrola zdroja. Príklady techník SuDS zahŕňajú:
   - Vsakovacie zariadenie
   - Porézne alebo priepustné dlažby
   - Strešnú vodu odvádzanú do záhrady (namiesto odtoku z potrubia)
   - Opätovné využitie alebo zber dažďovej vody
   - Zelené strechy
   - Iné techniky povrchovej infiltrácie, tlmenia a odvádzania vody, ktoré riešia odtok pri zdroji.
2. Kontrola na stavenisku alebo miestna kontrola. Príklady techník SuDS zahŕňajú:
   - Plytké
   - kanály
   - Infiltračné nádrže
   - Zadržiavacie nádrže
   - Väčšie vsakovacie nádrže
   - Pórovitá (priepustná) dlažba.
3. Regionálna kontrola. Príklady techník zahŕňajú:
   - Vyvažovacie rybníky
   - Mokrade
   - Veľká záchytná nádrž.

Techniky SuDS

Jeden alebo viacero komponentov vybudovaných na riadenie odtoku povrchovej vody s cieľom zabrániť záplavám a znečisteniu, vrátane napríklad: mokrých rybníkov, infiltračných nádrží, záchytných nádrží, rigolov, trstinových porastov, priepustnej (poréznej alebo priepustnej) dlažby, vsakovacích kanálov, zberu dažďovej vody, filtračných pásov, filtračných drenáží a priekop s perforovanými rúrami alebo bez nich, zelených striech a podzemných zásobníkov vody. Viac informácií nájdete v príručke SuDS.

Odtok povrchovej vody

Prúdenie vody po povrchu zeme do odvodňovacieho systému. K tomu dochádza, ak je pôda nepriepustná, nasýtená alebo ak sú zrážky mimoriadne intenzívne.

Prílivové ústie rieky

Prílivové ústie je definované ako polouzavretá pobrežná vodná plocha, ktorá má voľné spojenie s otvoreným morom a v ktorej sa morská voda merateľne riedi sladkou vodou pochádzajúcou z odvodňovania pevniny. Ústie rieky by nemalo byť obmedzené prílivovými vodami, t. j. nemali by sa v ňom nachádzať žiadne prekážky ani zúžené brehy, ktoré by za akýchkoľvek podmienok obmedzovali voľný odtok vody do otvoreného mora. Vplyv na celkový objem odtoku z tejto lokality (a ďalších lokalít, ktoré môžu v budúcnosti vypúšťať vodu do ústia rieky) by mal byť z hľadiska celkovej hladiny vody v ústí rieky nevýznamný. Prílivové rieky (t. j. rieky, v ktorých sa počas bežného prílivu a odlivu nevyskytuje žiadna alebo len obmedzená merateľná morská voda) nemožno na účely BREEAM zahrnúť do ústia rieky.

Čistenie

Zlepšenie kvality vody fyzikálnymi, chemickými alebo biologickými prostriedkami.

Typy odlučovačov oleja

Separátory triedy 1: Tie sú navrhnuté tak, aby sa pri štandardných testovacích podmienkach dosiahla koncentrácia oleja nižšia ako 5 mg/l. Mali by sa používať, ak sa od odlučovača vyžaduje, aby odstraňoval veľmi malé kvapôčky oleja, ako napríklad kvapôčky vznikajúce pri odtoku z parkoviska.
Separátory triedy 2: Tie sú navrhnuté tak, aby sa pri štandardných testovacích podmienkach dosiahla koncentrácia oleja nižšia ako 100 mg/l. Sú vhodné na riešenie vypúšťania, pri ktorom sa uplatňujú nižšie požiadavky na kvalitu, alebo na zachytávanie veľkých únikov. Obidve triedy môžu byť navrhnuté ako odlučovače s úplným zadržaním alebo odlučovače s obtokom:
Oddeľovače s úplným zadržaním: Tie prečisťujú prietok, ktorý môže byť odvádzaný drenážnym systémom, čo zvyčajne zodpovedá prietoku vytvorenému zrážkami s intenzitou 50 mm/hod.
Obtokové oddeľovače: Tie plne prečisťujú všetky prietoky vznikajúce pri zrážkach do 5 mm/hod. Prietoky nad túto hodnotu môžu odlučovač obísť. Tieto odlučovače sa používajú vtedy, keď je prijateľné riziko nezabezpečiť úplné čistenie pri vysokých prietokoch. Usmernenie o prevencii znečisťovania č. 3 obsahuje podrobnejšie pokyny k výberu a dimenzovaniu vhodného typu odlučovača.

Objem odtoku

Objem odtoku, ktorý vzniká pri zrážkach na mieste. Zvyčajne sa meria v metroch kubických. Dodatočný predpokladaný objem odtoku je rozdiel medzi objemom odtoku pred výstavbou a po výstavbe.

Vodné toky a kanalizácia

Pojem, ktorý zahŕňa rieky, potoky, priekopy, stoky, priepusty, hrádze, stavidlá, kanály a priechody, ktorými preteká voda.

Iné informácie

Zdroje povodní a povodňové riziko

1. Potoky a rieky: Povodne, ktoré môžu vzniknúť v dôsledku prietokov, ktoré nie sú zadržané v koryte v dôsledku vysokých úrovní zrážok v povodí.
2. Pobrežné alebo ústia riek: Záplavy, ku ktorým môže dôjsť z mora v dôsledku mimoriadne vysokého prílivu alebo prívalovej vlny alebo kombinácia obidvoch.
3. Podzemné vody: Tam, kde hladina podzemnej vody stúpa do takej výšky, že dochádza k záplavám. Najčastejšie v nízko položených oblastiach, ktoré sú podložené priepustnými horninami (vodonosnými vrstvami), zvyčajne v dôsledku dlhších období vlhkého počasia.
4. Kanalizácia a cestné vpuste: Kombinovaná, splašková alebo povrchová kanalizácia a diaľničné stoky , ktoré sú dočasne preťažené v dôsledku nadmerných zrážok alebo v dôsledku upchatia.
5. Povrchová voda: Čisté zrážky dopadajúce na povrch (na mieste alebo mimo neho), ktoré sa prejavujú ako odtok, ktorý sa nevsiakol do pôdy alebo nevstúpil do odvodňovacieho systému.
6. Zlyhanie infraštruktúry: Kanály, nádrže, priemyselné procesy, prasknuté vodovodné potrubia, zablokovaná kanalizácia alebo nefunkčné čerpacie stanice.

Kontaminované lokality

Ak sa na základe posúdenia rizík v lokalite potvrdí, že techniky infiltračných systémov SuDS nie sú vhodné, môžu sa použiť techniky SuDS, ktoré neumožňujú infiltráciu, ako sú napríklad rokliny lemované nepriepustnou membránou. Môže sa stať, že kontaminované sú len niektoré oblasti lokality, a preto je možné použiť infiltračné techniky SuDS na iných miestach lokality. Môže sa vyskytnúť aj požiadavka na sanáciu kontaminovanej pôdy, čo vytvára možnosti na použitie vsakovacích systémov SuDS po sanácii.

Pol 04 Zníženie nočného svetelného znečistenia (len nebytové a rezidenčné inštitúcie)

Počet dostupných kreditov	Minimálne normy
1	Žiadne

Cieľ

Zabezpečiť, aby sa vonkajšie osvetlenie sústredilo na vhodné miesta a aby sa minimalizovalo osvetlenie smerom nahor, čím sa zníži zbytočné rušivé svetelné znečistenie, spotreba energie a obťažovanie susedných nehnuteľností.

Kritériá hodnotenia

Na preukázanie súladu sa vyžaduje:

Jeden kredit

1 Ak sa vonkajšie rušivé osvetlenie odstránilo prostredníctvom efektívneho návrhu, ktorý odstraňuje potrebu vonkajšieho osvetlenia bez toho, aby negatívne ovplyvňoval bezpečnosť a ochranu miesta a jeho používateľov.

ALEBO, ak má budova vonkajšie osvetlenie, možno udeliť jeden kredit takto:

2 Všetko vonkajšie osvetlenie (s výnimkou bezpečnostného osvetlenia) sa môže automaticky vypnúť medzi 23:00 a 7:00.

3 Osvetlené reklamy, ak je to stanovené, sú v súlade s:

- 3.a Maximálnou svietivosťou (CD/m²) uvedenou v tabuľke 61 nižšie (definíciu jednotlivých zón nájdete v časti Ďalšie informácie na strane 396)
- 3.b V zóne E1 (pozri tabuľku 61 nižšie) musí byť maximálna hodnota jasu nulová.

4 Ak je zabezpečené bezpečnostné osvetlenie, ktoré sa bude používať medzi 23:00 a 7:00:

- 4.a Bezpečnostné a ochranné osvetlenie spĺňa nižšie úrovne osvetlenia odporúčané počas týchto hodín v súlade s CIE 150-2003 a CIE 126-1997, napríklad pomocou automatického spínača na zníženie úrovne osvetlenia o 23:00 alebo skôr.

Kontrolné zoznamy a tabuľky

Tabuľka 61: Odporúčania pre maximálnu svietivosť (CD/m²)

Osvetlená plocha (m²)	Zóna E1	Zóna E2	Zóna E3	Zóna E4
< 10,00	100	600	800	1000
≥ 10,00	Nie je k dispozícii	300	600	600

Tabuľka 62: Zóna environmentálneho osvetlenia

Zóna	Okolie	Osvetlenie prostredia	Príklady
E1	Prirodzené	Štandardne tmavé	Národné parky alebo chránené lokality
E2	Rurálne oblasti	Nízky jas v oblasti	Priemyselné alebo obytné rurálne oblasti
E3	Predmestské oblasti:	Stredný jas v oblasti	Priemyselné alebo obytné predmestia
E4	Mestské	Nízky jas v oblasti	Mestské centrá a obchodné štvrte

Poznámky o súlade

Ref	Definície pojmov	Popis
Hrubá stavba a jadro (iba nebytové a rezidenčné inštitúcie)		
CN1	Príslušné hodnotiace kritériá	Obidve možnosti: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy Pozri Príloha D - Posúdenie plášťa a jadra projektu na strane 409 Podrobnejší opis možností hodnotenia plášťa a jadra.
Obytné - čiastočne a úplne vybavené		
CN2	Príslušné hodnotiace kritériá - Obydlia pre jednu rodinu a obydlia pre viaceré rodiny	Obidve možnosti: Táto otázka sa neuplatňuje. Pozri Prílohu E – Uplatniteľnosť BREEAM New Construction na obydlia pre jednu rodinu a obydlia pre viaceré rodiny, čiastočne a úplne vybavené na str. 412, kde nájdete podrobnejší popis možností hodnotenia bytových domov.
Všeobecné		
CN3	Stanovenie zákazu vychádzania	Usmernenie Medzinárodnej komisie pre osvetľovanie (CIE) odporúča stanoviť zákaz vychádzania. Zvyčajne sem patria reflektory, značenie a všetko osvetlenie , ktoré nie je potrebné na zaistenie bezpečnosti alebo ochrany. Osvetlené reklamy môžu byť z tejto požiadavky vylúčené, ale budú musieť spĺňať rôzne úrovne maximálnej svietivosti v závislosti od okolitého prostredia a pozadia (pozri kritérium 3 na predchádzajúcej strane). Ak sa z iných dôvodov (napr. z dôvodu kontroly hluku) uplatňuje iný čas zákazu vychádzania,

odporúča sa zosúladiť tento režim, napr. poskytnúť dostatočný čas na prevádzku osvetlenia po skončení činnosti, aby sa uľahčil rozchod väčšieho davu, najmä ak ide o veľký počet divákov.		
Ref	**Definície pojmov**	**Popis**
CN3.1	Nebezpečnostné osvetlenie považované za nevyhnutné v čase od 23:00 do 7:00	Ak sa osvetlenie, ktoré nie je bezpečnostné, považuje za nevyhnutné medzi 23:00 a 7:00, t. j. v prípade budov, ktoré sa otvárajú alebo fungujú medzi týmito hodinami, systém osvetlenia by mal byť schopný automaticky prepnúť na nižšie úrovne osvetlenia odporúčané v CIE 150-2003 a CIE 126-1997 pre osvetlenie počas týchto hodín (alebo zabezpečiť tieto nižšie úrovne po celý čas).
CN3.2	Maximáln a svietivosť	Pri posudzovaní zóny, v ktorej je alebo má byť reklamný nápis umiestnený, by sa mal zohľadniť kontrast s okolím alebo pozadím (napr. okolie by mohlo byť neosvetlené pri pohľade z cesty alebo z okna obytného domu) a zóna by sa mala zodpovedajúcim spôsobom upraviť. Ak osvetlený nápis leží na hranici dvoch zón alebo ho možno pozorovať z inej zóny, mala by sa použiť úroveň osvetlenia platná pre najprísnejšiu zónu.

Metodológia

V nasledujúcom texte sú uvedené pokyny, kedy a ako uplatňovať kritériá na vonkajšie osvetlenie súvisiace s posudzovanou budovou.

1. Ak sa posudzuje jednotlivá budova na existujúcom mieste, je potrebné posúdiť len tie oblasti, ktoré sú ovplyvnené prácami, t. j. v rámci zóny výstavby. Ak sa posudzuje budova, ktorá je súčasťou celej novej výstavby, kritériá sa uplatňujú na celú lokalitu.
2. Ak sa rozsah posúdenia vzťahuje len na novú prístavbu, potom treba posúdiť len nové osvetlenie špecifikované ako súčasť rozšírených prác.
3. Zápustné svetlá používané na bezpečnostné účely v manévrovacích priestoroch vozidiel môžu byť z hodnotenia vylúčené.
4. Ak sú svietidlá špecifikované tak, aby spĺňali osobitné bezpečnostné normy, a tieto sú v rozpore s kritériami BREEAM, môžu byť z posudzovania tejto oblasti vylúčené. Za týchto okolností musí posudzovateľ získať dôkazy potvrdzujúce konkrétne bezpečnostné normy a to, že sa vzťahujú na posudzovanú stavbu.

Dôkazová dokumentácia

Kritériá	Predbežná fáza projektu	Záverečná fáza po výstavbe
Všetky	Projektová výkresová dokumentácia. Príslušný oddiel alebo ustanovenia špecifikácie budovy alebo zmluvy alebo údaje o návrhu vonkajšieho osvetlenia alebo výpočty. V prípade návrhu vonkajšieho osvetlenia, V prípade návrhu vonkajšieho osvetlenia musí inžinier M&E alebo projektant osvetlenia uviesť orientačné príklady, kde a ako je stratégia v súlade s kritériami hodnotenia.	Správa posudzovateľa BREEAM z inšpekcie na mieste a fotografický dôkaz A BUĎ písomné potvrdenie projektového tímu, že riešenia posúdené vo fáze návrhu boli realizované, ALEBO ak sa návrh zmenil, predložené dokumenty znázorňujúce stav po výstavbe a skutočnej realizácie stavby.
1 na strane 393	Správa o úrovni nočného osvetlenia alebo akákoľvek iná relevantná štúdia.	Správa posudzovateľa BREEAM z inšpekcie na mieste a fotografický dôkaz alebo výkresy zhotovenia. Správa o úrovni nočného osvetlenia alebo akákoľvek iná relevantná štúdia.

Dodatočné informácie

Relevantné definície

Reklamy

Akékoľvek slovo, písmeno, vzor, znak, tabuľa, oznam, markíza, žalúzia, zariadenie alebo vyobrazenie, ktoré má povahu reklamy a je použité úplne alebo čiastočne na účely reklamy alebo oznamu. Patria sem aj všetky reklamné pútače alebo podobné konštrukcie, ktoré sa používajú alebo sú navrhnuté či prispôsobené na umiestňovanie reklám.

Stavebná zóna

Na účely tejto oblasti je zóna výstavby definovaná ako pozemok, na ktorom sa realizuje stavba hodnotená podľa normy BREEAM, a jeho vonkajšie plochy, t. j. rozsah nových prác.

Osvetlené reklamy

Reklama, ktorá je navrhnutá alebo prispôsobená na osvetlenie umelým osvetlením, priamo alebo odrazom.

Zóny osvetlenia

Kontrast s okolím alebo pozadím, a teda svetelné prostredie budovy, mení vnímanie jasu. Maximálnu svietivosť reklamy je preto potrebné prispôsobiť v závislosti od svetelného prostredia.

Ďalšie informácie

Návrh by sa mal skontrolovať z hľadiska súladu s usmerneniami Medzinárodnej komisie pre osvetľovanie (CIE). Z

toho vyplývajú štyri súbory odporúčaní:

1. Limity priemerného pomeru svetla svietidiel smerom nahor, aby sa obmedzilo žiarenie na oblohe
2. Limity osvetlenia okien blízkych nehnuteľností, pre ktoré by mohla byť problémom vysoká svietivosť.
3. Limity intenzity každého svetelného zdroja v potenciálne rušivých smeroch za hranicami lokality
4. Limity priemernej svietivosti budovy, ak je osvetlená.

V každom prípade tieto limity závisia od polohy miesta, kde sa budova nachádza (napríklad vidiek, mesto alebo centrum mesta). Výpočet osvetlenosti (b) alebo intenzity (c) sa nevyžaduje, ak sú všetky svietidlá typu „cut-off“ a sú natočené tak, aby bolo svetlo v potenciálne rušivých smeroch blokované.

Súlad s Usmernením k vzorovej vyhláške Medzinárodnej asociácie pre tmavú oblohu: www.darksky.org/assets/documents/MLO/MLO_FINAL_June2011.pdf môže zabezpečiť aj splnenie požiadaviek na dosiahnutie tohto kreditu.

Pol 05 Zníženie hlučnosti

(nebytové priestory, bytové zariadenia a bytové domy)

Počet dostupných kreditov	Minimálne normy
1	Žiadne

Cieľ

Znížiť pravdepodobnosť, že hluk spôsobený pevnými zariadeniami v novej zástavbe ovplyvní okolité budovy citlivé na hluk.

Kritériá hodnotenia

Uplatniteľnosť:

Na preukázanie súladu sa vyžaduje:

Jeden kredit

1 Ak sa v okruhu 800 m od posudzovaného miesta nenachádzajú alebo nebudú nachádzať žiadne oblasti alebo budovy citlivé na hluk. ALEBO

2 Ak sa v okolí budovy nachádzajú oblasti citlivé na hluk alebo budovy v okruhu 800 m, možno udeliť jeden kredit takto:
- 2.a Ak sa vykonalo posúdenie vplyvu hluku a boli namerané tieto hladiny hluku alebo stanovené v súlade so sériou ISO 1996:
  - 2.a.i Existujúce hladiny hluku pozadia v najbližšej alebo najviac exponovanej zástavbe citlivej na hluk k navrhovanej zástavbe alebo v mieste, kde možno tvrdiť, že okolité podmienky sú podobné
  - 2.a.ii Hladina hluku vyplývajúca z nového zdroja hluku (pozri CN3.1 na strane 399).

3 Posúdenie vplyvu hluku musí vykonať patrične kvalifikovaný akustický expert s uznávanou akustickou kvalifikáciou a členstvom v príslušnej profesijnej organizácii (pozri príslušné definície na strane 400).

4 Hladina hluku z navrhovanej lokality alebo budovy meraná v lokalite najbližšej alebo najviac exponovanej zástavby citlivej na hluk predstavuje rozdiel maximálne +5 dB počas dňa (od 7:00 do 23:00) a +3 dB v noci (od 23:00 do 7:00) v porovnaní s hladinou hluku pozadia.

5 Ak je hladina hluku z navrhovanej lokality alebo budovy vyššia ako hladiny opísané vo vyššie uvedenom kritériu 4, boli nainštalované opatrenia na utlmenie hluku pri jeho zdroji na úroveň, ktorá bude v súlade s vyššie uvedeným kritériom 4.

Kontrolné zoznamy a tabuľky

Žiadne.

Poznámky o súlade

Ref	Definície pojmov	Popis
Hrubá stavba a jadro (iba nebytové a rezidenčné inštitúcie)		
CN1	Príslušné hodnotiace kritériá	Len plášť: Táto otázka sa neuplatňuje. Plášť a jadro: Uplatňujú sa všetky kritériá relevantné pre typ a funkciu budovy Pozri Príloha D - Posúdenie plášťa a jadra projektu na strane 409 Podrobnejší opis možností hodnotenia plášťa a jadra.
Obytné budovy - čiastočne vybavené a plne vybavené		
CN2	Príslušné hodnotiace kritériá - Obydlia pre jednu rodinu	Obidve možnosti: Táto otázka sa neuplatňuje. Pozri Prílohu E – Uplatniteľnosť BREEAM New Construction na obydlia pre jednu rodinu a obydlia pre viaceré rodiny, čiastočne a úplne vybavené na str. 412, kde nájdete podrobnejší popis možností hodnotenia bytových domov.
CN2.1	Príslušné hodnotiace kritériá - Obydlia pre viaceré rodiny	Obe možnosti: Tieto kritériá sa budú vzťahovať len na obydlia pre viaceré rodiny so spoločnými systémami VZT. Pozri prílohu E - Uplatniteľnosť BREEAM New Construction na obydlia pre jednu rodinu a obydlia pre viaceré rodiny, čiastočne a úplne vybavené, na str. 412, kde nájdete podrobnejší popis možností posúdenia bývania.
Všeobecné		
CN3	Norma nie je vhodná alebo sa neuplatňuje	Ak príslušný kvalifikovaný akustik potvrdí, že norma ISO 1996:2007 nie je vhodnou normou na posúdenie navrhovanej budovy alebo lokality, na účely posúdenia tejto otázky možno akceptovať jeho posúdenie pravdepodobnosti sťažností v dôsledku vplyvu hluku.

Ref	Definície pojmov	Popis
CN3.1	Súlad vo fáze návrhu. Pozri kritérium 2 na strane 397.	Vo fáze posudzovania návrhu, kde sa nachádzajú oblasti alebo budovy citlivé na hluk, je nepravdepodobné, že by bolo možné vykonať skutočné meranie z dôvodu plánovaného, ale neexistujúceho zariadenia. V takýchto situáciách možno súlad preukázať pomocou výpočtov akustikov alebo skúmaním modelu v mierke. Pre takéto prípady norma ISO 1996-2:2007 uvádza, že „keďže neexistujú všeobecne dohodnuté predpovedné modely, použitá metóda by mala byť starostlivo opísaná v správe akustického experta“ a že „ak sú k dispozícii, mali by sa použiť predpovedné modely prijaté príslušnými orgánmi“. Ak to nie je možné predpovedať pomocou týchto metód, bude potrebné vykonať meranie s použitím zdroja hluku podobného navrhovanému alebo prípadne meranie skutočného hluku zo zariadenia (po jeho inštalácii). Dodržiavanie tohto prístupu si vyžaduje písomný záväzok vymenovať patrične kvalifikovaného akustického experta, ktorý vykoná požadované merania po inštalácii a ďalší záväzok utlmiť zdroj hluku v súlade s kritériami 4 a 5 BREEAM (ak sa meraniami preukáže, že je to potrebné).
CN3.2	Neošetrené budovy	Táto otázka posudzovania sa nevzťahuje na budovy, ktoré nie sú určené na úpravu, t. j. tam, kde vnútorné priestory nebudú obsluhované vykurovacími, ventilačnými alebo klimatizačnými systémami, a teda nebudú mať žiadne zariadenie generujúce hluk. Príkladom takýchto typov budov môžu byť priemyselné sklady.
podľa CN3.3	Národná alebo miestna alternatíva k norme ISO	Je možné použiť národný alebo miestny ekvivalent série ISO 1996; musí sa to však schváliť zo strany BRE Global. Zoznam schválených noriem a váh sa môže použiť na kontrolu predtým schválených noriem alebo na navrhnutie novej národnej alebo miestnej normy.

Metodológia

Žiadne.

Dôkazová dokumentácia

Kritériá	Predbežná fáza projektu	Záverečná fáza po výstavbe
1	Návrhové výkresy znázorňujúce: 1. Všetky existujúce a navrhované budovy citlivé na hluk, ktoré sa nachádzajú v okolí a v rámci hranice lokality 2. Navrhované zdroje hluku z nový vývoj 3. Vzdialenosť (m) od týchto budov k posudzovanej výstavbe.	Ako fáza návrhu. Správa z inšpekcie na mieste vypracovaná posudzovateľom BREEAM a fotografický dôkaz.

Kritériá	Predbežná fáza projektu	Záverečná fáza po výstavbe
2–3	Správa akustika, kvalifikácia a odborný štatút akustika ALEBO Príslušný oddiel alebo ustanovenia špecifikácie budovy alebo zmluvy, ktoré vyžadujú posúdenie hluku vhodne kvalifikovaným akustikom v súlade s normou ISO 1996:2007 ALEBO List od objednávateľa alebo projektového tímu, v ktorom potvrdzuje, že vymenuje experta na akustiku, ktorý vykoná posúdenie hluku v súlade s normou ISO 1996.	Správa akustika s meraniami na základe nainštalovaného a prevádzkovaného zariadenia.
4–5	Správa akustika s odporúčaniami na opatrenia na zníženie hluku A BUĎ: 1. Vyznačený plán návrhu Vyznačený plán návrhu znázorňujúci špecifikácie akustických opatrení ALEBO 2. Formálny list od objednávateľa alebo projektového tímu, v ktorom sa v prípade potreby potvrdzuje, že budú nainštalované tlmiace opatrenia odporúčané vymenovaným kvalifikovaným akustikom.	Správa posudzovateľa BREEAM z inšpekcie na mieste a fotografický dôkaz potvrdzujúci existenciu špecifikovaných opatrení na zníženie hluku ALEBO List od akustického technika potvrdzujúci, že všetky špecifikované tlmiace opatrenia boli nainštalované v požadovanej kvalite.

Dodatočné informácie

Relevantné definície

Oblasť citlivá na hluk

Krajiny alebo budovy, v ktorých sú obyvatelia pravdepodobne citliví na hluk spôsobený novým zariadením inštalovaným v posudzovanej budove, vrátane:

1. Obytné oblasti
2. Nemocnice, zdravotné strediská, opatrovateľské domy, ordinácie lekárov atď.
3. Školy, vysoké školy a iné vzdelávacie inštitúcie
4. Knižnice
5. Modlitebne
6. Oblasti s voľne žijúcimi živočíchmi, pamiatkami, parkami a záhradami
7. Nachádza sa v oblasti, ktorá je považovaná za oblasť výnimočnej prírodnej krásy, vedeckého alebo ekologického záujmu
8. Akákoľvek iná výstavba, ktorú možno považovať za citlivú na hluk.

Patrične kvalifikovaný odborník v akustike

Osoba, ktorá má uznanú zvukovú kvalifikáciu a členstvo v príslušnej odbornej organizácii. Akustici, ktorí spĺňajú definíciu vhodne kvalifikovaného akustika v článku Hea 05 Akustický výkon na strane 120, budú tiež spĺňať túto definíciu na účely súladu s týmto vydaním.

Ďalšie informácie

Žiadne.

Inovácie

Zhrnutie

Kategória inovácií umožňuje získanie kreditov za ukážkové plnenie kritérií a inovácie, ktoré nie sú zahrnuté v ostatných kritériách alebo presahujú ich rámec. Patria sem aj kredity za príkladnú výkonnosť, ak budova spĺňa úrovne príkladnej výkonnosti v konkrétnej oblasti. Zahŕňa aj inovatívne výrobky a procesy, za ktoré je možné dosiahnuť kredity, ak ich schválila spoločnosť BRE Global.

Úspory nákladov vyplývajúce z inovácií sa podporujú prostredníctvom pomoci, motivácie a propagácie rýchleho zavádzania inovačných opatrení.

Inn 01 Inovácia (všetky budovy)

Počet dostupných kreditov	Minimálne normy
10	Žiadne

Cieľ

Podporovať inovácie v stavebníctve prostredníctvom uznávania prínosov súvisiacich s udržateľnosťou, ktoré nie sú obsiahnutých v štandardných oblastiach BREEAM.

Kritériá hodnotenia

Na preukázanie súladu sa vyžaduje:

K dispozícii je maximálne 10 kreditov, ktoré je možné získať, nie však nad rámec celkového skóre BREEAM, za nasledovné kritériá:

Ukážková úroveň plnenia kritérií v existujúcich oblastiach BREEAM

1 Ak budova preukáže príkladnú výkonnosť tým, že splní definované kritériá príkladnej úrovne výkonnosti v jednom alebo viacerých z nasledujúcich bodov hodnotenia BREEAM (podrobnosti o kritériách hodnotenia príkladnej úrovne výkonnosti nájdete v príslušnom bode BREEAM v rámci tohto programového dokumentu):

- 1.a Man 03 Zodpovedné stavebné postupy na strane 56
- 1.b Man 05 Následná starostlivosť na strane 74
- 1.c Hea 02 Kvalita vnútorného vzduchu na strane 98
- 1.d Ene 01 Zníženie spotreby energie a emisií uhlíka na strane 150
- 1.e Ene 10 Flexibilná reakcia na strane dopytu na strane 211
- 1.f Tra 03a Alternatívne spôsoby dopravy na strane 226 alebo
- 1.g Tra 03b Alternatívne spôsoby dopravy na strane 235
- 1.h Wat 01 Spotreba vody na str. 253
- 1.i Mat 01 Vplyvy životného cyklu na strane 276
- 1.j Mat 03 Zodpovedné získavanie stavebných produktov na str. 282
- 1.k Wst 01 Nakladanie so stavebným odpadom na strane 306
- 1.l Wst 02 Recyklované kamenivo na strane 313
- 1.m Wst 05 Prispôsobenie sa zmene klímy na strane 330

Schválené inovácie

2 Za každú žiadosť o inováciu schválenú spoločnosťou BRE Global možno udeliť jeden kredit, ak budova spĺňa kritériá definované v schválenej žiadosti o inováciu.

Kontrolné zoznamy a tabuľky

Žiadne.

Poznámky o súlade

Ref	Definície pojmov	Popis
Všeobecné		
CN1	Ukážkové úroveň plnenia kritérií	Pre viac informácií pozri poznámky o zhode v rámci jednotlivých otázok hodnotenia, ktoré obsahujú úrovne ukážkového plnenia.

Metodológia

Ukážková úroveň plnenia kritérií v existujúcich oblastiach BREEAM

Informácie o metodike udeľovania kreditov za ukážkovú úroveň plnenia nájdete v časti Metodika v príslušných vydaniach BREEAM.

Schválené inovácie

Žiadosti o inováciu môže spoločnosti BRE Global podať licencovaný posudzovateľ BREEAM prostredníctvom oficiálneho schválenej žiadosti o inováciu (k dispozícii v rámci projektov BREEAM).

Dôkazová dokumentácia

Kritériá	Predbežná fáza projektu	Záverečná fáza po výstavbe
1 na predchádzajúcej strane	Ako je definované v rámci existujúcich oblastí BREEAM.	Ako je definované v rámci existujúcich oblastí BREEAM.
2 na predchádzajúcej strane	Kópia schválenej žiadosti o inováciu A Kópia správy k žiadosti o inováciu, v ktorej sa uvádza, že žiadosť bola „schválená“. A Príslušné listinné dôkazy preukazujúce špecifikáciu schválenej inovácie.	Predbežná fáza návrhu A Príslušné doklady potvrdzujúce, že projekt dosiahol alebo zaviedol schválenú inováciu, ako je opísaná a kvantifikovaná v schválenej žiadosti o inováciu.

Dodatočné informácie

Relevantné definície

Schválená inovácia

Akákoľvek nová technológia, návrh, konštrukcia, prevádzka, údržba alebo metóda demolácie, ktorá preukázateľne zlepšuje udržateľnosť budovy a je preukázateľným prínosom pre širšie odvetvie spôsobom, ktorý nie je zahrnutý inde v BREEAM. Okrem toho túto inováciu schválila spoločnosť BRE Global v súlade so zverejnenými postupmi udeľovania kreditov za inovácie BREEAM.

Ďalšie informácie

Žiadosť o kredity za inovácie

Viac informácií o kritériách oprávnenosti na získanie kreditov BREEAM za inovácie, postupe podávania žiadostí, poplatkoch za podanie žiadosti a predtým schválených inováciách nájdete v Časti BREEAM Inovácie, ktoré sú k dispozícii v BREEAM Projects.

Prílohy

Príloha A - Prevádzkovatelia národných schém (NSO)

Prevádzkovatelia národných schém (NSO) prevádzkujú schémy BREEAM prispôsobené konkrétnej krajine na základe licencie od spoločnosti BRE Global. Tieto organizácie sú vybrané tak, aby prostredníctvom svojich riadiacich štruktúr poskytovali miestne znalosti, prítomnosť na trhu a zapojenie miestnych zainteresovaných strán.

Spoločnosť BRE Global je národnou organizáciou pre BREEAM UK a tiež pre celoštátne schémy BREEAM International. Medzinárodné systémy BREEAM sa uplatňujú v ktorejkoľvek krajine sveta okrem Spojeného kráľovstva a krajín, v ktorých národná organizácia pre environmentálne hodnotenie prevádzkuje miestny systém.

Systémy vypracované prevádzkovateľmi národných schém musia spĺňať požiadavky základnej technickej normy BREEAM a základnej procesnej normy BREEAM, ktoré rozširujú rámec stanovený v Kódexe pre udržateľné prostredie budov.

Národné organizácie a ich miestne schémy BREEAM sú uvedené na webovej stránke BREEAM: www.breeam.com a na stránke Vyhľadávač technických noriem na pomoc zákazníkom pri výbere správnej schémy. V prípade potreby sa na posúdenie musia použiť miestne pravidlá; v týchto prípadoch sa obráťte na miestny NSO, ktorý vám poskytne ďalšie informácie. Ak budova nespadá do rozsahu pôsobnosti týchto miestnych systémov alebo ak v danej krajine nepôsobí žiadna miestna národná organizácia, používajú sa medzinárodné systémy BREEAM pre celú krajinu.

Príloha B - Rozsah pôsobnosti a vzdelávacie budovy

BREEAM International New Construction verzia 6 bola špeciálne prispôsobená na hodnotenie týchto vzdelávacích zariadení:

1. Predškolské zariadenia vrátane:
    a. Materské školy[84]
    b. Detské centrá[85]
2. Školy vrátane:
    a. Základné školy
    b. Stredné školy
    c. Školy všetkých vekových kategórií (vrátane vzdelávacích alebo výučbových budov na internátoch)
    d. Školy so špeciálnymi výchovno-vzdelávacími potrebami (ŠVVP)
3. Univerzity a vysoké školy
4. Vyššie odborné školy a inštitúcie vrátane:
    a. Výučbové zariadenia
    b. Centrá vzdelávacích zdrojov
    c. Laboratóriá, dielne alebo ateliéry
    d. Študentské odbory
    e. Alebo kombinácia vyššie uvedených typov.

Školy s akútnymi špeciálnymi výchovno-vzdelávacími potrebami (ŠVVP)

Školy s akútnymi špeciálnymi výchovno-vzdelávacími potrebami sa vzťahujú na deti s ťažkým postihnutím alebo ťažkosťami s učením, ktoré im bránia interpretovať okolie bez pocitu úzkosti alebo stresu. Tieto deti môžu ľahko strácať pozornosť alebo byť nadmerne stimulované, prípadne oboje. Do tejto skupiny žiakov patria najmä deti s poruchami správania, emocionálnymi alebo sociálnymi problémami (BEDS) a deti s poruchami komunikácie a interakcie (poruchy autistického spektra (ASD)).

Táto schéma BREEAM nebola špeciálne prispôsobená na hodnotenie ŠVVP. Hodnotenie podľa tejto metodiky je však stále možné, s výnimkou prípadov, keď sa poskytuje vysoko špecializované ubytovanie. Školy s akútnymi ŠVVP preto potrebujú individuálne hodnotenie.

Viac informácií o ŠVVP nájdete v stavebnom bulletine 102 Projektovanie pre postihnuté deti so špeciálnymi vzdelávacími potrebami, ktorý vydalo Ministerstvo pre deti, školy a rodiny (k dispozícii na: www.education.gov.uk).

Ubytovanie na študentských internátoch

BREEAM International New Construction, verzia 6 sa môže použiť na hodnotenie internátnych, vysokoškolských alebo univerzitných budov. Tieto typy budov sa na účely hodnotenia BREEAM klasifikujú ako rezidenčné inštitúcie.

Príloha C - Rozsah pôsobnosti a ubytovacie zariadenia

BREEAM International New Construction, verzia 6 sa môže použiť na posúdenie obytných budov s viacerými obyvateľmi, ktoré nie sú vhodné na posúdenie ako obytné budovy. Medzinárodná schéma BREEAM pre novostavby, verzia 6, poskytuje metodiku hodnotenia celej budovy, ktorú možno uplatniť aj na budovy, ktoré obsahujú súkromné obytné priestory, ale aj spoločné zariadenia v rámci tej istej budovy, aby bolo možné posúdiť celú budovu.

BREEAM International New Construction, verzia 6 sa môže použiť na hodnotenie týchto typov rezidenčných inštitúcií:

1. Hotel, ubytovňa, penzión a penzión
2. Študentské ubytovanie
3. Domovy starostlivosti, ktoré neobsahujú rozsiahle alebo špecializované zdravotnícke zariadenia (prípustné sú obmedzené ordinácie a lekárske miestnosti).
4. Chránené bývanie
5. Ostatné obytné budovy, ktoré obsahujú kombináciu obytných priestorov so spoločenskými priestormi, ako napríklad niektoré vojenské ubytovacie zariadenia.

Príloha D - Posúdenie projektu hrubej stavby a jadra

Nezariadené, špekulatívne novostavby (často označované ako „projekty hlavnej stavby len“ alebo „projekty hlavnej stavby a jadra“) možno hodnotiť pomocou schémy BREEAM International New Construction, verzia 6.

Medzinárodnú verziu BREEAM International New Construction, verzia 6 je možné použiť na projekty plne vybavených novostavieb, projektov hrubej stavby a projektov hrubej stavby a jadra. Táto časť poskytuje pokyny pre posudzovateľov a projektové tímy o uplatňovaní BREEAM na projekty len hrubej stavby a hrubej stavby a jadra.

Projekt „len hrubá stavba“ alebo „hrubá stavba a jadro“ je definovaný ako projekt, v rámci ktorého je rozsahom prác developera len návrh a výstavba základnej budovy, pričom pred začatím užívania budovy je potrebné dokončiť celý rad stavebných prác a prác na zariadení. To môže zahŕňať niektoré alebo všetky tieto prvky: konštrukciu, plášť budovy , základné systémy budovy vrátane stratégie obsluhy budovy a inštalácií (ako je napríklad HVAC) alebo podpory zariadení na inštaláciu takýchto systémov a prípadne aj vybavenie spoločných priestorov.

V projektoch, v ktorých nie sú oblasti výstavby úplne vybavené, sa výkonnosť budovy a súlad s BREEAM overuje na základe rozsahu prác developera. Meria sa to pomocou dvoch štandardných možností typu projektu, ktoré následne definujú príslušné kritériá hodnotenia platné pre daný typ projektu. Hoci sa niektoré projekty budú do určitej miery líšiť od rozsahu týchto štandardných možností, na účely BREEAM sa oblasti, ktoré nie sú zahrnuté vo zvolenej možnosti, z hodnotenia vylúčia, a to aj v prípade, že patria do rozsahu prác developera. Tento prístup je potrebný na zabezpečenie jasnosti, konzistentnosti a porovnateľnosti na trhu s nehnuteľnosťami. Úplne filtrovateľný zoznam kritérií alebo otázok na základe rozsahu každého jednotlivého projektu by neumožnil porovnateľnosť hodnotení BREEAM, či už z hľadiska porovnávania plnenia alebo na propagačné či reklamné účely.

Definovanie typu projektu hrubá stavba a jadro

Na účely vymedzenia rozsahu hodnotenia a označovania certifikátom BREEAM možno nebytovú novostavbu, ktorá nie je úplne vybavená, zaradiť do jedného z týchto typov:

- Hodnotenie a certifikácia projektu len hrubej stavby
- Hodnotenie a certifikácia projektu hrubej stavby a jadra

Posúdenie projektu len hrubá stavba

Táto možnosť posúdenia a certifikácie je k dispozícii v prípade, že rozsah prác developera zahŕňa len novostavby na konštrukcii, spodnej stavbe a nadstavbe budovy vrátane:

- Vonkajšie steny, okná, dvere (vonkajšie), strecha, jadro vnútorných stien, konštrukčné podlahy
- Pevné a mäkké terénne úpravy (ak existujú a sú v rozsahu prác).

Posúdenie projektu hrubej stavby a jadra

Táto možnosť je k dispozícii, ak rozsah prác developera zahŕňa hrubé stavby, ako je opísané v možnosti 1, a základné služby budovy. Základné služby budovy zahŕňajú práce týkajúce sa inštalácie centrálnych alebo spoločných dopravných systémov, vodovodných systémov, vybavenia spoločných priestorov, centrálnych mechanických a elektrických systémov vrátane VZT, ale bez miestneho vybavenia systémov v priestoroch nájomcov. Systémy budú zvyčajne centralizované s obmedzeným rozvodom do každej prenajatej oblasti (pre budúce pripojenie v rámci vybavenia nájomcu).

Možnosti hodnotenia projektov hrubej stavby a projektov hrubej stavby a jadra sú k dispozícii pre všetky typy budov okrem obytných samostatných domov a bytových domov, podrobnejší opis možností hodnotenia obytných budov nájdete v prílohe E - Uplatniteľnosť BREEAM New Construction na obydlia pre jednu rodinu a obydlia pre viaceré rodiny, čiastočne a úplne vybavené na strane 412.

Posudzovanie projektov hrubej stavby a jadra

Na proces posudzovania a uplatňovanie väčšiny oblastí hodnotenia BREEAM nebude mať rozsah prác na novostavbe, ktoré sa týkajú len hrubej stavby alebo hrubej stavby a jadra, žiadny vplyv. Dôvodom je, že väčšina kritérií BREEAM sa týka vplyvov, procesov a postupov riadenia, ktoré sa vyskytujú pri akejkoľvek novostavbe bez ohľadu na to, či ide o projekt hrubej stavby a jadra alebo projekt s kompletným vybavením. Niekoľko oblastí a kritérií BREEAM je však prispôsobených na hodnotenie vybavených budov, napríklad akustické vlastnosti. Preto sa v rámci problematiky posudzovania uvádzajú ďalšie usmernenia vo forme poznámky o zhode. Tieto poznámky o zhode pre projekty hrubej stavby a jadra potvrdzujú, či sa oblasť posudzovania vzťahuje na projekty len hrubej stavby alebo na projekty hrubej stavby a jadra, a ak sa uplatňuje, ako ju posúdiť pre vyššie definované možnosti alebo typy projektov.

v

Posúdenie projektu hrubej stavby a jadra a minimálne normy BREEAM

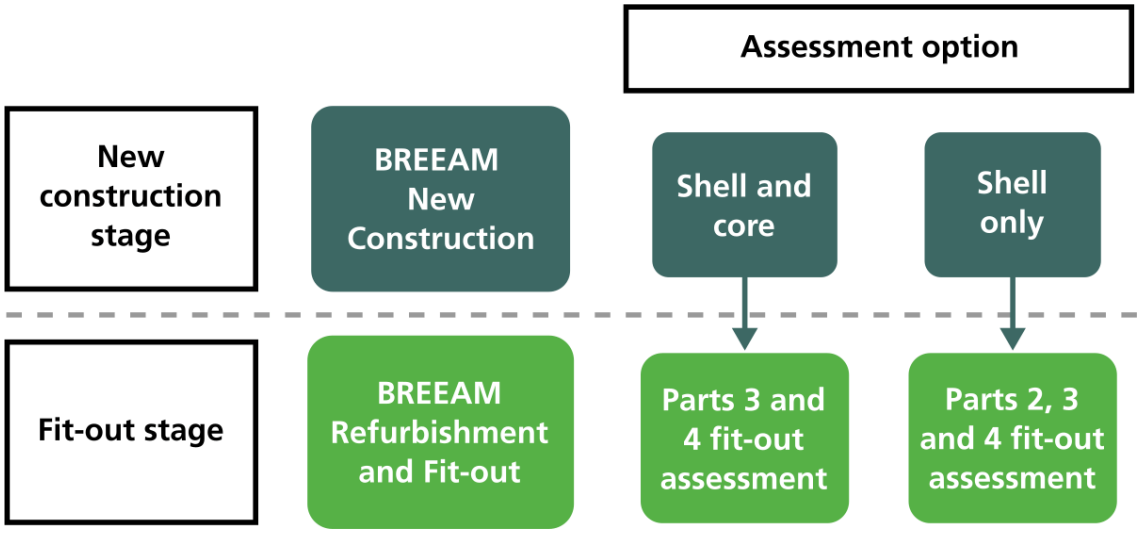
Všetky minimálne normy BREEAM sa naďalej vzťahujú na posúdenie projektu hrubej stavby a jadra v rozsahu prác developera. Jedinou výnimkou sú minimálne štandardy pre oblasti, kredity alebo kritériá BREEAM, ktoré sa nehodnotia v projekte len hrubej stavby alebo projekte hrubej stavby a jadra (potvrdené poznámkou o zhode projektu hrubej stavby a jadra v každej príslušnej oblasti).

BREEAM International New Construction, verzia 6 a BREEAM International Non-Domestic Refurbishment 2015

Spoločnosť BRE Global vyvinula samostatnú schému BREEAM, ktorá pokrýva etapy renovácie a vybavenia životného cyklu nebytových budov. V rámci tohto systému by sa posudzovali len kritériá, ktoré spadajú do rozsahu prác nájomcu na vybavení.

Vďaka dvojdielnemu hodnoteniu projektov hrubej stavby a jadra, v rámci ktorého sa oddelene hodnotia časti hrubej stavby a jadra a časti týkajúce sa vybavenia, poskytuje BREEAM flexibilný a zároveň spoľahlivý spôsob hodnotenia projektov hrubej stavby a jadra.

Na obrázku 6 je znázornený vzťah medzi schémami International New Construction a International Refurbishment and Fit-out.



Obr. 6: Medzinárodné schémy pre novostavby a medzinárodné schémy pre rekonštrukcie a vybavenia a možnosti hodnotenia

Rozsah medzinárodných schém BREEAM pre novostavby, projekty len hrubej stavby a projekty hrubej stavby a jadra a medzinárodné schémy BREEAM pre rekonštrukcie a vybavenie bol v čo najväčšej možnej miere vymedzený na základe uznávaných priemyselných definícií, ako je napríklad definícia British Council for Offices pre kategórie A a B vybavenia. V praxi však neexistuje pevná štandardná definícia renovačných a vybavovacích prác , ktorá sa v jednotlivých projektoch značne líši. Vzhľadom na túto variabilitu a tiež potrebu zabezpečiť konzistentnú definíciu na účely porovnateľnosti hodnotenia, systém BREEAM International Refurbishment and Fit-out definoval niekoľko voliteľných hodnotiacich častí. Rozsah každej z týchto častí hodnotenia zväčša vychádza zo stanovených hraníc kľúčových fyzikálnych parametrov budovy. V rámci tohto systému môžu klienti požiadať o certifikáciu posúdenia na základe akejkoľvek kombinácie častí podľa rozsahu ich rekonštrukčných a zariaďovacích prác, čo predstavuje veľmi flexibilný systém.

Rozsah pôsobnosti Časti 1 schémy BREEAM International Refurbishment and Fit-out sa zhoduje s možnosťou 1, teda možnosťou len pre hrubú stavbu v rámci schémy BREEAM International New Construction. Časti 1 a 2 sú v súlade s možnosťou 2, teda s možnosťou hrubej stavby a jadra v rámci schémy BREEAM International New Construction. Časti 3 a 4 sa potom vzťahujú na rozsah prác, ktoré sú zahrnuté v rámci zriaďovacích prác vybavenia nájomcu, a preto by sa použili na doplnenie hodnotenia hrubej stavby a jadra po vybavení.

Typy hodnotenia podľa schémy BREEAM International Non-Domestic Refurbishment 2015:

- Časť 1 - Materiál a konštrukcia: vonkajší plášť vrátane stien, strechy, okien a podlahy
- Časť 2 - Základné služby: centralizované mechanické a elektrické zariadenia vrátane vykurovania, chladenia a vetrania
- Časť 3 - Miestne služby: miestne služby vrátane osvetlenia, miestneho vykurovania, chladenia a vetrania
- Časť 4 - Vnútorné vybavenie: vnútorné úpravy, nábytok, vybavenie a zariadenie.

Ďalšie informácie o medzinárodnej schéme BREEAM Non-Domestic Refurbishment 2015 nájdete na webovej stránke BREEAM(www.breeam.com).

Príloha E - Uplatniteľnosť BREEAM New Construction na obydlia pre jednu rodinu a obydlia pre viaceré rodiny, čiastočne a úplne vybavené

Vzhľadom na rôzne spôsoby výstavby a predaja domov na celom svete ponúka BREEAM International New Construction štyri rôzne spôsoby klasifikácie pre hodnotenie obytných budov.

V tejto časti sú uvedené usmernenia pre posudzovateľov a projektové tímy o uplatňovaní BREEAM na obytné budovy.

Na vykonanie hodnotenia musí posudzovateľ a projektový tím najprv definovať projekt ako obydlie pre jednu rodinu alebo obydlie pre viaceré rodiny a potom uviesť, či bude „čiastočne“ alebo „úplne“ vybavený . O tom je potrebné rozhodnúť na začiatku procesu hodnotenia v rámci nástroja na bodovanie a podávanie správ.

Obydlia pre jednu rodinu a pre viaceré rodiny

Definícia obydlia pre jednu rodinu

Obydlie pre jednu rodinu je trvalá obytná budova, oddelená od akejkoľvek inej budovy.

Hovorí sa jej aj ako „dom“ alebo „rodinný dom“, „obydlie pre jednu rodinu“ a je určené na bývanie pre jednu domácnosť alebo rodinu. Obydlia pre jednu rodinu nesmú mať žiadne spoločné priestory ani zdieľať služby s okolitými obydliami.

Obydlia pre jednu rodinu sú zvyčajne postavené na pozemkoch väčšieho rozsahu než je prízemná plocha a ponúkajú vonkajší priestor v súkromnom vlastníctve. Nemusí to však vždy platiť pre obydlia postavené na husto obývaných pozemkoch, napríklad v mestách. V prípade obydlí pre jednu rodinu, ktoré sú pripojené k iným obydliam, sa uplatňujú kritériá „obydlia pre jednu rodinu“, pokiaľ sa ostatné obydlia neposudzujú.

V prípade obydlí s dodatočnými prístavbami alebo apartmánmi určenými pre členov rozšírenej rodiny možno udeliť úľavy bez toho, aby sa zmenil opis z „obydlia pre jednu rodinu“.

Definícia obydlí pre viaceré rodiny

Obydlia pre viaceré rodiny predstavujú akýkoľvek počet trvalých bytových jednotiek väčší ako jeden. Musia sa nachádzať na tom istom pozemku a môžu byť buď spojené v rámci tej istej budovy alebo sú oddelené.

Jedna budova môže napríklad pozostávať z bytového domu alebo z terasových domov. Prípadne by mohlo ísť o skupinu „obydlí pre jednu rodinu“ postavených na tom istom pozemku.

Čiastočne a úplne vybavené obydlia

Zámerom kritérií čiastočného a úplného vybavenia je uznať potrebu väčšej flexibility vo fáze „vybavenia“ pokiaľ ide o trh s nehnuteľnosťami na kľúč. Nehnuteľnosti na kľúč sú nové domy predávané na voľnom trhu ako kompletné a určené na okamžité nasťahovanie nového majiteľa domu.

Definícia čiastočne vybavených obydlí

Ide o nové domy na kľúč, ktoré sú určené na bývanie novým majiteľom domu, pričom vzhľadom na miestne stavebné zvyklosti a kultúrne aspekty, aj keď sa nehnuteľnosť považuje za „dokončenú“ v okamihu predaja, nový majiteľ domu musí svoju novú nehnuteľnosť vybaviť špecifickým zariadením a príslušenstvom.

Hoci sa BREEAM Residential usiluje o zachovanie flexibility, pokiaľ ide o špecifikáciu rôznych zariadení a vybavenia zo strany nového majiteľa domu; aby bol nový byt certifikovaný ako čiastočne vybavený dom podľa BREEAM, musia byť určité prvky vždy prítomné počas rozsahu prác bez ohľadu na stavebné postupy alebo kultúrne rozdiely.

Táto možnosť posudzovania a certifikácie je k dispozícii v prípade, že rozsah prác developera zahŕňa novostavby, ktoré sa týkajú konštrukcie, spodnej a vrchnej stavby budovy, ako aj potrebných základných, centrálnych a lokálnych systémov, aby mohli obyvatelia pohodlne bývať v každom byte. V závislosti od klimatických a konštrukčných vlastností nového domu sú to tieto prvky:

Povinné prvky čiastočne vybaveného obydlia:

- Strecha, vonkajšie steny, vnútorné a deliace steny a konštrukčné podlahy, okná a vonkajšie dvere (pre každý byt)
- Prívod pitnej vody
- Trubky a pripojenie na kanalizáciu
- Mechanické a elektroinštalačné systémy vrátane
  - Svietidlá a inštalácie osvetlenia
  - Systémy vykurovania, chladenia a vetrania.

Povinné prvky čiastočne vybaveného obydlia (ak existujú)

- Zariadenie spoločných priestorov
- Inštalácia centrálnych alebo komunálnych
- dopravných systémov Spevnené plochy a zeleň

Pri týchto posúdeniach je potrebné jasne špecifikovať rozsah vykonávaných prác a zabezpečiť ich presnú certifikáciu projektu.

Definícia plne vybavených obydlí

Plne vybavené obydlie je také, v ktorom sa okrem základných, centrálnych a lokálnych systémov nachádzajú aj ďalšie zariadenia a vybavenie, ktoré zmierňujú vplyvy na životné prostredie počas používania bytu počas celej jeho životnosti.

- Povrchové úpravy interiéru, ako sú podlahy, steny a dvere a nábytok (napr. kuchyne a kúpeľne)
- Teplá, studená pitná a úžitková voda
- Vnútorné vybavenie, ako sú recyklačné koše, umývacia linka a biela technika
- Monitorovacie zariadenia, ako sú merače energie a zobrazovacie zariadenia.

Čiastočne vybavené a plne vybavené obydlia a minimálne štandardy BREEAM

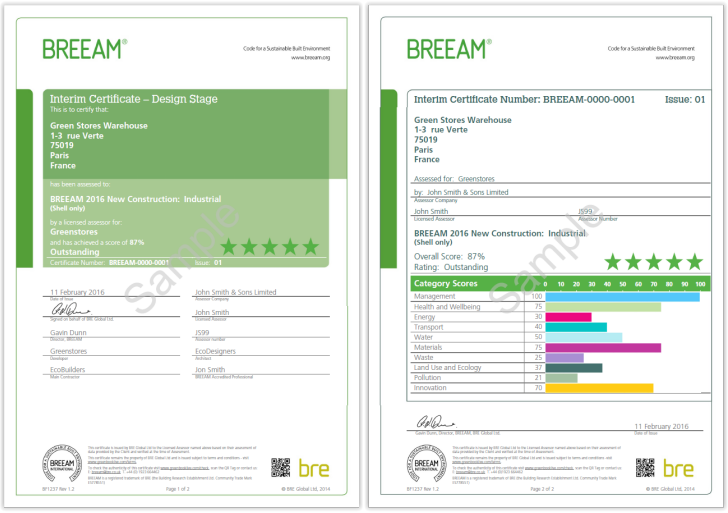
Všetky minimálne normy BREEAM sa naďalej vzťahujú na čiastočne vybavené hodnotenia rozsahu prác developera. Jediné výnimky sú:

- Minimálne štandardy pre otázky, kredity alebo kritériá BREEAM, ktoré sa nehodnotia v čiastočne vybavenom projekte (potvrdené v poznámkach o súlade pre obytné budovy - čiastočne a úplne vybavené v každom vydaní)
- Wat 01 Spotreba vody na strane 253, kde minimálna norma môže byť vylúčená, ak vodovodné armatúry nebudú inštalované v mene nového majiteľa domu alebo nájomníka.

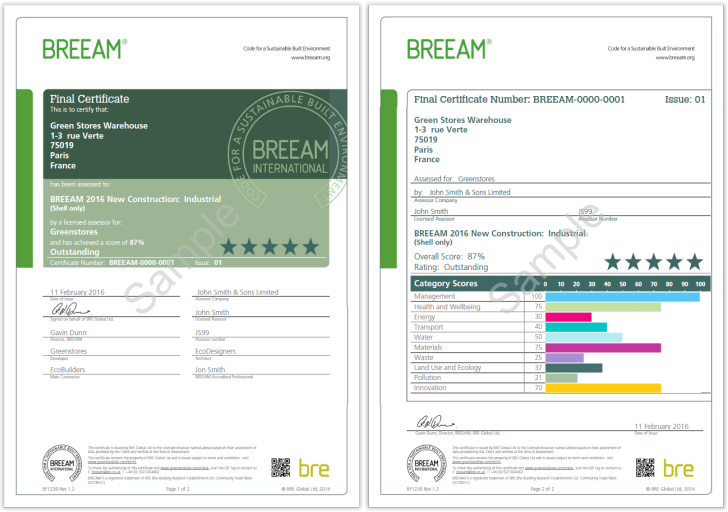
Príloha F - Príklady certifikátov

BREEAM New Construction

Príklady certifikátov BREEAM pre novostavby pre priebežnú fázu projektovania a konečnú fázu po výstavbe sú uvedené na obrázku 7 a na obrázku 8.



Obr. 7: Príklad priebežného certifikátu vo fáze návrhu



Obr. 8: Príklad dokončeného certifikátu vo fáze po ukončení výstavby

Príloha G - Požiadavky na schému ohľaduplného staviteľa

Organizačné, miestne alebo národné požiadavky na schému ohľaduplného staviteľa výstavbu (usmernenie pre správcov schémy)

Účelom tejto prílohy je poskytnúť usmernenie pre ohľaduplných správcov alebo prevádzkovateľov stavebných systémov, na základe ktorého môžu určiť, či je ich systém potenciálne oprávnený na uznanie systémom BREEAM ako „vyhovujúci systém“, a teda či je výkonnosť, ako ju tento systém posudzuje alebo hodnotí, vhodná na účely udeľovania kreditov BREEAM.

Ak správca preskúmal svoju schému na základe nižšie uvedených požiadaviek a chce, aby ho BREEAM zaradil do zoznamu „vyhovujúcich schém“, mal by kontaktovať kanceláriu BREEAM v spoločnosti BRE Global a poskytnúť nasledujúce informácie:

1. Opis fungovania schémy vrátane spôsobu monitorovania a overovania súladu a noriem, na ktoré je schéma (alebo jeho posudzovatelia) akreditovaná
2. Požiadavky schémy
3. Ako schéma hodnotí súlad zhotoviteľa a staveniska s týmto kódexom postupov
4. Ak je to relevantné, počet projektov, ktoré využili systém a priemerné skóre alebo dosiahnutú úroveň výkonnosti.

Spoločnosť BRE Global potom bude informovať prevádzkovateľa systému o ďalších krokoch v procese preskúmania a zaradenia do zoznamu.

Vezmite na vedomie: Spoločnosť BRE Global neposkytuje prekladateľské služby, a preto musia správcovia alebo prevádzkovatelia schém ohľaduplnej výstavby predložiť preložené dokumenty (v angličtine) spolu s príslušnými časťami originálnych dokumentov.

Požiadavky na prevádzkovú schému

1. Schéma má zavedený kódex postupov (rozsah pôsobnosti je uvedený nižšie).
2. Hodnotenie a bodovanie schémy je štruktúrované tak, aby bolo možné určiť a ohodnotiť výkonnosť zhotoviteľa alebo staveniska podľa schémy ako takej a jednotlivých častí kódexu postupov na základe:
   a. Nesúladu
   b. Súladu (požadovaná úroveň na dosiahnutie kreditov BREEAM)
   c. „Nad rámec“ súladu (ak je to relevantné), napr. plnenie v hornom kvartile
   d. Príkladná prax, napr. 10 % najlepších výsledkov.
3. V systéme sa definovala základná úroveň výkonnosti, na základe ktorej sa určuje výkonnosť jednotlivých položiek a celková výkonnosť projektu. Táto základná úroveň by mala byť vo všeobecnosti v súlade so všeobecne uznávanými osvedčenými postupmi na staveniskách v hodnotenej krajine alebo v širšom medzinárodnom regióne.
4. Výkonnosť zhotoviteľov a stavenísk nezávisle monitorujú a overujú jednotlivci alebo poskytovatelia služieb určení správcom systému.
5. Správca schémy preukáže, aké opatrenia zaviedol, aby zabezpečil, že osoby, ktoré vykonávajú posudzovanie a overovanie, majú potrebné zručnosti, vedomosti a skúsenosti na to, aby ich vykonávali kvalifikovane.
6. Staveniská počas fázy výstavby aspoň raz navštívi monitor , aby overil súlad s kódexom postupov systému a zhodnotil jeho plnenie (alebo častejšie v prípade stavieb, kde je fáza výstavby dlhšia ako 12 mesiacov).
7. Výkonnosť staveniska nahlasuje monitor a celkové skóre alebo súlad s požiadavkami sa určí pri každej návšteve staveniska.
8. Správca systému vydá dodávateľovi osvedčenie o výkone alebo zhode.
9. Správca systému uplatňuje verejný postup podávania sťažností a sťažnosti príslušne prešetruje.

Rozsah pôsobnosti kódexu postupov schémy

Kódex postupov schémy musí zahŕňať alebo zohľadňovať tieto kategórie a položky:

Environmentálne povedomie a zmierňovanie vplyvov

Preukázať informovanosť staviteľa, zohľadnenie a zmiernenie vplyvu stavby na životné prostredie.

1. Systémy environmentálneho riadenia alebo environmentálna politika
2. Riadenie a prevencia znečistenia svetlom, hlukom, ovzduším, pôdou a vodou
3. Opatrenia alebo postupy na úsporu energie a vody
4. Opatrenia alebo postupy na zníženie množstva odpadu a odklon od skládkovania
5. Zodpovedne získané stavebné materiály s nízkym vplyvom
6. Miestna pracovná sila a dodávatelia
7. Monitorovanie a určenie vplyvov na životné prostredie
8. Ochrana ekologických prvkov
9. Nízkouhlíkové alebo bezuhlíkové zdroje energie
10. Informovanosť a školenie pracovníkov na stavenisku.

Bezpečný a primeraný prístup

Preukázať, že stavebník prevádzkuje stavenisko spôsobom, ktorý zabezpečuje bezpečný prístup na stavenisko a do jeho okolia.

1. Plán riadenia dopravy na stavenisku
2. Cesty, chodníky a obchádzky bez akýchkoľvek prekážok, jasne označené a bezpečné
3. Prístupné, bezpečné a označené stavenisko a ubytovanie na stavenisku pre všetky pohlavia alebo schopnosti
4. Zabezpečenie a ohraničenie staveniska
5. Poskytovanie bezpečnostných informácií a núdzových postupov
6. Poskytovanie nápisov, oznámení a iných informácií v bežných miestnych jazykoch
7. Ochrana verejnosti pred činnosťami na stavenisku, napr. pohybom zeminy, sutinami atď.
8. Správa návštevníkov na stavenisku.

Bezpečné a ohľaduplné pracovné prostredie

Preukázanie, že staviteľ prevádzkuje stavenisko čistým, bezpečným a zodpovedným spôsobom s cieľom zabezpečiť pohodu pracovníkov na stavenisku a minimalizovať akékoľvek negatívne dopady na ich zdravie a bezpečnosť.

1. Zabezpečenie čistých, dobre udržiavaných a vhodne dimenzovaných alebo vhodne umiestnených alebo tienených zariadení na stavenisku (sprchy, šatne alebo sušiarne, fajčiarske priestory alebo jedálne).
2. Poradenstvo v oblasti ochrany zdravia pri práci a poskytovanie informácií alebo postupov v núdzových situáciách, osoby poskytujúce prvú pomoc a vybavenie pre poskytnutie prvej pomoci
3. Čisté a dobre udržiavané pracovné priestory a zariadenia
4. Monitorovanie protispoločenského alebo kriminálneho správania na stavenisku a v jeho okolí, napr. odhadzovanie odpadkov, urážlivé alebo hanlivé výrazy, vandalizmus alebo grafity, alebo predchádzanie takémuto správaniu.
5. Poskytnutie čistých a vhodných osobných ochranných prostriedkov (OOP)
6. Vykonávanie, monitorovanie a dodržiavanie plánu bezpečnosti a ochrany zdravia pri práci vypracovaného pre stavenisko (plán, ktorý stanovuje postupy na zabezpečenie bezpečného vykonávania stavebných prác na ochranu a blaho pracovníkov na stavenisku a iných osôb, ktoré môžu byť prácami ovplyvnené)
7. Profesionálny vzhľad a správanie pracovníkov na stavenisku
8. Potreby pracovníkov na stavenisku v oblasti odbornej prípravy.

Dobrý sused

Preukázanie, že stavebník prevádzkuje stavenisko spôsobom, ktorý je ohľaduplný k okolitým susedom a návštevníkom lokality v blízkosti staveniska.

1. Komunikácia, oznamovanie a dostupné informácie týkajúce sa činností na stavenisku alebo programu alebo informácií vrátane núdzových postupov alebo kontaktov
2. Prístupná správa staveniska a postup podávania pripomienok
3. Údržba a čistota staveniska, obvodových a priľahlých ciest a prístup na stavenisko
4. Opatrenia na ochranu pred prachom a hlukom
5. Vzhľad staveniska vrátane vizuálne vhodných a dobre udržiavaných vývesných tabúľ a ohraničenia a propagovaného zapojenia do systému
6. Zapojenie širšej komunity.

Kontrolné zoznamy

Kontrolný zoznam A1

Pozri Man 03 Zodpovedné stavebné postupy na strane 56.

1 Bezpečný a primeraný prístup

Cieľom tejto časti je preukázať, že stavebník prevádzkuje stavenisko spôsobom, ktorý zaručuje bezpečný a vhodný prístup na stavenisko, do jeho okolia a na stavenisko. Súlad s týmto oddielom preukazujú tieto položky:

Tabuľka 63: Kontrolný zoznam A1-1 - Požiadavky na bezpečný a primeraný prístup

Ref	Kritériá	Á	Požadovaný dôkaz alebo odkaz	Potvrdenie a odôvodnenie
a	Na stavenisko je zabezpečený vhodný a bezpečný prístup. Musí zahŕňať minimálne: Zabezpečenie parkovania na stavenisku alebo v jeho blízkosti ALEBO zastávku verejnej dopravy s priemernou frekvenciou max 30 minút v okruhu 500 m ALEBO špeciálna kyvadlová doprava do hlavného uzla verejnej dopravy poskytovaná zhotoviteľom Dobré osvetlenie a primerané bariéry A jednotné povrchy, t. j. minimalizácia nebezpečenstva zakopnutia mimo hranice lokality Všetky prístupy musia byť čisté a nezanesené blatom Stropy alebo lešenia, ktoré sú súčasťou hranice staveniska alebo sa nachádzajú mimo nej, musia byť v noci dobre osvetlené a siete na lešení musia byť inštalované a dobre udržiavané.		Pozri kópiu plánu parkovania a skontrolujte grafikony verejnej či kyvadlovej dopravy a ďalšie zariadenia na mieste.	
b	Na stavenisku je zabezpečený vhodný a bezpečný prístup. Musí zahŕňať minimálne: Chodníky označené rampami a značkami Dostatočne široké cesty pre invalidné vozíky Prístupnosť všetkých priestorov pre zrakovo alebo sluchovo postihnutých návštevníkov Na všetky nebezpečenstvá v lokalite sa upozorňuje pri vstupe na stavenisko.		Skontrolujte stavenisko a či je zoznam rizík úplný.	
c	Vchody a východy zo staveniska sú jasne označené, aby ich návštevníci a vodiči dodávok videli.		Skontrolujte priamo na stavenisku.	

Ref	Kritériá	A	Dôkaz alebo odkaz požadované	Overovanie a zdôvodnenie
d	Recepcia na stavenisku je jasne označená ALEBO všetci návštevníci sú na recepciu sprevádzaní .		Pri príchode si skontrolujte pokyny ALEBO pozrite kópiu postupu úvodného postupu.	
e	Poštová schránka je umiestnená na chodníku, aby poštár nemusel vstúpiť na pozemok.		Zobrazenie na mieste.	
f	V prípade, že v oblasti žijú menšinové komunity hovoriace iným jazykom alebo pracujúce na stavenisku, oznámenia sa tlačia v bežnom miestnom jazyku.		Skontrolujte miesto a preverte, či sú zamestnanci registrovaní ako menšinová kultúrna komunita. V prípade, že na stavenisku alebo v okolí je jazyková menšina, skontrolujte, či sú nápisy v jazyku takejto komunity.	
g	Všetky dopravné značky alebo názvy sú viditeľné ALEBO ak je dopravná značka alebo názov zatarasený, bol postavený náhradný.		Zobrazenie na mieste.	
h	Ak sa stavenisko nachádza v oblasti s veľkým dopravným preťažením a miesto vykládky je mimo staveniska, dodávky materiálu sa vykonávajú menšími vozidlami a sú načasované tak, aby spôsobovali čo najmenej ťažkostí.		Skontrolujte postupy na stavenisku.	

2 Byť dobrým susedom

Cieľom tejto časti je preukázať, že stavebník prevádzkuje stavenisko spôsobom, ktorý je ohľaduplný k okolitým susedom. Súlad s týmto oddielom preukazujú tieto položky:

Tabuľka 64: Kontrolný zoznam A1-2 - Požiadavky na dobrého suseda

Ref	Kritériá	Á	Požadovaný dôkaz alebo odkaz	Potvrdenie a odôvodnenie
a	Všetkým susedom boli alebo budú zaslané úvodné listy a existuje záväzok, že pri ukončení zmluvy sa susedom napíše ďakovný list za ich trpezlivosť a predloží sa im formulár na spätnú väzbu.		Pozri kópie listov so zoznamom adries. Je potrebné poskytnúť kópiu tohto záväzku alebo kópiu štandardného listu, ktorý sa vždy zasiela na konci projektu. Kópia formulára spätnej väzby sa musí poskytnúť spolu s postupom na monitorovanie výsledkov a vykonávanie zmien pre budúcu prácu.	
b	Pracovná doba na stavenisku a obmedzenia hlučnej práce sú primerané danej oblasti, najmä ak sa stavenisko nachádza v blízkosti: Domov Škôl Nemocníc Priemyselných budov Hlavných zastávok verejnej dopravy Mestských centier Obchodov.		Je potrebné predložiť kópiu vyhlásenia o zámere, politiky, dohody atď.	
c	Hranica staveniska (ktorá zahŕňa všetky oblasti ovplyvnené prácami) je jasne a bezpečne vyznačená a zodpovedá prostrediu: Farebnosť oplotenia bola zohľadnená s ohľadom na okolité prostredie Chodci majú vhodný, bezpečný a chránený prechod popri hranici areálu Výstražné značky pre chodcov a účastníkov cestnej premávky sú dobre osvetlené Verejnosť považuje okolie staveniska za upratané a čisté.		Spýtajte sa správcu lokality, či zvažovalo oplotenie a umiestnenie staveniska. Je oplotenie jasne a bezpečne označené, čisté, upravené a udržiavané? Uistite sa, že neboli podané žiadne sťažnosti na neporiadok na stavenisku a ak sa nejaké problémy vyskytli, že boli rýchlo odstránené a neopakovali sa.	
d	K dispozícii je kniha sťažností A dôkaz o tom, že sťažnosti sa riešia okamžite.		Skontrolujte knihu sťažností a skontrolujte včasnosť odpovedí.	

Ref	Kritériá	A	Dôkaz alebo odkaz požadované	Overovanie a zdôvodnenie
e	Miestni obyvatelia sú vhodne informovaní pomocou informačnej tabule: O pokroku na stavenisku O kontaktných údajov spoločnosti (telefónne číslo, webová stránka alebo e-mailová adresa).		Zobrazenie na mieste.	
f	Svetlo je odtienené od susedov.		V kópii dočasných prác je uvedené tienenie svetla alebo vedúci stavby musí preukázať, ako tienenie svetla funguje alebo že sa nepoužíva.	
g	Zamestnancom staveniska sa neodporúča navštevovať miestne zariadenia, keď majú oblečený pracovný odev. Príklady, ako tomu zabrániť: Vyhradená jedáleň pre zamestnancov Rozložené prestávky pre rôzne skupiny Poskytnutie spŕch alebo umyvární Poskytnutie skriniek Žiadosť o ponechanie osobných ochranných prostriedkov (OOP) na stavenisku.		Zobrazenie na mieste. Overte si tieto postupy u vedúceho staveniska.	
h	Hlasitosť používania rádia je obmedzená alebo platí zákaz používania rádia.		Skontrolujte, či je zavedené nejaké obmedzenie alebo zákaz a ako sa presadzuje.	

3 Pozornosť venovaná životnému prostrediu

Táto časť má preukázať, že stavebník posúdil vplyv stavby na životné prostredie a zaviedol opatrenia na zmiernenie jej vplyvu. Súlad s touto časťou preukazujú tieto položky:

Tabuľka 65: Kontrolný zoznam A1-3 - Požiadavky na ochranu životného prostredia

Ref	Kritériá	Á	Požadovaný dôkaz alebo odkaz	Potvrdenie a odôvodnenie
a	Účinky svetelného znečistenia sú obmedzené a všetky svetlá sú smerové a neznečisťujú životné prostredie. Ak existuje environmentálna politika špecifická pre danú lokalitu, ktorá stanovuje obmedzenia osvetlenia, tento kredit je možné udeliť.		Zobrazenie na mieste.	
b	Na stavenisku sa realizujú opatrenia na úsporu energie. Môže ísť napríklad o tieto prípady: Nízkoenergetické osvetlenie Vypínanie zariadenia, keď sa nepoužíva Inštalácia termostatov Inštalácia časovačov Výber energeticky účinných zariadení. Ak je stanovená environmentálna politika konkrétneho staveniska, ktorá definuje opatrenia na úsporu energie, tento bod je možné udeliť.		Zobrazenie na mieste.	
c	Pre toto stavenisko sa vykonáva preskúmanie stratégie minimalizácie vplyvu. V preskúmaní by sa mal zohľadniť vplyv staveniska z hľadiska životného prostredia a spôsob minimalizácie akýchkoľvek nepriaznivých účinkov, napr. ochrana ekologických prvkov, kontrola znečistenia.		Zobrazenie stratégie minimalizácie vplyvu.	
d	Na mieste sa zavádzajú a monitorujú opatrenia na úsporu vody. Ak je zavedená environmentálna politika špecifická pre dané stavenisko, v ktorej sa uvádza, ako sa na stavenisku riadia a monitorujú opatrenia na úsporu vody, tento bod sa môže udeliť.		Skontrolujte postupy na stavenisku.	
e	Zvažovali sa alternatívne zdroje energie.		Zobrazenie na mieste.	
f	K dispozícii je zariadenie na zachytenie úniku vykurovacieho oleja.		Zobrazenie na mieste. Zabezpečte, aby bolo zariadenie na zachytenie úniku umiestnené v miestach, kde môže dôjsť k úniku, aby sa zabezpečil rýchly čas reakcie.	

Ref	Kritériá	A	Dôkaz alebo odkaz požadované	Overovanie a zdôvodnenie
g	V prípade veľkého odtoku vody sú k dispozícii záchytné nádrže. Ak je zavedená environmentálna politika pre dané stavenisko, v ktorej sa uvádza, ako sa minimalizuje odtok ťažkej vody a ako sa s ňou bude na stavenisku zaobchádzať, tento bod sa môže udeliť.		Zobrazenie na mieste.	
h	Materiály a zariadenia sú prehľadne uložené, chránené a v prípade potreby zakryté A je k dispozícii dostatočný priestor na uskladnenie nových materiálov v zabezpečených krytých priestoroch, aby sa zabránilo ich poškodeniu, krádeži a ochrane pred poveternostnými vplyvmi.		Zobrazenie na mieste. Uistite sa, že poskytnutý priestor sa využíva správne.	

4 Bezpečné a ohľaduplné pracovné prostredie

Cieľom tejto časti je preukázať, že stavebník prevádzkuje stavenisko čistým a bezpečným spôsobom s cieľom zabezpečiť pohodu svojich pracovníkov a minimalizovať negatívne dopady na ich zdravie a bezpečnosť. Súlad s touto časťou preukazujú tieto položky:

Tabuľka 66: Kontrolný zoznam A1-4 - Požiadavky na bezpečné a ohľaduplné pracovné prostredie

Ref	Kritériá	Á	Požadovaný dôkaz alebo odkaz	Potvrdenie a odôvodnenie
a	Na pracovisku sú k dispozícii primerané priestory pre pracovníkov a návštevníkov. Musia obsahovať minimálne: Oddelené toalety pre mužov, ženy a osoby so zdravotným postihnutím Fungujúce použiteľné sprchy A Vhodné priestory na prezliekanie Skrinky v sušiarni Vyhradený priestor pre fajčiarov Vhodné a bezpečné ubytovanie (ak je k dispozícii).		Zobrazenie na mieste.	
b	Zariadenia na mieste sú udržiavané v dobrom a čistom stave. Musí zahŕňať minimálne: Oblasti okolo jedálne, kancelárií a skládok Sociálne zariadenia na stavenisku (vrátane toalety a priestory na prezliekanie) Vyhradený priestor pre fajčiarov.		Zobrazenie na mieste.	

Ref	Kritériá	A	Dôkaz alebo referencia požadované	Overovanie a zdôvodnenie
c	Súkromné alebo vizuálne rušivé oblasti sú tienené. Musí zahŕňať minimálne: Priestory okolo jedálne, kancelárií a skládok, ak je to potrebné Toalety Vyhradený priestor pre fajčiarov.		Zobrazenie na mieste.	
d	Návštevníci majú k dispozícii čisté osobné ochranné prostriedky (OOP).		Skontrolujte zásady a postupy spoločnosti a to, či sa uplatňujú na pracovisku.	
e	Postupy v oblasti bezpečnosti a ochrany zdravia pri práci sa týkajú týchto oblastí: Primerané školenie pre všetkých zamestnancov vrátane zahraničných pracovníkov, aby porozumeli osvedčeným postupom v oblasti bezpečnosti a ochrany zdravia pri práci (BOZP) a informáciám uvedeným na pracovisku Vystavenie pracovníkov slnečnému žiareniu Identifikácia pracovníkov ; všetci pracovníci musia mať identifikačnú kartu s fotografiou Hlásenie všetkých incidentov (menších aj vážnych) a nezdarov Zabezpečenie, aby bol na pracovisku k dispozícii primeraný počet pracovníkov prvej pomoci a vybavenie na poskytnutie prvej pomoci.		Skontrolujte zásady a postupy spoločnosti a spôsob ich presadzovania. Skontrolujte knihu prvej pomoci, najmä pre menšie nehody. Kontrola poskytovateľov prvej pomoci Skontrolujte zoznam osôb poskytujúcich prvú pomoc a ich kvalifikáciu (kvalifikácia musí byť získaná v priebehu posledných troch rokov).Skontrolujte, či má každá osoba poskytujúca prvú pomoc lekárničku so základným vybavením a či má v prípade potreby prístup k ďalšiemu vybaveniu a či vie, kde ho nájde.	
f	V týchto priestoroch sú vyvesené materiály s uvedením najbližšej policajnej stanice a nemocnice (nahlasovanie nehôd a pohotovostná služba): Recepcia staveniska Jedáleň staveniska Hlavná kancelária staveniska.		Preverte, či manažéri, operátori, recepčný pracovníci tieto informácie poznajú alebo či vedia, kde by ich našli. Urobte rozhovor s vyvodením záverov.	
g	Inšpektor bezpečnosti a ochrany zdravia pri práci alebo ekvivalentný pracovník vykonal kontrolu.		Zobrazenie na mieste.	
h	Únikové cesty sú dobre označené a existuje jasný postup núdzovej evakuácie A pravidelne sa vykonávajú cvičenia.		Zobrazenie na mieste. Písomný dôkaz o postupe požiarneho cvičenia .	

Kontrolný zoznam A2

Pozri časť Man 04 Uvedenie do prevádzky a odovzdanie

na strane 66. Tabuľka 67: Kontrolný zoznam A2

Kontrolný zoznam A2 - Požiadavky na príručku pre užívateľa domu		ÁNO/NIE
Časť 1 - Prevádzkové oblasti		
a. Environmentálna stratégia alebo návrh a vlastnosti	1. Podrobnosti o akejkoľvek osobitnej stratégii alebo prvkoch environmentálneho alebo energetického návrhu vrátane prehľadu dôvodov ich použitia (napr. environmentálne a ekonomické úspory a obmedzenia pri vykonávaní zmien) a spôsobu ich najlepšieho využitia. Stratégie alebo prvky by mohli zahŕňať pasívny solárny dizajn, super izoláciu, energeticky účinné drevené okná, systémy rekuperácie tepla, solárne systémy na prípravu teplej vody, fotovoltaiku, pasívne vetracie otvory alebo použitie certifikovaného dreva či systémov na odvod vody v rámci hraníc jednotlivých nehnuteľností.	
b. Energia	1. Dostatočné informácie o budove , službách pevných budov a požiadavkách na ich údržbu, napríklad: a. Poskytnúť vhodný návod na obsluhu a údržbu zameraný na dosiahnutie hospodárnosti pri využívaní paliva a energie spôsobom, ktorý je pre užívateľov zrozumiteľný. Pokyny by mali priamo súvisieť s konkrétnymi systémami inštalovanými v obydlí a zohľadňovať rôzne požiadavky, ktoré budú na systém počas roka pravdepodobne kladené. b. Údaje o všetkých obnoviteľných systémoch a ich fungovaní c. Údaje o nízkoenergetických svietidlách, ich používaní a výhodách, napr. úspory energie a nákladov v porovnaní s tradičnými svietidlami d. Údaje o akomkoľvek systéme označovania energetickými štítkami pre domáce zariadenia alebo spotrebiče e. Všeobecné informácie o energetickej účinnosti f. Údaje o používaní a údržbe merača energie, ak je nainštalovaný alebo poskytnutý.	
c. Spotreba vody	1. Údaje o opatreniach a tipoch na úsporu vody. 2. Externé využívanie vody a efektívnosť, napr. používanie vodných nádrží alebo iných typov systémov recyklácie dažďovej vody.	
d. Recyklácia a odpad	1. Informácie o národnom alebo miestnom systéme nakladania s odpadmi (ak sa uplatňuje). 2. Ak sa na domácnosť nevzťahuje miestny systém zberu, údaje o spoločných recyklačných nádobách, kontajneroch alebo zariadeniach a ich umiestnenie. 3. Informácie o umiestnení a používaní všetkých nádob na recykláciu a kompostovanie. 4. Informácie o tom, kde môžu obyvatelia získať údaje alebo usmernenia o recyklácii a trvalo udržateľnom nakladaní s odpadom, napr. od miestnej alebo súkromnej organizácie.	

Kontrolný zoznam A2 - Požiadavky na príručku pre užívateľa domu		ÁNO/NIE
e. Odkazy, referencie a ďalšie informácie	1. Referencie alebo odkazy na iné informácie vrátane webových stránok, publikácií a organizácií, ktoré poskytujú informácie o tom, ako prevádzkovať domácnosť efektívne a čo najšetrnejšie k životnému prostrediu. Minimálne by to malo zahŕňať odkazy na: a. Ďalšie usmernenia o osvedčených postupoch, ako šetriť energiou b. Spoločnosť zodpovednú za výstavbu nehnuteľnosti c. Spoločnosť zodpovednú za správu domu (v prípade potreby). 2. Vo všetkých prípadoch by sa mala uviesť adresa alebo telefónne kontaktné číslo a adresa URL	
f. Poskytovanie informácií v alternatívnych formátoch	1. Uveďte postup získania kópie príručky v alternatívnych formátoch vrátane alternatívnych jazykov, Braillovho písma, veľkého písma alebo audio kazety či CD. Mala by obsahovať kontaktné údaje osoby alebo organizácie zodpovednej za vypracovanie príručky.	
Časť 2 - Stavenisko a okolie		
a. Recyklácia a odpad	1. Informácie o tom, ako nakladať s odpadmi, na ktoré sa nevzťahuje štandardný týždenný systém zberu miestnych organizácii, napríklad chladničky alebo mrazničky, počítače, batérie a iné potenciálne nebezpečné vybavenie. V niektorých oblastiach môže tieto predmety zbierať miestna organizácia. V takom prípade by sa mali poskytnúť údaje a informácie o takomto zbere. 2. Informácie a umiestnenie miestnych recyklačných zariadení a skládok odpadu.	
b. Udržateľné (mestské) odvodňovacie systémy (SuDS)	1. Podrobnosti o systémoch na ochranu proti povodniam v rámci hranice lokality vrátane dôvodov a prínosov ich použitia (napr. prevencia lokálnych povodní) a poradenstvo týkajúce sa údržby a prevádzky.	
c. Verejná doprava	1. Podrobnosti o miestnej verejnej doprave vrátane máp a cestovných poriadkov a polohy blízkych autobusových zastávok, vlakov, alebo staníc metra. 2. Podrobnosti o úschove bicyklov a cyklotrasách v danej oblasti vrátane máp siete cyklotrás pre celé mesto alebo miestnu oblasť, ak sú dostupné. 3. Podrobnosti o parkovaní a informácie o dostupných systémoch „zaparkuj a choď“, systémoch zdieľania áut, spoločného využívania áut alebo prenájme áut v danej oblasti. 4. Podrobnosti o tom, ako sa dostať k miestnym službám verejnou dopravou alebo na bicykli:	
d. Občianska vybavenosť	1. Podrobnosti o umiestnení obchodov s potravinami, poštových schránok, poštových úradov, bánk alebo peňažných pobočiek, lekární, škôl, zdravotníckych stredísk, centier voľného času, komunitných centier, modlitební, pohostinstiev, detských ihrísk, vonkajších voľne prístupných verejných priestranstiev. 2. Iné miesta v danej lokalite, ako sú zaujímavé miesta alebo kultúrne hodnoty, oblasti prírodnej krásy, voľná príroda, miesta ochrany prírody, pridelené pozemky atď.	

Kontrolný zoznam A2 - Požiadavky na príručku pre užívateľa domu		ÁNO/NIE
e. Zodpovedný nákup	1. Uveďte informácie o nákupe: a. Domáceho zariadenia alebo spotrebiča energeticky účinné a s nízkou spotrebou vody b. Elektrických zariadení vrátane svietidiel a žiaroviek c. Výrobkov z dreva z udržateľných zdrojov d. Obstarávanie ekologických potravín alebo pestovanie plodín alebo poskytovanie miestnych produktov alebo miestnych potravín, napr. farmárske trhy, systémy ekologických debničiek atď.	
f. Núdzové informácie	1. Kontaktné údaje na pohotovostné služby vrátane: a. Adresy miestnych kliník pre drobné poranenia alebo nemocníc alebo podobných zariadení b. Adresy najbližšej policajnej a hasičskej stanice.	
g. Odkazy, referencie a ďalšie informácie	1. Odkazy na ďalšie informácie vrátane webových stránok, publikácií a organizácií, ktoré poskytujú informácie o tom, ako znížiť vplyv na životné prostredie, pokiaľ ide o dopravu, využívanie miestnych zariadení, zodpovedné nakupovanie atď. Takéto odkazy alebo prepojenia môžu zahŕňať odkazy na: a. Miestny orgán (vrátane informácií o recyklácii a skládok odpadu) b. Miestnych poskytovateľov dopravy (napr. autobusové alebo vlakové spoločnosti) c. Miestnu vybavenosť Vo všetkých prípadoch by sa mala uviesť adresa alebo telefónne kontaktné číslo a adresa URL.	
Potvrdenie developera		
Uvedením „ÁNO“ pri vyššie uvedených kritériách potvrdzujem, že všetky obydlia tohto typu špecifikácie v lokalite ZADAJTE NÁZOV LOKALITY spĺňajú uvedené kritériá.		
Podpis: Dátum: Výtlačok č.:		

Kontrolný zoznam A3

Pozri časť Prístupnosť Hea 06 na strane 133

Tabuľka 68: Kontrolný zoznam A3 - Kontrolný zoznam stratégie prístupu [86]

Ref	Požiadavky	ÁNO/NIE
1	**Prístup**	
	V stratégii sa uvádza metóda, ktorú si žiadateľ osvojil v súvislosti s prístupom, s osobitným dôrazom na začlenenie zdravotne postihnutých osôb, osôb rôznych vekových skupín, pohlaví, etnickej príslušnosti, vytrvalosti a úrovne fyzickej zdatnosti a rodičov s deťmi. Mala by zahŕňať spôsob, akým boli zohľadnené príslušné miestne, regionálne a vnútroštátne rozvojové alebo plánovacie politiky. V stratégii sa uvádza, ako bude prístup uvedený v stratégii informovať o rozhodnutiach prijímaných počas procesu rozvoja.	
2	**Odborné stanoviská**	
	Stratégia poskytuje informácie o výsledkoch všetkých odborných stanovísk, ktoré sa uskutočnili (alebo sa uskutočnia) v otázkach prístupu (v závislosti od rozsahu výstavby): 1. Príslušné strany a orgány (pozri poznámky o dodržiavaní predpisov v časti Človek 01) 2. Technickí odborníci, napr. poradenstvo v oblasti prístupu, diaľnic, prevencie kriminality a urbanistického dizajnu .	
3	**Ako sa dosiahne prístup**	
	Stratégia obsahuje to, ako: 1. Rozmiestnenie objektov umožní praktický prístup 2. Okolité cesty, chodníky a rozhľadne budú prepojené 3. Osvetlenie, výhľady, značky a trasy zlepšia prístup.	
	Vyhotovia sa diagramy, ktoré znázornia: 1. Ako sa ľudia môžu na tomto mieste pohybovať a ako cez neho môžu prechádzať 2. Opatrenia na uprednostnenie prístupu pre rôznych používateľov, napr. chodcov, cyklistov a motorové vozidlá.	
	Stratégia obsahuje to, ako: 1. Bude navrhnutý, poskytnutý a použitý prístup do interiéru. V prípade špekulatívnych budov by stratégia mala preukázať možnosti navrhovaného rozmiestnenia objektov a podrobne opísať flexibilitu návrhu s cieľom zohľadniť špekulatívny charakter výstavby.	
	Stratégia obsahuje to, ako: 1. Bude v návrhu riešená viditeľnosť vchodov a vstupných priestorov a zariadení (napr. toaliet, konferenčných miestností atď.) 2. Úrovne a sklony sa menia na verejných priestranstvách vrátane chodníkov a znížených obrubníkov, autobusových zastávok, parkovacích miest (vrátane parkovacích miest pre zdravotne postihnutých) 3. Budú použité symboly a obrázky (ak je to vhodné) na uľahčenie orientácie.	
	Stratégia zobrazuje verejné a súkromné priestory a vysvetľuje, ako návrh pomohol zabezpečiť bezpečnosť týchto oblastí.	

Ref	Požiadavky	ÁNO/NIE
	Táto stratégia stanovuje, že zdravotne postihnuté osoby nebudú izolované, ale budú sa môcť pohybovať po budove a používať rovnaké vchody, chodby a miestnosti ako všetci ostatní bez obchádzok.	
	Stratégia vysvetľuje, ako je zabezpečený prístup záchranných služieb. Môže uvádzať aj priestory pre zhromaždenie ľudí v prípade pohotovosti, ktoré by mali zahŕňať útočisko pre zdravotne postihnutých.	

Kontrolný zoznam A4

Pozri časť Prístupnosť Hea 06 na strane 133

Kritériá pre navrhovanie celoživotných domov

Tento kontrolný zoznam by sa nemal používať samostatne. Podrobnosti o každom zo 16 jednotlivých kritérií nájdete na webovej stránke Lifetime Homes. V tomto kontrolnom zozname je stručne zhrnutých všetkých 16 kritérií.

Názov projektu:

Kontrolný zoznam A4 Hea 06 Prístupnosť		ÁNO/NIE
Kritériá pre navrhovanie celoživotných domov	**Štandard celoživotných domov**	
(1) Parkovanie (šírka alebo možnosť rozšírenia)	(1)a Parkovanie „na pozemku“ (mimo obce): Ak má obydlie parkovisko v rámci svojho pozemku, malo by byť možné rozšíriť ho aspoň jedno parkovacie miesto tak, aby dosiahlo minimálnu šírku 3300 mm.	
	(1)b Spoločné alebo zdieľané parkovanie: Ak sa parkovanie zabezpečuje prostredníctvom spoločných alebo zdieľaných miest, parkovacie miesta by mali mať šírku 3300 mm v súlade so špecifikáciou uvedenou na webovej stránke Lifetime Homes - parkovanie.	
(2) Prístup k obydliu z parkoviska (vzdialenosť, sklony a šírky)	Vzdialenosť od parkovacieho miesta podľa kritéria 1 ku vchodu do obytného domu (alebo príslušného vchodu do bloku alebo výťahového jadra) by mala byť čo najkratšia a prístup by mal byť rovný alebo mierne klesajúci. Vzdialenosť od parkoviska pre návštevníkov k príslušným vchodom by mala byť čo najkratšia a mala by byť rovná alebo mierne sklonený.	
(3) Prístup ku všetkým vchodom	Prístup ku všetkým vchodom by mal byť podľa možnosti rovný alebo mierne sklonený a v súlade so špecifikáciou uvedenou na webovej stránke Lifetime Homes - prístup k obydliu.	
(4) Vchody	Všetky vchody by mali: a) Byť osvetlené b) Mať úroveň prístupu nad prahom c) Mať efektívnu svetlú šírku otvoru a výstupku, ako je uvedené nižšie. Okrem toho by hlavné vchody mali mať: d) Primeranú ochranu proti poveternostným vplyvom e) Vyrovnanú plochu pred vstupom.	

Kontrolný zoznam A4 Hea 06 Dostupnosť Domy na celý život domov na celý život	Kritériá pre navrhovanie	ÁNO/NIE
(5) Spoločné schody a výťahy	(5)a Spoločné schody: Hlavné prístupové schody by mali umožňovať ľahký prístup v súlade so špecifikáciou uvedenou na webovej stránke Lifetime Homes - spoločné schodisko) bez ohľadu na to, či je k dispozícii výťah alebo nie.	
	(5)b Spoločné výťahy: Ak sa do obydlia dostávate výťahom, mal by byť plne prístupný v súlade so špecifikáciou uvedenou na webovej stránke Lifetime Homes.	
(6) Vnútorné vchody a chodby	Pohyb na chodbách a cez dvere by mal byť maximálne vyhovujúci pre čo najširší okruh osôb vrátane osôb používajúcich pomôcky pre mobilitu alebo invalidné vozíky a osôb, ktoré sťahujú nábytok alebo iné predmety. Vo všeobecnosti platí, že užšie chodby a podesty potrebujú širšie dvere v bočných stenách. Šírka dverí a chodieb by mala byť v súlade so špecifikáciou uvedenou v dokumente Lifetime Homes - vnútorné vchody a chodby na webovej stránke.	
7) Priestor pre pohyb	V jedálni a v obývacej izbe by mal byť priestor na otočenie invalidného vozíka a v ostatných priestoroch by mal byť dostatočný priestor na pohyb pre osoby na invalidnom vozíku.	
(8) Obytný priestor na vstupnej úrovni	Na vstupnej úrovni každého obydlia by mala byť obývacia izba alebo obytný priestor.	
(9) Možnosť lôžkového priestoru na vstupnej úrovni	V obydliach s dvoma alebo viacerými podlažiami bez stálej spálne na vstupnej úrovni by mal byť priestor na vstupnej úrovni, ktorý by sa dal využiť pre vhodné dočasné lôžko.	
(10) Odtok WC a sprchy na vstupnej úrovni	Ak na vstupnej úrovni bytu nie je k dispozícii prístupná kúpeľňa v súlade s kritériom 14 tohto zoznamu, na vstupnej úrovni by mal byť prístupný priestor pre WC s možnosťou inštalácie sprchy, ako je podrobne uvedené v špecifikácii na webovej stránke Lifetime Homes – sprcha a kanalizácia na vstupnej úrovní.	
(11) Steny WC a kúpeľne	Na steny vo všetkých kúpeľniach a záchodoch by sa mali dať namontovať pevné úchytky a podpory, ako sú madlá.	
(12) Schody a možnosť výťahu v obydlí	Návrh v rámci obytného domu s dvoma alebo viacerými podlažiami by mal zahŕňať: a) možnosť inštalácie schodiskového výťahu a b) vhodný identifikovaný priestor na výťah z úrovne vstupu na podlažie, v ktorom sa nachádza hlavná spálňa a kúpeľňa, ktorý spĺňa kritérium (14) Kúpeľne na nasledujúcej strane.	

Kontrolný zoznam A4 Hea 06 Dostupnosť		ÁNO/NIE
Celoživotné domy celoživotných domov	**Kritériá pre navrhovanie**	
(13) Možnosť montáže zdvíhacích zariadení a spálne alebo kúpeľne	Konštrukcia nad stropom hlavnej spálne a kúpeľne by mala byť schopná uniesť stropné zdviháky a návrh by mal zabezpečiť primeranú cestu medzi touto spálňou a kúpeľňou.	
(14) Kúpeľne	Prístupná kúpeľňa, ktorá umožňuje ľahký prístup v súlade so špecifikáciou uvedenou v dokumente Lifetime Homes - kúpeľne by sa mala nachádzať v každom byte na rovnakom podlaží ako hlavná spálňa.	
(15) Výška zasklenia a okenných kľučiek	Okná v hlavnom obytnom priestore (zvyčajne v obývacej izbe) by mali umožniť ľuďom výhľad von, keď sedia. Okrem toho by malo byť v každej obytnej miestnosti aspoň jedno otváracie okno, ktoré by bolo prístupné a použiteľné pre široké spektrum osôb vrátane osôb s obmedzeným pohybom a dosahom.	
(16) Umiestnenie servisných ovládacích prvkov	Servisné ovládacie prvky by mali byť vo výške od 450 mm do 1200 mm od podlahy a najmenej 300 mm od akéhokoľvek vnútorného rohu miestnosti.	
Potvrdenie developera		
Zadaním „ÁNO“ pre vyššie uvedené kritériá pre domy na celý život potvrdzujem, že všetky obydlia tohto typu špecifikácie na [VLOŽTE NÁZOV LOKALITY_____] spĺňajú aktuálne kritériá pre celoživotné domy.		
Podpis: Dátum: Výtlačok č.:		

Kontrolný zoznam A5

Pozri časť Až štyri kredity - základná trasa (možnosť 2): Energeticky účinné konštrukčné prvky na strane 151.

Na udelenie kreditov musia byť splnené alebo odfiltrované všetky kritériá pre daný kredit A všetky predchádzajúce kredity. Ak chcete na získať všetky štyri dostupné kredity z kontrolného zoznamu A5, musia byť splnené všetky príslušné kritériá.

Tabuľka 69: Kritériá na udelenie kreditov pomocou kontrolného zoznamu energeticky účinných prvkov (Kontrolný zoznam A5)

Kredity	Osvetlenie	Teplá voda	LZC	Stavebný materiál	Vyhrievanie	Chladenie a vetranie
1	Kritérium 1 (ne-bytové) Kritérium 3 bytové)	Kritérium 7	-	Kritérium 10	Kritérium 16	Kritérium 17 bytové) Kritérium 18 Kritérium 21 (ne-bytové)
2	Kritérium 2 (ne-bytové) Kritérium 4 (bytové)		Kritérium 8	Kritérium 13 Kritérium 15		Kritérium 19 (ne-bytové) Kritérium 20 (bytové)
3	Kritérium 5 (Bytové - obydlie pre viaceré rodiny)		Kritérium 9	Kritérium 11 Kritérium 14		Kritérium 22 (nebytové)
4	Kritérium 5 (Bytové - Samostatné obydlie Kritérium 6 (Bytové - Obydlie pre viaceré rodiny)			Kritérium 12		

Tabuľka 70: Kontrolný zoznam A5 - Energeticky účinné prvky pre posúdenia s použitím základného postupu (možnosť 2) v Ene 01

Ref	Energeticky účinné prvky - kritériá a poznámky	Typ budovy
Osvetlenie		
1	Vnútorné priestory s denným osvetlením a bez denného osvetlenia majú ovládače, ktoré berú do úvahy neprítomnosť ľudí alebo ich obsadenosť alebo denné osvetlenie v zmysle normy ASHRAE 90.1 Kalifornského energetického kódexu. Všetky pomocné priestory (podľa potreby) musia byť primerane osvetlené, ako napr.: 1. Sklady a chladiarne. 2. Miestnosti v závode a riadiace miestnosti. 3. Toalety, umyvárne a sprchy. 4. Priestory s krátkodobým pobytom ľudí, chodby a schodiská.	Nebytové
2	Ak aspoň 80 % všeobecných vnútorných svietidiel s pevným upevnením dosahuje účinnosť aspoň 80 lúmenov na watt alebo vyššiu. *Poznámka: Všeobecné vnútorné osvetlenie sa vzťahuje na všetky vnútorné svietidlá, ale nezahŕňa svietidlá používané na núdzové účely. Posudzovateľ by mať zohľadniť, že referenčná hodnota sa vzťahuje na jednotlivé svietidlá, nie na priemerný lúmen na watt obvodu.*	
3	V každom byte je k dispozícii informačný leták vysvetľujúci účinnosť z hľadiska osvetlenia a výhody nákupu vysokoúčinných nízkoenergetických svietidiel (LEL).	Bytové
4	75 % pevných vnútorných svietidiel v pomere k celkovému počtu pevných svietidiel v obytných miestnostiach bolo vybavených LEL. *Pozri poznámku o obytných miestnostiach nižšie.*	
5	100 % pevných vnútorných svietidiel v pomere k celkovému počtu pevných svietidiel v obytných miestnostiach bolo vybavených LEL. *Poznámka: Obytné miestnosti sú definované nasledovne:* *1. Obývacie izby alebo jedálne* *2. Kuchyňa alebo viacúčelové miestnosti* *3. Spálne* *4. Chodby* *5. Študovne* *6. Kancelárie* *7. Herne alebo voľnočasové miestnosti* *8. Kúpeľne* *9. Záchody*	
6	Všetko vnútorné osvetlenie v spoločných priestoroch, s výnimkou zákonného bezpečnostného osvetlenia, pozostáva z pevných svietidiel, ktoré sú vybavené: 1. LEL 2. Snímačmi na detekciu pohybu (PIR) 3. Senzormi vypnutia denného svetla ALEBO časovače. *Poznámka: Pre kritériá osvetlenia obytných budov sa za LEL považujú žiarovky, ktoré majú svetelnú účinnosť vyššiu ako 65 lúmenov na jeden watt obvodu.*	Obytné budovy - Obydlia pre viaceré rodiny

Ref	Energeticky účinné prvky - kritériá a poznámky	Typ budovy
Účinnosť ohrevu teplej vody		
7	Teplá voda sa dodáva prostredníctvom samostatného systému s účinnosťou ≥ 85 % (buď centrálneho alebo decentralizovaného) ALEBO ak sú určené decentralizované plynové zásobníkové ohrievače s účinnosťou ≥ 85 %. ALEBO Ak sú tepelné čerpadlá určené na prípravu teplej vody, kritériá sa môžu udeliť za predpokladu, že COP je ≥ 4,5. *Poznámka: Systém ohrevu vody je navrhnutý v súlade s odporúčaniami normy ASHRAE 90.1 a špecifikované ovládacie prvky sú v súlade s pokynmi pre systémy teplej vody. Ak budova nie je vykurovaná, toto kritérium sa neuplatňuje.*	Všetky budovy
Nízkouhlíkové a bezuhlíkové technológie (LZC)		
8	Najmenej 10 % celkovej spotrebe elektrickej energie alebo vykurovania a chladenia sa vyrába pomocou technológií LZC v objekte alebo v jeho blízkosti. *Pozri poznámku o technológiách LZC nižšie.*	Všetky budovy
9	Najmenej 20 % celkovej spotrebe elektrickej energie alebo vykurovania a chladenia sa vyrába pomocou technológií LZC v objekte alebo v jeho blízkosti. *Poznámka: Nízkouhlíkové a bezuhlíkové technológie uvedené vo oblasti BREEAM Ene 04 Nízke na strane 178 sa môžu použiť na preukázanie zhody. Iné systémy môžu byť v rámci tejto otázky prijateľné ako súčasť stratégie LZC, ale vo svojej podstate sa nepovažujú za technológie LZC. Prijateľnosť bude závisieť od povahy navrhovaného systému. Posudzovateľ BREEAM musí v prípade pochybností potvrdiť prijateľnosť s BRE Global.*	

Ref	Energeticky účinné prvky - kritériá a poznámky	Typ budovy
Štruktúra budovy		
10	5 % zlepšenie požiadaviek na hodnotu U pre steny, strechy, prízemie, okná a dvere v zmysle normy ASHRAE 90.1 (pre všetky budovy okrem nízkopodlažných obytných budov) alebo normy ASHRAE 90.2 (pre nízkopodlažné obytné budovy).	Všetky budovy
11	10 % zlepšenie požiadaviek na hodnotu U podľa normy ASHRAE 90.1 alebo 90.2 (podľa potreby).	
12	15 % zlepšenie požiadaviek na hodnotu U podľa normy ASHRAE 90.1 alebo 90.2 (podľa potreby).	
13	Tlaková skúška ukazuje priepustnosť vzduchu ≤ 50 % hodnoty netesnosti podľa platných národných noriem. Ak nie sú k dispozícii vnútroštátne normy, maximálna hodnota priepustnosti vzduchu na dosiahnutie tohto kritéria je 2 $m^3/h/m^2$@ 50 Pa.	
14	Tlaková skúška ukazuje priepustnosť vzduchu ≤ 75 % hodnoty netesnosti podľa platných národných noriem. Ak nie sú k dispozícii vnútroštátne normy, maximálna hodnota priepustnosti vzduchu na dosiahnutie tohto kritéria je 1,5 $m^3/h/m^2$@ 50 Pa.	
15	Priemerná hodnota g zasklenia je ≥ 60 %.	

Ref	Energeticky účinné prvky - kritériá a poznámky	Typ budovy
Účinnosť vykurovania		
16	Sezónna účinnosť zdroja vykurovania priestoru je ≥ 90 %. Systém musí spĺňať aj VŠETKY nasledujúce požiadavky: 1. Vykurovací systém musí byť navrhnutý v súlade s odporúčaniami normy ASHRAE 90.1. 2. Najmenej 75 % spotreby tepla musí zabezpečovať vykurovací systém s najvyššou účinnosťou; zvyšné doplnkové teplo musí dodávať zdroj vykurovania s vysokou účinnosťou ≥ 90 %. 3. Ak vykurovací systém pozostáva z viacerých kotlov alebo zdrojov tepla, sezónna účinnosť systému s viacerými kotlami musí byť ≥ 90 4. Celková účinnosť systému, t. j. distribučná a sezónna účinnosť kotla, je ≥ 70 % 5. Ovládacie prvky vykurovacieho systému musia byť v súlade s normou ASHRAE 90.1. 6. Systém musí byť vybavený určitou formou regulácie prietoku, t. j. čerpadla s rôznymi stupňami. Ak existuje kogenerácia, kritériá sa môžu dosiahnuť za predpokladu, že: 1. Kogeneračná jednotka funguje ako hlavný kotol. 2. Zvyšný výkon zabezpečujú kotly s účinnosťou ≥ 85 %. 3. Zvýšenie výkonu zabezpečujú kotly s vysokou účinnosťou ≥ 80 %. 4. Kogeneračné zariadenie musí mať účinnosť ≥ 85 %. 5. Ovládacie prvky systému spĺňajú požiadavky uvedené v norme ASHRAE 90.1. ALEBO Ak sú tepelné čerpadlá určené na prípravu vykurovania, kritériá sa môžu udeliť za predpokladu, že COP je ≥ 4,5. *Poznámka:* *1. Na určenie sezónnej účinnosti kotla používaného na vykurovanie priestorov je na nasledujúcom odkaze uvedený zoznam kotlov a ich príslušných účinností. Ak sa kotol použitý pri posudzovaní nenachádza v tomto zozname, na preukázanie zhody sa môže použiť najbližšia zhoda: www.ncm-pcdb.org.uk/sap/.* *2. Ak sa spotreba čiastočne uspokojuje prostredníctvom LZC na mieste alebo formou vykurovania LZC v blízkosti miesta (napr. solárny systém na prípravu teplej vody), potom by sa výkon tohto systému mal započítať do celkového výkonu systému na výpočet účinnosti systému.* *3. Ak budova nie je vykurovaná, toto kritérium sa neuplatňuje.*	Všetky budovy
Chladenie a vetranie		
17	Kritériá 1 až 4 v časti Hea 04 Tepelná pohoda boli splnené. A Uvedené klimatizačné systémy majú: 1. Formu regulácie prietoku, t. j. čerpadla s rôznymi stupňami. 2. Ovládacie prvky na zabránenie súčasného vykurovania a chladenia. 3. Nastavené hodnoty teploty a vlhkosti (ak je to vhodné) zvolené pre minimálnu spotrebu energie v súlade s podmienkami komfortu.	Bytové

Ref	Energeticky účinné prvky - kritériá a poznámky	Typ budovy
18	V prípade, že návrh zahŕňa systém nízkouhlíkového chladenia, ktorý úplne nahradí potrebu mechanického chladiaceho systému. ALEBO Chladiaci generátor má koeficient účinnosti (COP) > 3,5. *Poznámka: Súlad s týmto kritériom sa preukáže, ak sa v návrhu použila nízkouhlíková technológia chladenia, ako napr.:* *1. Nočné chladenie, t. j. vyžaduje si vysokú tepelnú hmotnosť materiálu* *2. Chladenie vzduchom v spojení so zemou* *3. Výtlačné vetranie (nie je spojené so žiadnym aktívnym chladiacim systémom)* *4. Chladenie podzemnou vodou* *5. Chladenie povrchovou vodou* *6. Odparovacie chladenie, priame alebo nepriame* *7. Stratégie chladenia pasívnych domov (Passivhaus)* *8. Odvlhčovanie a odparovacie chladenie s využitím odpadového tepla* *9. Absorpčné chladenie využívajúce odpadové teplo* *10. Budova nevyžaduje žiadnu formu chladenia* *Hodnotenie tohto kritéria nezahŕňa špecializované chladiace systémy (ako sú serverovne, chladiarne atď.). Posudzovateľ by mal s BRE potvrdiť, ktoré špecializované chladiace systémy môžu byť z posudzovania tohto kritéria vylúčené.*	Všetky budovy
19	Všetky vzduchovody a vzduchotechnické jednotky (AHU) sú certifikované tak, aby spĺňali najlepšie normy tesnosti. ALEBO Žiadne mechanické vetranie (okrem prípadov, keď sa vyžaduje ako súčasť vnútroštátnych stavebných predpisov; takéto systémy by mali spĺňať aj nižšie uvedené normy pre úniky). *Poznámka: Príkladom noriem osvedčených postupov sú potrubia testované podľa normy EN 16798-3 triedy ATC 4 a AHU testované podľa normy EN 1886 triedy L1 alebo normy ASHRAE 62.1 Vetranie pre prijateľnú kvalitu vnútorného vzduchu a normy ASHRAE 90.1 Energetická norma pre budovy.*	Nebytové
20	Ak je špecifický výkon ventilátora pre uvedený mechanický ventilačný systém: 1. ≤ 0,5 W/liter/s pre systémy nepretržitého odsávania. 2. ≤ 1,0 W/liter/s pre MVHR v celom dome, keď beží pri každom zo svojich nastavení A dosahuje účinnosť rekuperácie tepla najmenej 85 %. ALEBO Žiadne mechanické vetranie (systémy vyžadované ako súčasť vnútroštátnych stavebných predpisov sú z požiadaviek vylúčené). *Poznámka: Ak sú mechanické vetracie systémy určené pre obytnú budovu komplexné a podobajú sa skôr systémom uvedeným v položke 21 na nasledujúcej strane, potom kritériá uvedené v položke 21 by sa namiesto nich mali použiť na posúdenie.*	Bytové

Ref	Energeticky účinné prvky - kritériá a poznámky	Typ budovy
21	Ak je špecifický výkon ventilátora pre uvedený mechanický ventilačný systém: 1. ≤ 1,4 W/liter/s pre centrálne mechanické vetracie systémy vrátane vykurovania 2. ≤ 1,8 W/liter/s pre centrálne mechanické vetracie systémy vrátane vykurovania a chladenia, A Systém: 1. Je vybavený reguláciou prietoku, t. j. čerpadla s rôznymi stupňami. 2. Môže sa regulovať v súlade s odporúčaniami normy ASHRAE 90.1. ALEBO Žiadne mechanické vetranie (systémy vyžadované ako súčasť vnútroštátnych stavebných predpisov sú z požiadaviek vylúčené). *Poznámka: Ak sú mechanické vetracie systémy určené pre nebytové budovy jednoduché a podobajú sa skôr systémom uvedeným v položke 20 na predchádzajúcej strane, potom kritériá uvedené v položke 20 by sa namiesto nich mali použiť na posúdenie.*	Nebytové
22	Ak je metóda spätného získavania tepla integrovaná do návrhu mechanického vetracieho systému, musí: 1. Dosahovať účinnosť rekuperácie tepla najmenej 75 %. 2. Mať namontovanú formu regulácie prietoku , t. j. pohony s premenlivými otáčkami. 3. Byť regulovaná v súlade s odporúčaniami normy ASHRAE 90.1. *Poznámka: Ak budova nie je vykurovaná, toto kritérium sa neuplatňuje.*	

Kontrolný zoznam A6

Pozri Wst 02 Recyklované kamenivo na strane 313.

Aby sa preukázalo, že miestne usmernenie o osvedčených postupoch na definovanie „granulovaného plnenia a uzatvárania ako vysokokvalitného použitia“ je vhodné, musí miestne usmernenie alebo norma zahŕňať požiadavky uvedené v tabuľke 71 a tabuľke 72 . Poznámka: Rozsah a pôsobnosť týchto miestnych usmernení alebo noriem skontrolujú experti na odpady zo spoločnosti BRE , aby sa zabezpečilo, že celkový efekt bude v súlade s požiadavkami BREEAM.

Tabuľka 71: Odber vzoriek a testovanie spracovaného alebo získaného produktu

Popis vlastnosti	Základný princíp
Všeobecný opis	-
Zloženie kameniva (vrátane organických látok)	Vizuálne triedenie frakcie plus 8 mm.
Stanovenie veľkosti častíc	Rozdelenie veľkosti častíc vo vzorke kameniva stanovené pomocou skúšobných sít (sít, ktoré spĺňajú národnú alebo ekvivalentnú normu pre skúšobné sitá).
Obsah jemných častíc	Hmotnostné percento kameniva prechádzajúceho 0,063 mm sitom.
Tvar častíc	Určenie podielu (hmotnostného) plochých alebo podlhovastých častíc.

Tabuľka 72: Požiadavka na dodatočné skúšky spracovaných alebo zhodnotených výrobkov z kameniva pri konečnom použití (vezmite do úvahy, že skúšky a vlastnosti uvedené v zátvorkách sa vyžadujú len vtedy, ak je skúška relevantná pre konečné použitie alebo miestne podmienky, alebo sa považuje za nevyhnutnú z iných dôvodov)

Test alebo vlastnosť	Základný princíp
(Odolnosť povrchu voči oderu)	Stanovenie schopnosti častíc kameniva zachovať si svoje tvarové vlastnosti v podmienkach výstavby a dopravy (ak je to relevantné pre konečné použitie).
(Alkalická reakcia oxidu kremičitého)	Reaktivita kameniva v betóne (RILEM AAR3 alebo ekvivalentná metóda), ak existuje obava, že kamenivo je alkalicky reaktívne.
(Odolnosť voči zmrazovaniu a rozmrazovaniu)	Odolnosť voči fragmentácii v dôsledku zmrazovania a rozmrazovania. Skúška zrýchleným zmrazovaním a rozmrazovaním, hodnota pevnosti síranu horečnatého alebo ekvivalentná metóda.
(Odolnosť proti lešteniu)	Náchylnosť kameniva na leštenie (odolnosť voči vyhladeniu alebo strate povrchového trenia), ak je to relevantné pre konečné použitie.
Objemová hmotnosť	Stanovenie voľne zhutnenej objemovej hmotnosti suchého kameniva v peci.
(Únosnosť)	Stanovenie pevnosti alebo únosnosti zhutneného kameniva alebo pôdy. Vzťahuje sa na použitie nestmeleného kameniva v základoch budov alebo ciest.
(Chloridy)	Stanovenie obsahu chloridov rozpustných vo vode (dôležité pre použitie v betóne alebo malte).

Test alebo vlastnosť	Základný princíp.
Dôkaz, že nedošlo k úniku nebezpečných látok	Najmä pokiaľ ide o úniky rádioaktivity, uvoľňovanie ťažkých kovov, uvoľňovanie polyaromatických uhľovodíkov. V prípade potreby a pochybností je potrebné predložiť dôkazy.
Rozpustnosť vo vode	Rozpustnosť kameniva vo vode (hmotnostné percento).
(organická kontaminácia)	Vhodné na použitie v malte alebo betóne. Stanovenie zložiek ovplyvňujúcich tuhnutie a tvrdnutie betónu; prítomnosť ľahkých organických kontaminantov.
Hustota častíc	Špecifická hmotnosť alebo relatívna hustota kameniva.
(Plastičnosť jemných častíc)	Vysoký podiel plastových jemných častíc môže byť pri asfaltovaní alebo výstavbe ciest škodlivý. Skúšanie nemusí byť potrebné, ak celkový obsah jemných častíc v kamenive nepresahuje dohodnutú hodnotu, ktorá bola určená na základe miestneho uspokojivého použitia. Ak sa množstvo jemných častíc môže považovať za plastické alebo škodlivé, použite jednu z týchto alebo inú rovnocennú metódu: a) hodnotu ekvivalentu piesku; b) index plasticity; alebo c) hodnotu metylénovej modrej.
(Odolnosť voči fragmentácii alebo nárazu)	Skúška na posúdenie odolnosti častíc kameniva voči degradácii pri náraze.
(Odolnosť voči teplu alebo tepelnému šoku)	Vzťahuje sa na použitie kameniva v asfalte alebo bitúmene. Zmena fyzikálnych vlastností kameniva vystaveného prostrediu s teplotou 700 °C.
Sírany a sulfidy	V prípade potreby stanovenie síranov rozpustných v kyseline alebo celkovej síry.
Absorpcia vody	Zvýšenie hmotnosti vzorky kameniva vysušeného v peci v dôsledku prenikania vody do vodou prístupných dutín.

Kontrolný zoznam A7

Pozri časť LE 01 Výber miesta na strane 339.

Tabuľka 73: Kontrolný zoznam A7-1 - Pravdepodobnosť významnej kontaminácie v lokalite

Číslo položky	Otázky	Odpoveď	
Návod: Položky 1 až 5uvedené nižšie sa môžu použiť na určenie pravdepodobnosti prítomnosti významnej kontaminácie v celej lokalite alebo na jej povrchu na účely rýchleho hodnotenia na základe výberu lokality LE 01: Požiadavky kritéria 3: Ak sa v stavebnej zóne v niektorej z otázok zaznamená ÁNO, mali by sa dodržiavať vnútroštátne uznávané stratégie prieskumu kontaminácie, alebo ak takéto stratégie neexistujú, mal by príslušný odborník na kontaminovanú pôdu vykonať dôkladný prieskum lokality, posúdenie rizika a hodnotenie, ktoré by zahŕňalo minimálne požiadavky uvedené v tabuľke 74 na nasledujúcej strane. Ak je pri všetkých otázkach týkajúcich sa stavebnej zóny zaznamenané NIE, potom možno lokalitu definovať ako lokalitu, ktorá nemá žiadne významné znečistenie a nie je potrebné ďalšie skúmanie; v takom prípade nie je možné udeliť kredit. Tento kontrolný zoznam je len jednoduchá kontrola a v takýchto prípadoch je na žiadosť klienta potrebné vykonať prieskum lokality, posúdenie rizika a hodnotenie tak, ako je uvedené v tabuľke 74.		
1	Je lokalita zaregistrovaná miestnym úradom alebo inou príslušnou organizáciou ako kontaminovaná?	Áno	Nie
2	Má daná lokalita nejaké historické alebo predchádzajúce využitie, ktoré mohlo spôsobiť kontamináciu lokality (pozri LE 01 Výber lokality - dodatočné informácie na strane 342 a tiež kontrolný zoznam A7-3 nižšie)? Ak na túto otázku nie je možné odpovedať z dôvodu nedostatku informácií, označte „áno“, t. j. predpokladajte najhorší možný scenár.	Áno	Nie
3	Nachádza sa lokalita vo vzdialenosti 250 m od skládky (napr. aktívnej, neaktívnej, uzavretej)?	Áno	Nie
4	Je o lokalite známe alebo existuje podozrenie, že je kontaminovaná (napr. boli už na lokalite vykonané štúdie)?	Áno	Nie
5	Má miestny orgán alebo iná príslušná organizácia nejaké informácie o lokalite, ktoré by mohli vzbudiť podozrenie na kontamináciu? Ak na túto otázku nie je možné odpovedať z dôvodu nedostatku informácií, označte „áno“, t. j. predpokladajte najhorší možný scenár.	Áno	Nie

Tabuľka 74: Kontrolný zoznam A7-2 - Rozsah prieskumu miesta, posúdenie rizík a hodnotiaca správa

Číslo položky	Obsah	Odpoveď	
Oddiel 1: Predbežný prieskum (štúdia dokumentov a rekognoskácia lokality)			
Návod: Historický výskum a preskúmanie dostupných informácií zo zdrojov, ako sú archívy, plány a záznamy regulačných orgánov, s cieľom zistiť minulé a súčasné aktivity v danej lokalite a v okolitej oblasti, aby sa určila možnosť prítomnosti kontaminácie. Ak predbežný prieskum poskytne dôvod domnievať sa, že môže byť prítomná kontaminácia (alebo sa nenájdu žiadne záznamy), bude potrebné vykonať ďalšie podrobnejšie prieskumy (oddiely 2 a 3). V opačnom prípade sa lokalita nebude považovať za kontaminovanú na účely tejto problematiky BREEAM a kredit nebude možné udeliť. Štúdiu musí vykonať odborník na kontaminované územia, ako je definované v príslušných definíciách; norma ISO 10381:[587] poskytuje usmernenie, čo by mal predbežný prieskum zahŕňať. Na účely systému BREEAM by mal zahŕňať minimálne tieto aspekty:			
1.1	Účel a cieľ štúdie.	Áno	Nie
1.2	Plány umiestnenia a rozloženia stavby.	Áno	Nie
1.3	Zhodnotenie histórie lokality.	Áno	Nie
1.4	Posúdenie environmentálneho prostredia zahŕňajúce: Geológia, hydrogeológia, hydrológia Priemyselná činnosť Poloha kontrolovaných vôd (kanály, ústia riek, jazerá, rybníky, rieky, pramene, vodonosné vrstvy) Incidenty, pri ktorých došlo k znečistenou, skládky v okruhu 250 m atď.	Áno	Nie
1.5	Posúdenie súčasného alebo navrhovaného využitia lokality a okolitých pozemkov.	Áno	Nie
1.6	Preskúmanie všetkých predchádzajúcich štúdií o kontaminácii lokality (na základe dokumentácie alebo invazívnych štúdií) alebo sanačných prác.	Áno	Nie
1.7	Predbežné (kvalitatívne) posúdenie rizík: Posúdenie potenciálnych zdrojov, ciest a možných príjemcov kontaminantov Koncepčný model lokality Identifikácia zdroja kontaminácie.	Áno	Nie
1.8	Odporúčania na prípadný invazívny prieskum kontaminácie.	Áno	Nie
Oddiel 2: Správa z prieskumu lokality			
Návod: Správa musí skúmať každý aspekt, na ktorý poukázala štúdia, ktorá zahŕňa prieskumné vrty vybudované najvhodnejšou metódou pre danú lokalitu na preskúmanie miestnych podpovrchových vrstiev (ďalšie informácie sú uvedené v norme ISO 10381-5:2005). Správa musí obsahovať minimálne tieto informácie:			

Položka Nie	Obsah	Odpoveď	
2.1	Metodika prieskumu lokality: Metódy vyšetrovania Plán zobrazujúci miesta prieskumu Odôvodnenie miest prieskumu Stratégie odberu vzoriek a analýzy.	Áno	Nie
2.2	Výsledky a zistenia prešetrovania: Podmienky pôdy (pôda a podzemná voda) Diskusia o kontaminácii pôdy, podzemnej a povrchovej vody.	Áno	Nie
2.3	Hodnotenie rizík: Minimálne na základe modelu cesty kontaminantu k príjemcovi Zohľadňuje sa závažnosť následkov a pravdepodobnosť výskytu.	Áno	Nie
2.4	V prípade potreby prijať odporúčania na nápravu na základe: Navrhované využitie lokality Zistenia hodnotenia rizík Technické a finančné správy	Áno	Nie
Oddiel 3: Možnosti nápravy			
Návod: Ak na základe prieskumu lokality je potrebné vykonať sanáciu, musí sa vypracovať a dodržiavať metodika sanácie špecifická pre danú lokalitu. Na zabezpečenie uspokojivého návrhu a realizácie sanačného opatrenia môže byť potrebná konzultácia s regulačnými orgánmi. Správa musí obsahovať minimálne tieto informácie:			
3.1	Podrobný náčrt prác, ktoré sa majú vykonať: Typ, forma a rozsah kontaminácie, ktorá sa má sanovať Metodika sanácie Plány alebo výkresy lokality Fázovanie prác a približný časový harmonogram.	Áno	Nie
3.2	Súhlasy, dohody a licencie (súhlasy na vypúšťanie, licencie na nakladanie s odpadmi atď.).	Áno	Nie
3.3	Postupy riadenia stavby na ochranu susedov, životného prostredia a občianskej vybavenosti počas prác: Zdravotné a bezpečnostné postupy Kontrola prachu, hluku a zápachu Kontrola povrchového odtoku.	Áno	Nie
3.4	Podrobnosti o tom, ako sa budú práce overovať, aby sa zabezpečilo splnenie cieľov sanácie: Stratégia odberu vzoriek Vizuálna kontrola v lokalite, vizuálne alebo čuchové dôkazy Chemická analýza Navrhované štandardy čistoty (t. j. koncentrácie kontaminantov).	Áno	Nie

Tabuľka 75: Kontrolný zoznam A7-3 - Predchádzajúce spôsoby využitia miesta, ktoré môžu spôsobiť významnú kontamináciu

Znečisťujúca činnosť	Á/N	Znečisťujúca činnosť	Á/N	Činnosť spôsobujúca znečistenie	Á/N
Zoznam najčastejších činností spôsobujúcich znečistenie a typov znečistenia pôdy nájdete v nasledujúcom zozname alebo v tabuľke 1 dokumentu UNEP: „Identifikácia a manažment kontaminovaných lokalít, metodická príručka“88, UNEP a ADEME, vydavateľstvo ADEME, Paríž, 2005(www.unep.fr/scp/waste/land.htm).					
Poľnohospodárske využitie		Výroba azbestu		Drevársky a drevársky priemysel	
Chemické práce		Spracovanie kovov		Použitie ako sklad kovového šrotu	
Energetický priemysel - Elektrárne		Papierenský, celulózový a polygrafický priemysel		Zneškodňovanie odpadu	
Technické a výrobné procesy		Čerpacie stanice		Zariadenie na nakladanie s odpadmi	
Ťažobný priemysel a spracovanie nerastov		Priestory na chemické čistenie		Dvory na ochranu dreva	
Potravinársky priemysel		Výroba kovov		Práce nešpecifikované	
Plynárne		Výroba nekovov a výrobkov z nich		Demolácia budov na niektoré z uvedených použití	
Výroba skla a keramiky		Železničné pozemky		Baníctvo	
Nemocnice a cintoríny		Údržba cestných vozidiel		Nakladanie s odpadom	
Infraštruktúra		Gumárenský priemysel		Výrobné závody	
Laboratóriá		Čistenie kanalizácie		Ropné rafinérie	
Skládka		Textilný priemysel			

Harmonogram zmien v dokumente schémy

Medzinárodná technická príručka BREEAM pre novostavby môže byť z času na čas revidovaná a znovu vydaná. Opätovné vydanie verzie BREEAM môže byť potrebné z týchto dôvodov:

1. Objasnenie kritérií, poznámok o zhode alebo zoznamu požiadaviek na dôkazy
2. Aktualizácia odkazu alebo príslušnej definície
3. Aktualizácia alebo zmena postupov výpočtu
4. Zmeniť rozsah pôsobnosti, aby bolo možné zahrnúť ďalšie typy budov

Tento dokument obsahuje podrobnosti o všetkých dodatkoch alebo zmenách vykonaných v schéme BREEAM International New Construction, verzia 6, ktoré viedli k opätovnému vydaniu technickej príručky. Je dôležité poznamenať, že opätovné vydanie vo všeobecnosti nemá za následok zmeny, vypustenie alebo doplnenie hlavných kritérií hodnotenia alebo oblasti hodnotenia.
Zásadné zmeny kritérií hodnotenia sa zvyčajne vykonávajú v rámci formálnej aktualizácie systému, čo vedie k novej verzii systému BREEAM.

Odkaz na dokument schémy	Verzia	Dátum
SD250	6.0.0	01/12/2021

Ak sa objednávateľ alebo posudzovateľ odvolával na určité vydanie technickej príručky, ktoré bolo následne nahradené novšou verziou, môže buď pokračovať v používaní starého vydania technickej príručky a odvolávať sa naň alebo, ak to posudzovateľ považuje za vhodné, prejsť na najnovšie vydanie. Pri predkladaní certifikačnej správy musí posudzovateľ BREEAM vo svojej správe objasniť, ktoré vydanie technickej príručky použil na vykonanie formálneho hodnotenia budovy. Ak sa v priebehu hodnotenia použili dve rôzne verzie, uveďte odkaz na posledné použité vydanie.

Poznámky na záver

1 Pri niektorých oblastiach hodnotenia sa počet dostupných kreditov líši podľa typu budovy. Niektoré otázky sa okrem toho nemusia vzťahovať na určité typy budov alebo budovy, ktoré neobsahujú určitú funkciu alebo oblasť, napr. laboratórium.

2 Pre školy a budovy vysokých škôl pozri aj prílohu B - Rozsah a budovy pre vzdelávanie.

3 Pokiaľ ide o rezidenčné inštitúcie, pozri tiež prílohu C - Rozsah pôsobnosti a rezidenčné inštitúcie.

4 ISO 15686-5:2008. Budovy a vybudované objekty. Plánovanie životnosti - časť 5: Náklady na životný cyklus.

5 ISO 9972:2015 Tepelnotechnické vlastnosti budov - Stanovenie prievzdušnosti budov - Metóda tlakového ventilátora

6 Rámec „Soft Landings Framework“, pre lepšiu informovanosť, projektovanie, odovzdávanie a výkonnosť budovy v prevádzke, Usable Buildings Trust (UBT), BSRIA BG 4/2009.

7 BREEAM 2011 a „Soft Landings“, interpretačná doložka pre objednávateľov a projektantov, BSRIA BG 28/2011

8 CIBSE Lighting Guide LG10 Daylighting and Windown Design, 1999.

9 EN 13779:2007 Vetranie nebytových budov - Požiadavky na výkon vetracích a klimatizačných systémov

10 EN 13779:2007 Vetranie nebytových budov - Požiadavky na výkon vetracích a klimatizačných systémov

11 Svetová zdravotnícka organizácia, Regionálny úrad pre Európu. Vybrané znečisťujúce látky: Usmernenie WHO pre kvalitu vnútorného ovzdušia Internet. 2010 citované 26. okt. 2015 K dispozícii na: www.who.int/indoorair/publications/9789289002134/en/

12 ISO 16000-2:2006 Vnútorný vzduch. Časť 2: Stratégia odberu vzoriek formaldehydu (2006). Medzinárodná organizácia pre normalizáciu (ISO).

13 ISO 16000-3:2011 Vnútorný vzduch. Časť 3: Stanovenie formaldehydu a iných karbonylových zlúčenín vo vnútornom ovzduší a v ovzduší skúšobnej komory - metóda aktívneho odberu vzoriek (2011). Medzinárodná organizácia pre normalizáciu (ISO).

14 Európska zosúladená akcia o kvalite vnútorného ovzdušia a jej vplyve na človeka - správa č. 11: Pokyny pre Požiadavky na vetranie v budovách (1992). Komisia Európskych spoločenstiev.

15 ISO 16000-5:2007 Vnútorný vzduch. Časť 5: Stratégia odberu vzoriek prchavých organických zlúčenín (VOC) (2007). Medzinárodná organizácia pre normalizáciu (ISO).

16 ISO 16000-6:2011 Vnútorný vzduch. Časť 6: Stanovenie prchavých organických zlúčenín vo vnútorných priestoroch a v skúšobnej komore vzduchu aktívnym odberom vzoriek na sorbente Tenax TA®, termickou desorpciou a plynovou chromatografiou s použitím MS alebo MS-FID (2011). Medzinárodná organizácia pre normalizáciu (ISO).

17 ISO 16017-1:2001 Vnútorné ovzdušie a ovzdušie na pracovisku - Odber vzoriek a analýza prchavých organických zlúčenín sorbčnou trubicou alebo tepelnou desorpciou alebo kapilárnou plynovou chromatografiou - časť 1: Čerpanie vzoriek (2001). Medzinárodná organizácia pre normalizáciu (ISO).

18 EN 16402:2013 Farby a laky - Hodnotenie emisií látok z náterových látok do vnútorného ovzdušia - Odber vzoriek a testovanie (2013). Európsky výbor pre normalizáciu (CEN).

19 ISO 16000-9:2006 Vnútorný vzduch. Časť 9 - Stanovenie emisií prchavých organických zlúčenín zo stavebných výrobkov a nábytku - Metóda emisnej skúšobnej komory (2006). Medzinárodná organizácia pre normalizáciu (ISO).

20 CEN/TS 16516:2013 Stavebné výrobky - Posudzovanie uvoľňovania nebezpečných látok - stanovenie emisií do vnútorného ovzdušia (2013). Európsky výbor pre normalizáciu (CEN).

21 Štandardná metóda testovania a hodnotenia emisií prchavých organických chemikálií z vnútorných zdrojov pomocou environmentálnych komôr verzia 1.1 (metóda testovania emisií pre kalifornskú špecifikáciu 01350) (2010). Kalifornské ministerstvo zdravotníctva (CDPH).

22 ISO 16000-9:2006 Vnútorný vzduch. Časť 9 - Stanovenie emisií prchavých organických zlúčenín zo stavebných výrobkov a vybavenia - Metóda emisnej skúšobnej komory (2006). Medzinárodná organizácia pre normalizáciu (ISO)

23 CEN/TS 16516:2013 Stavebné výrobky - Posudzovanie uvoľňovania nebezpečných látok - stanovenie emisií do vnútorného ovzdušia (2013). Európsky výbor pre normalizáciu (CEN).

24 Štandardná metóda testovania a hodnotenia emisií prchavých organických chemikálií z vnútorných zdrojov pomocou environmentálnych komôr verzia 1.1 (metóda testovania emisií pre kalifornskú špecifikáciu 01350) (2010). Kalifornské ministerstvo zdravotníctva (CDPH).

25 EN 717-1:2004 Dosky na báze dreva - Stanovenie uvoľňovania formaldehydu - Časť 1: Emisie formaldehydu komorovou metódou (2004). Európsky výbor pre normalizáciu (CEN).
26 EN 13999-1:2013 Lepidlá - Krátkodobá metóda merania emisných vlastností nízkorozpúšťadlových lepidiel alebo lepidiel bez rozpúšťadiel po aplikácii - Časť 1: Všeobecný postup (2013). Európsky výbor pre normalizáciu (CEN).
27 EN 13999-2:2013 Lepidlá - Krátkodobá metóda merania emisných vlastností nízkorozpúšťadlových lepidiel alebo lepidiel bez rozpúšťadiel po aplikácii - Časť 2: Stanovenie prchavých organických zlúčenín (2013). Európsky výbor pre normalizáciu (CEN).
28 EN 13999-3:2007 Lepidlá - Krátkodobá metóda merania emisných vlastností nízkorozpúšťadlových lepidiel alebo lepidiel bez rozpúšťadiel po aplikácii - Časť 3: Stanovenie prchavých aldehydov (2009). Európsky výbor pre normalizáciu (CEN).
29 EN 13999-4:2007 Lepidlá - Krátkodobá metóda merania emisných vlastností nízkorozpúšťadlových lepidiel alebo lepidiel bez rozpúšťadiel po aplikácii - Časť 4: Stanovenie prchavých diizokyanátov (2009). Európsky výbor pre normalizáciu (CEN).
30 EN 16402:2013 Farby a laky - Hodnotenie emisií látok z náterových látok do vnútorného ovzdušia - Odber vzoriek a testovanie (2013). Európsky výbor pre normalizáciu (CEN).
31 EN 717-1:2004 Dosky na báze dreva - Stanovenie uvoľňovania formaldehydu - Časť 1: Emisie formaldehydu komorovou metódou (2004). Európsky výbor pre normalizáciu (CEN).
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33 EN 13999-1:2013 Lepidlá - Krátkodobá metóda merania emisných vlastností lepidiel s nízkym obsahom rozpúšťadiel alebo bez rozpúšťadiel po aplikácii - Časť 1: Všeobecný postup (2013). Európsky výbor pre normalizáciu (CEN).
34 EN 13999-2:2013 Lepidlá - Krátkodobá metóda merania emisných vlastností nízkorozpúšťadlových lepidiel alebo lepidiel bez rozpúšťadiel po aplikácii - Časť 2: Stanovenie prchavých organických zlúčenín (2013). Európsky výbor pre normalizáciu (CEN).
35 EN 13999-3:2007 Lepidlá - Krátkodobá metóda merania emisných vlastností nízkorozpúšťadlových lepidiel alebo lepidiel bez rozpúšťadiel po aplikácii - Časť 3: Stanovenie prchavých aldehydov (2009). Európsky výbor pre normalizáciu (CEN).
36 ISO/IEC 17025:2005 Všeobecné požiadavky na kompletnosť skúšobných a kalibračných laboratórií (2005). Medzinárodná organizácia pre normalizáciu (ISO).
37 EN 15457:2014 Farby a laky. Laboratórna metóda skúšania účinnosti konzervačných látok v nátere proti plesniam (2014). Európsky výbor pre normalizáciu (CEN).
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42 ISO 16000-2:2006 Vnútorný vzduch. Časť 2: Stratégia odberu vzoriek formaldehydu (2006). Medzinárodná organizácia pre normalizáciu (ISO)
43 EN 14175-1:2003 Digestory, Slovník EN 14175-2:2003 Digestory, Bezpečnosť a požiadavky na výkon EN 14175-3:2003 Digestory , Typové skúšobné metódy EN 14175-4:2004 Digestory, Skúšobné metódy na mieste DD CEN/TS 14175-5:2006 Digestory, Odporúčania pre inštaláciu a údržbu EN 14175-6:2006 Digestory, Digestory s premenlivým objemom vzduchu EN 14175-7:2012 Digestory, Digestory pre vysoké teploty a kyslé zaťaženie
44 EN 12469:2000 Biotechnológia. Výkonnostné kritériá pre mikrobiologické bezpečnostné skrine, BSi.
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50 CTG065 Technology Guide, Heating control: maximalizácia komfortu, minimalizácia spotreby energie, The Carbon Trust, 2011
51 BS 8233:2014 Zvuková izolácia a zníženie hluku v budovách - Kódex postupov. BSI, 2014.
52 Stavebný vestník 93: Akustický dizajn v školách, Sprievodca dizajnom, 2004, Ministerstvo školstva a zamestnanosti Spojeného kráľovstva
53 ISO/IEC 17024:2003 Posudzovanie zhody - Všeobecné požiadavky na orgány vykonávajúce certifikáciu osôb
54 TM39 Meranie spotreby energie v budovách. CIBSE, 2009.
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58 TM50 Energetická účinnosť v komerčných kuchyniach. CIBSE, 2021.
59 TM54 Hodnotenie prevádzkovej energetickej hospodárnosti budov vo fáze návrhu. CIBSE, 2013.
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85 Detské centrá sú viacúčelové centrá služieb, kde môžu malé deti a ich rodiny získať predškolskú výchovu, celodennú starostlivosť o deti, rodičovskú podporu a zdravotné služby pre deti a rodiny, ako napríklad prístup k zdravotníkom

a zdravotné prehliadky: Detské centrá sú často spojené s miestnou základnou školou, a to v areáli školy alebo v jej tesnej blízkosti.

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Preklad som vypracovala ako prekladateľka zapísaná v zozname znalcov, tlmočníkov a prekladateľov, ktorý vedie Ministerstvo spravodlivosti Slovenskej republiky v odbore slovenský jazyk/ anglický jazyk, evidenčné číslo prekladateľa 970139.
Preklad je zapísaný v denníku pod číslom 171/2024
Prekladané listiny súhlasia s preloženými listinami.
Zároveň vyhlasujem, že som si vedomá následkov vedome nepravdivého prekladu.

V Bratislave dňa 01.03.2024

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I declare that I am aware of the consequences of knowingly false translation.

In Bratislava dated 01.03.2024

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