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BREEAM In-Use International

Technical Manual: Commercial

SD6063 – V6.0.0

BINARIUM Business Centre certified to BREEAM International In-Use in 2018 and 2019

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TERMS AND CONDITIONS

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Cover image

BINARIUM Business Centre, a 16000m^2 building located in Cluj Napoca, Romania.

Acknowledgement

This manual has been made possible through the continued efforts of many dedicated BRE Group staff members, the BRE Global Limited Governing Body, BREEAM Assessors and those who have responded to our consultation calls and meetings or provided feedback in other ways. BRE Global Limited also extends its gratitude to those who support BREEAM by continuing to specify and apply the method and contribute towards a sustainable built environment.

Table of contents

BREEAM In Use i
TERMS AND CONDITIONS i
Disclaimer i
Copyright i
Trade Marks i
Cover image i
Acknowledgement ii
Table of contents iii
List of tables viii
List of figures x
What the icons mean 1
Category weightings 1
Assessment issue credits 2
Minimum standards 2
About BRE Global Limited 4
About this document 5
Changes to this BREEAM Scheme Document 5
Introduction to BREEAM 6
BREEAM aim and objectives 6
Objectives of BREEAM 6
The BREEAM schemes 7
Trust in the Certification Mark 7
BREEAM In-Use International 9
The value of data collection 10
How to use BREEAM In-Use International 11
Scope 13
Eligibility criteria 13
Assessing tenanted assets 14
Asset types that can be assessed 16
Scoring and rating of BREEAM In-Use International assessed assets 18
BREEAM In-Use International rating benchmarks 18
Environmental category weightings 19
Minimum standards 19
BREEAM assessment issues and credits 21

Calculating an asset's BREEAM rating 22
BREEAM evidential requirements 24
The BREEAM In-Use International Assessor role 24
Evidence types 25
Evidence principles 25
Robustness of evidence 27
Building Details 30
Asset 30
Basic building details 31
Part 1 Asset Performance 35
Health and Wellbeing 36
Hea 01 Daylighting 40
Hea 02 Control of glare from sunlight 44
Hea 03 Internal and external lighting levels 47
Hea 04 Lighting control 52
Hea 05 Minimising flicker from lighting systems 55
Hea 06 View out 57
Hea 07 User comfort control 60
Hea 08 Ventilation system air intakes and exhausts 63
Hea 09 Carbon dioxide sensors 66
Hea 10 Carbon monoxide detection 69
Hea 11 Provision of rest areas 72
Hea 12 Inclusive design 75
Hea 13 Drinking water provision 81
Energy 83
Asset energy calculator guidance 87
Ene 01 Building services 103
Ene 02 Percentage of mechanical ventilation 105
Ene 03 Fabric performance 107
Ene 04 Air permeability of the fabric 110
Ene 05 Cooling 113
Ene 06 Heating 116
Ene 07 Internal lighting 120
Ene 08 Ventilation 123
Ene 09 Water heating 125
Ene 10 Demand side management (DSM) capabilities for electricity 128

Ene 11 Installed controls 131
Ene 12 Local energy performance asset rating 134
Ene 13 Solar photovoltaic (PV) panels 137
Ene 14 Solar thermal panels 139
Ene 15 Monitoring energy uses 140
Ene 16 Monitoring tenanted areas 143
Ene 17 External lighting 146
Ene 18 Energy efficient transport systems 150
Transport 153
Tra 01 Alternative modes of transport 156
Tra 02 Proximity to public transport 163
Tra 03 Proximity to amenities 166
Tra 04 Pedestrian and cyclist safety 169
Water 171
Wat 01 Water monitoring 175
Wat 02 Water efficient equipment: toilets 178
Wat 03 Water efficient equipment: urinals 180
Wat 04 Water efficient equipment: hand washing basins taps 183
Wat 05 Water efficient equipment: showers 186
Wat 06 Water efficient equipment: white goods 188
Wat 07 Leak detection system 190
Wat 08 Leak prevention 192
Wat 09 Isolation valves 194
Wat 10 Reducing utility-supplied water consumption 196
Resources 198
Rsc 01 Condition survey 201
Rsc 02 Reuse and recycling facilities 204
Rsc 03 Resources inventory 208
Rsc 04 Future adaptation 211
Resilience 214
Rsl 01 Flood risk assessment 217
Rsl 02 Surface water run-off impact mitigation 220
Rsl 03 Natural hazard risk assessment 222
Rsl 04 Durable and resilient features 224
Rsl 05 Alarm systems 226

Land Use and Ecology 228
Lue 01 Planted area 230
Lue 02 Ecological features of planted area 233
Pollution 236
Pol 01 Minimising watercourse pollution 240
Pol 02 Chemical storage 242
Pol 03 Local air quality 244
Pol 04 Global warming potential of refrigerants 247
Pol 05 Refrigerant leak detection systems 250
Part 2 Management Performance 252
Management 253
Man 01 Building user guide 256
Man 02 Management engagement and feedback 258
Man 03 Maintenance policies and procedures 261
Man 04 Environmental policies and procedures 264
Man 05 Green lease 266
Health and Wellbeing 269
Hea 14 Thermal comfort 272
Hea 15 Smoking policy 276
Hea 16 Indoor air quality management 278
Hea 17 Acoustic conditions 283
Hea 18 Legionella risk management 289
Hea 19 Drinking water management 293
Energy 295
Operational energy calculator guidance 298
Ene 19 Energy consumption 300
Ene 20 Carbon intensity district heating and cooling 305
Ene 21 Renewable electricity generated 307
Ene 22 Energy audit 309
Ene 23 Energy consumption reporting 311
Ene 24 Reduction of carbon emissions 313
Water 316
Wat 11 Water consumption 318
Wat 12 Water recycling 320
Wat 13 Water consumption reporting 322
Wat 14 Water strategy 324

Resources ... **326**
Rsc 05 Sustainable procurement ... 328
Rsc 06 Optimising resource use, reuse and recycling ... 333
Resilience ... **338**
Rsl 06 Emergency plans and climate-related physical risks ... 341
Rsl 07 Climate-related transition risks and opportunities ... 344
Rsl 08 Social risks and opportunities ... 346
Rsl 09 Fire risk management ... 348
Rsl 10 Security risk assessment ... 351
Land Use and Ecology ... **354**
Lue 03 Ecology report ... 356
Lue 04 Biodiversity management plan ... 360
Pollution ... **363**
Pol 06 Reduction of nighttime light pollution ... 367
Pol 07 Inspection of watercourse pollution prevention features ... 371
Pol 08 Refrigerant replacement ... 373
Pol 09 Land contamination mitigation ... 375
Pol 10 Response to pollution incidents ... 378

List of tables

Table 1: Minimum standards 2
Table 2: BREEAM In-Use International environmental categories 9
Table 3: Vacancy type definitions 13
Table 4: Determining assessment boundary for tenanted assessments 14
Table 5: Asset types that can be assessed using BREEAM In-Use International 16
Table 6: BREEAM In-Use International rating benchmarks 18
Table 7: BREEAM In-Use International environmental category weightings 19
Table 8: Minimum BREEAM standards by rating level: Asset Performance 20
Table 9: Minimum BREEAM standards by rating level: Management Performance 20
Table 10: Exemplary level credits 21
Table 11: Calculating an assets BREEAM Rating for Part 1: Asset Performance 23
Table 12: BREEAM evidence principles 26
Table 13: Evidence types 27
Table 14: Asset Performance categories, credits available and environmental weightings 35
Table 15: Minimum performance requirements for glazed area as a percentage of floor area in occupied space 42
Table 16: Default design carbon dioxide concentrations 68
Table 17: The components and subcomponents used to determine end use energy consumption 88
Table 18: Standard asset specification 90
Table 19: Subcomponents, parameters and sources for modelling asset energy performance 91
Table 20: Best practice asset specification 93
Table 21: Allocation of credits 129
Table 22: Allocation of credits 133
Table 23: Baseline figures for white goods 189
Table 24: Information on future adaptation design measures 212
Table 25: Flood risk zones 218
Table 26: Emission limit from combustion appliances 245
Table 27: Common refrigerant types with a low GWP 248
Table 28: Management performance categories, credits available and environmental weightings 252
Table 29: Performance standards for indoor ambient noise levels in selected spaces 286
Table 30: Performance standards for reverberation time (at 500 Hz) in rooms used for speech and music 287
Table 31: Performance standards for reverberation time in teaching and study spaces 287
Table 32 Operational energy performance scale and credits awarded. 299
Table 33: Fuel specific guidance for calculating energy consumption 301

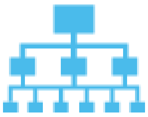
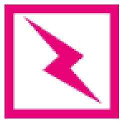
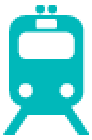
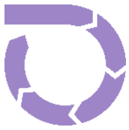
Table 34: Allocation of credits 321
Table 35: Waste recording requirements 335
Table 36: Obtrusive light limitations for exterior lighting installations and illuminated signs 369
Table 37: Environmental lighting zones 369

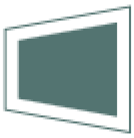
List of figures

Figure 1: BREEAM certification mark 8
Figure 2: Multi-tenanted asset with common areas assessed only (assessed area in grey). 15
Figure 3: Multi-tenanted asset with common areas and spaces B, D and E assessed owing to the tenants making the necessary data available to the asset owner (assessed are in grey). 15
Figure 4: The relationship between the standard asset (BIU benchmark) and the assessed asset 89
Figure 5: Schematic of the simplified energy modelling approach for space heating........ 96
Figure 6: Schematic of the simplified energy modelling approach for space cooling 98
Figure 7: Example of output - Indicative carbon saving potential 102

What the icons mean

Icons have been designed to visually represent some of the information in the technical manual to assist in orientation. These are colour coded to align with the BREEAM environmental category colours.

 Management	 Health and wellbeing	 Energy
 Transport	Water	 Resources
 Resilience	 Land Use and Ecology	 Pollution

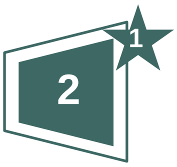
Category weightings	Assessment issue credits
	

Category weightings

Within each environmental category summary page, there is an icon which outlines the weighting for that respective category. For example, if the weighting for the category is 15% then the icon will contain the figure 15%.

Assessment issue credits

For each assessment issue, the icon represents the number of credits available for that issue. For example, if two credits are available for an assessment, the icon will contain the number 2. Where exemplary credits are available for an assessment issue, these are shown as a star in the top right-hand corner of the assessment issue icons. The number of exemplary credits available is shown within the star.



Minimum standards

One of seven minimum standard icons is shown along with the assessment issue credit icon. The minimum standard star cluster indicates which BREEAM rating the assessment issue minimum standard applies to.

Table 1: Minimum standards

Ratings with a minimum standard	Icon
No minimum standard	☆☆☆☆☆☆ ☆☆☆☆☆ ☆☆☆☆ ☆☆☆ ☆☆ ☆
Outstanding	★★★★★★ ☆☆☆☆☆ ☆☆☆☆ ☆☆☆ ☆☆ ☆
Excellent and Outstanding	★★★★★★ ★★★★★ ☆☆☆☆ ☆☆☆ ☆☆ ☆

Very good, Excellent and Outstanding	★★★★★★ ★★★★★ ★★★★ ☆☆☆ ☆☆ ☆
Good, Very good, Excellent and Outstanding	★★★★★★ ★★★★★ ★★★★ ★★★ ☆☆ ☆
Pass, Good, Very good, Excellent and Outstanding	★★★★★★ ★★★★★ ★★★★ ★★★ ★★ ☆
Acceptable, Pass, Good, Very good, Excellent and Outstanding	★★★★★★ ★★★★★ ★★★★ ★★★ ★★ ★

About BRE Global Limited

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BRE Global Limited's mission is to 'Protect People, Property and the Planet'.

We aim to achieve this by:

1. Researching and writing standards
2. Testing and certification in the areas of fire, electronics, security and sustainability
3. Developing world leading sustainability assessment methods
4. Undertaking research and consultancy for clients and regulators
5. Promulgating standards and knowledge throughout the industry through publications and events
6. Developing and delivering training

BRE Global Limited's product testing and approvals are carried out by recognised experts in our world-renowned testing laboratories.

BRE Global Limited is custodian of a number of world leading brands including:

1. Building Research Establishment's Environmental Assessment Method (BREEAM) - the world's leading environmental assessment method for buildings.
2. CEEQUAL - Sustainability Assessment and Awards Scheme for Civil Engineering, Infrastructure, Landscaping and Public Realm Works.
3. Home Quality Mark- National standard for assessment and certification for new homes in the UK
4. Loss Prevention Certification Board (LPCB) for approval of fire and security products and services.

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About this document

This document is the technical manual for BREEAM In-Use International Commercial V6.0.0. It describes an environmental performance standard against which existing, non-domestic buildings can be assessed and achieve a BREEAM In-Use rating.

The Scheme Document and the information detailed within is intended for use by trained, qualified and licensed Assessors in accordance with the procedural and operational requirements of BREEAM (as described in the BREEAM and CSH: Operational Guidance, SD5070, as well as SD096) under the terms and conditions of a BREEAM In-Use licence. This document should be used by non-BREEAM In-Use Assessors for reference purposes only.

Changes to this BREEAM Scheme Document

This Scheme Document is subject to revision and can be re-issued from time-to-time by BRE Global Limited. A schedule of the publication date for each issue of this document is provided below.

Scheme Doc.	Issue no.	Date of issue
SD 6063	6.0.0 (current)	May 2020

Introduction to BREEAM

BREEAM is the world's first and leading sustainability assessment and certification scheme for the built environment. It is an international standard that is locally adapted, operated and applied through a network of scheme operators, Assessors and industry professionals.

Through its application, BREEAM recognises and reflects the value in higher performing assets and aims to inspire and empower change by rewarding and motivating sustainability across the life cycle of master-planning projects, infrastructure and buildings.

Launched in 1990, to date, BREEAM has been used to certify over 570,000 assessments of buildings across the building life cycle and it is being applied in over 86 countries.

BREEAM aim and objectives

BREEAM assesses, encourages and rewards environmental, social and economic sustainability throughout the built environment. The BREEAM schemes:

- encourage continuous performance improvement and innovation by setting and assessing against a broad range of scientifically rigorous requirements that go beyond current regulations and practice,
- empower those who own, commission, deliver, manage or use buildings, infrastructure or communities to achieve their sustainability aspirations,
- build confidence and value by providing independent certification that demonstrates the wider benefits to individuals, business, society and the environment.

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 challenge the market to provide innovative, cost effective solutions that minimise the environmental impact of buildings.
- 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.
- 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 on-going 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 Standard (Process, Science and Technical) owned and managed by BRE Global Limited. This Core Standard is applied to cover aspects of the built environment life through a suite of BREEAM Schemes. Locally developed and operated versions of the schemes are used in other countries by organisations known as National Scheme Operators (NSOs).

All NSOs are required to maintain scheme operations to internationally agreed standards and seek accreditation from a national accreditation body to demonstrate competence, impartiality and performance capability.

For a full list of BREEAM National Scheme Operators and Schemes visit www.breeam.com.

The BREEAM schemes

BRE Global Limited develops and operates a family of BREEAM schemes, each designed to assess the sustainability performance of buildings, projects or assets 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
- HQM: for new build dwellings (in the United Kingdom only)
- BREEAM In-Use: for existing buildings in operation
- BREEAM Refurbishment and Fit Out: for domestic and non-domestic building fit-outs and refurbishments

Trust in the Certification Mark

It is important that the industry trusts in the integrity and rigour of BREEAM. As a formal third-party certification scheme, robustness and fairness are key aspects that underpin the method. BREEAM provides confidence in two ways:

1. **Creation and operation of the Certification Mark**

   The credibility and consistency of the BREEAM assessment and rating is a fundamental part of the scheme. As the UK's leading building science centre, BRE is owned by the BRE Trust, a registered charity that works to improve the quality and sustainability of our buildings and built environment for the wider public benefit. BRE promotes best practice and develops knowledge and understanding throughout the sector and is independent from those interest groups involved in the design and construction of new buildings.

   BRE is highly respected as a world leading authority in building performance research, testing, evaluation, standard setting and certification with over 90 years of experience operating both within the UK and internationally. The science-based content and independent application in accordance with recognised international standards[1] underpin both the creation and operation of BREEAM. BRE Global, the BRE's certification body and operators of BREEAM, is accredited by the United Kingdom Accreditation Service (UKAS) against these standards to ensure independence, competence and impartiality.

A key aspect of this impartiality is the open and accountable governance structure. The operation of BREEAM (as with all our assurance activities) is overseen by an independent Governing Body. The Governing Body represents a breadth of stakeholder interests to ensure, among other things, that BRE Global acts in a manner that is beyond reproach, operates our processes correctly, treats our customers fairly and is always acting for the public good.

2. Assurance through certification

Independence is a key feature of BREEAM as it provides confidence to the consumer. Assessors are trained and licensed by BRE to undertake the BREEAM assessment and determine a rating. To view a current list of BREEAM Assessors visit www.greenbooklive.com. The BREEAM Assessor will evaluate the asset using the criteria and methodologies defined in this technical manual and it's supporting assessment tools.

Once an assessment is complete and has achieved a positive outcome in the BRE Global quality assurance procedure, a certificate will be issued. The certificate provides formal verification that the BREEAM Assessor has completed their assessment in accordance with the requirements of the scheme and its quality standards. This in turn providing confidence to any interested party or stakeholder in the BREEAM rating and performance of the asset.

Anyone wishing to verify a certified assessment and rating of a building against BREEAM can do so by either checking its BREEAM certificate, which will contain the scheme's certification mark (see Figure 1), or by searching the project listings on Green Book Live http://www.greenbooklive.com/www.greenbooklive.com.

Figure 1: BREEAM certification mark

[1] BS EN ISO/IEC 17065:2012 General requirements for bodies operating product certification systems for certification activities associated with the assessment of environmental performance.

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BREEAM In-Use International

BREEAM In-Use International Commercial is a performance-based assessment method for the certification of existing non-domestic assets. If you are looking to assess existing residential assets, please refer to SD 243 technical manual for BREEAM In-Use International: Residential.

The primary aim of BREEAM In-Use is to mitigate the operational impacts of existing assets on the environment.

Clients can measure, evaluate and reflect the performance of their new assets against best practice in an independent, cost-effective and robust manner. The BREEAM In-Use International assessment process is broken down into two Parts:

1. **Asset Performance:** *benchmarking the performance of the asset, outlining areas of best practice, as well as potential scope for improvement.*
2. **Management Performance:** *benchmarking the building management processes used within an asset, outlining areas of best practice, as well as potential to reach optimal asset performance.*

The outcome of a BREEAM In-Use International assessment is a certified BREEAM In-Use rating for the Parts which an assessment is undertaken against. All Parts can be assessed and certified in isolation, and each will receive an independent rating, reflecting performance across the environmental categories listed in Table 2.

The process enables performance levels to be benchmarked, providing the platform for informed management decisions to be made, helping to optimise performance. Through on-going assessments, BREEAM In-Use International encourages continual improvement.

Table 2: BREEAM In-Use International environmental categories

Environmental category	Purpose
Management	Encourages sustainable management practices throughout the life cycle of the asset, ensuring that both technical and non-technical building users have appropriate guidance on how they can help maximise sustainable performance. This enables assets to put in place clear targets and provide feedback loops to ensure that processes can be optimised moving forward.
Health and Wellbeing	Encourages assets to provide healthy, safe, comfortable and accessible environments, both internally and externally, for their building users.
Energy	Encourages the reduction of energy use by recognising building with lower operational energy consumption and carbon emissions over the lifetime of the asset. It assesses the inherent energy efficiency of the building fabric, installed servicing systems and renewable energy generation capacity.
Transport	Encourages the provision of improved access to local amenities and to sustainable means of transport, i.e. public transport and other alternative transport solutions for building users. This enables solutions that support a reduction in car journeys and, therefore, congestion and CO_2 emissions over the life of the asset.

Environmental category	Purpose
Water	Encourages sustainable water use throughout the operation of the asset, and the associated site. This ensures the asset focuses on identifying means of reducing potable water consumption (internal and external) over the lifetime of the building and minimising losses through leakage.
Resources	Encourages the prudent and responsible use of resources including materials and waste. To reduce whole life impacts from resource use the category requires users to consider the environmental impacts of the operations for the life of an asset. The category encourages users to evaluate resource use within the context of a circular economy and waste in accordance with the waste hierarchy.
Resilience	Encourages consideration of an asset's exposure to a range of risks such as; climate-related physical risks and local watercourse pollution, excess material damage, and physical security. Then encourages the pro-active management of these risks to minimise their impact and ensure rapid recovery.
Land Use and Ecology	Encourages assets to gain an awareness of the current and potential ecological value on-site, and the potential impact the operation of the asset has on this value. This enables long-term strategies, including those for management and maintenance, to be established that will protect and enhance ecological value in the future
Pollution	Encourages the prevention and control of both airborne and waterborne pollution associated with the asset's location and use. Then encourages the asset to pro-actively minimise the risk of pollution on surrounding communities and environments, as well as managing the transition risks associated with refrigerants.

The value of data collection

Real estate owners, occupiers, developers and funders around the world are facing ever increasing demands to address Corporate Social Responsibility. This results in a need to have clear reporting processes related to the assets they own, manage and occupy.

By gathering, analysing and sharing data trends related to the performance of these assets, BREEAM In-Use can help clients to develop a common understanding of how their assets perform, outlining the areas which present the largest opportunity for improvement.

Assessing an asset according to BREEAM In-Use means a client can:

- Set key performance indicators for energy, water, waste and greenhouse gas performance.
- Understand the performance of assets within their portfolios.
- Benchmark individual assets against other assets within owner portfolios.
- Optimise the performance of their assets through good management, maintenance and occupation policies and procedures.
- Set performance improvement targets and measure progress over time.

- Support BRE on the continuing development of BREEAM In-Use by identifying and improving best environmental performance of existing buildings.

How to use BREEAM In-Use International

This technical document has been created to:

- Enable qualified and licensed BREEAM In-Use International Assessors to complete BREEAM In-Use International assessments and determine a rating.
- Enable BRE Global Ltd to complete quality assurance reviews of a BREEAM In-Use licenced Assessor's assessment, in accordance with the standards to which BRE Global Ltd is accredited.
- As a reference for clients who plan to assess their asset/management processes against BREEAM In-Use International.

The technical manual is split into six sections:

1. **Introduction to BREEAM**
2. **Scope**

This section describes what can be assessed under BREEAM In-Use International. The Scope section can be used by clients and BREEAM In-Use Assessors to check whether this is the correct BREEAM Scheme to use for their project.

3. **Scoring and rating**

This section illustrates how performance is measured and rated. It outlines the BREEAM In-Use International rating level benchmarks, the minimum standards for certain assessment Issues, and the Environmental category weightings. Please note: for the purpose of formal certification, performance must be verified by a BREEAM In-Use International Assessor.

4. **Evidence requirements**

This section provides guidance to BREEAM In-Use International Assessors on the various types and forms of evidence required to demonstrate compliance with BREEAM In-Use International issues. It also includes a description of why BREEAM requires an auditable trail of evidence, and a table of general types of evidence that are typically required and used as a form of compliance.

5. **Building details**

This section includes an explanation of asset related data that must be completed prior to undertaking an assessment. The data that is filled out within this section will assist in determining scoring, such as energy benchmarking.

6. **Assessment issues**

Each of the two parts are made up of a series of assessment Issues, which relate to each of the Environmental categories. Within each Issue the levels of performance (the available credits) against which the asset will be assessed are outlined. By using the appropriate evidence, a corresponding number of available BREEAM In-Use International credits can be awarded.

Each Environmental category begins with a category **Summary** and **Context** statement. **Aim** and **Value** statements are then given for each BREEAM In-Use International assessment issue.

Each BREEAM In-Use issue is then structured as follows:

a) **Issue information:** contains the assessment issue reference, title, number of credits available and whether the issue forms part of the BREEAM minimum standards.

b) **Aim:** outlines the objective of the issue and the impact it measures or mitigates.

c) **Value:** outlines the key value of the issue and summarises beneficial outcomes resulting from compliance with the issue criteria.

d) **Question:** contains the question that is asked to assess the BREEAM In-Use assessment issue. This includes a table of all possible answer options including the respective number of credits rewarded for each one.

e) **Assessment criteria:** outlines the requirements that must be met in order for certain answer options to be selected.

f) **Specific notes:** asset type specific guidance will be given where necessary.

g) **Methodology:** includes a description of any methodology used to determine the number of credits achieved for a given level of performance. It includes, for example, calculation procedures or guidance on how to relate non-BREEAM schemes, standards or qualifications referenced to the assessment criteria.

h) **Evidence:** describes the types of project information that must be provided to the licensed BREEAM Assessor to enable verification of performance against the assessment criteria and justification of credits awarded. The BREEAM evidential requirements section provides further guidance on evidential requirements.

i) **Definitions:** includes any definition of terms used in the assessment issue.

j) **Checklists and tables:** contains any checklists and useful tables.

k) **Additional information:** contains any further information relevant to the application of the assessment criteria, or sources of additional information that may be of use in addressing the issue.

Please Note: Compliance Notes, which provide information on how to determine compliance for specific BREEAM Issues related to this version, are now all published on the BREEAM Knowledge Base at kb.breeam.com. Each compliance note in the BREEAM Knowledge Base has a title and unique reference number, which can be quoted in BREEAM In-Use International Assessor verification comments.

Scope

BREEAM In-Use International Commercial can be used to assess the sustainability performance of existing non-domestic assets. Residential institutions such as residential care home, hotels, hostels and student accommodation are considered to be non-domestic assets and should be assessed under this scheme. When looking to assess existing residential assets please refer to the scope section of SD243 the BREEAM In-Use International Residential manual.

The construction of new buildings, new infrastructure or communities' projects, and existing building refurbishment and fit-outs cannot be assessed under the BREEAM In-Use scheme. Projects requiring these assessment types should be assessed under the relevant BREEAM schemes.

BREEAM In-Use International has been developed for use in all countries where there is no locally adapted version. Please note: where a country has a locally adapted version of BREEAM In-Use International that is appropriate to the asset type being assessed, this must be used in preference to BREEAM In-Use International. Please refer to www.breeam.com for further details on countries with local adapted version of BREEAM.

Eligibility criteria

For all asset types that can be assessed using BREEAM In-Use International, the eligibility criteria listed below must also be met:

1) The asset must be a complete and finished structure.

    a) **Asset Performance**

    No more than 20% of the Gross Internal Area (GIA) can be classified as Unfitted at the point of submission. The assessment information provided must be correct at the point of submission to BRE Global for certification.

    b) **Management Performance**

    No more than 20% of the Gross Internal Area (GIA) can be classified as Vacant, where Vacant = Unfitted plus Unoccupied over the reporting period (12 months).

    For definitions on vacancy types, please refer to Table 3 below.

    Table 3: Vacancy type definitions

Vacancy type	Definition
Unfitted	Areas of an asset which are not fitted out, and consequentially unoccupied.
Unoccupied	Areas of the asset which are fitted out, and are either: a) Not leased, OR b) Are unoccupied. For example, an entirely unoccupied unit or floor.

2) The asset must contain occupiable or occupied space(s) which is designed to be continuously occupied for 30 minutes or more per day by a building user.

    a) **Asset Performance**

    An asset not yet occupied can still be assessed.

b) **Management Performance**

The asset must have been occupied for at least 12 months prior to the start of the assessment.

Any asset without compliant consumption data will not be able to achieve all of the credits within Management Performance (e.g. the Operational Energy Calculator and Water).

3) An asset does not have to include the whole building; it could include just part of a building or a single floor. In such cases, the scope of the BREEAM In-Use International assessment must include all relevant amenity and service areas.

4) The asset must comply with all relevant environmental and health and safety legislation in its location

5) An asset cannot normally include more than one building. The only exception is where several buildings meet the following criteria:

a) All buildings must be located on the same site. The boundary of the site must be drawn where responsibility of management or ownership of the site changes.

b) All buildings must have the same building function, similar performance, and be of the similar design and age.

c) Building management and maintenance policies, procedures and approach must be the same across all the buildings that make up the asset to ensure consistent implementation.

d) Evidence must be collated from each building that is included in the asset and where performance against the BREEAM requirements varies, the final score will be determined by the space with the lowest level of performance.

Assessing tenanted assets

BREEAM In-Use International is looking to establish the overall performance of the asset being assessed. Therefore, criteria must be considered against all relevant space(s) within the defined assessment boundary regardless of whom has ownership/responsibility over the associated aspects (i.e. landlord or tenant). This encourages all stakeholders within the asset to optimise their performance.

Table 4: Determining assessment boundary for tenanted assessments

<table>
<tr><th>Part</th><th>Multi-tenanted assessment</th></tr>
<tr><td>1: Asset Performance</td><td rowspan="2">The rating can be based on:
a) Common areas* that a facility/building manager is responsible for
OR
b) Common areas AND tenanted areas within the asset that are either:
i) Under the full control of the asset owner/building manager
OR
ii) Where the asset owner/building manager can gather data from the relevant tenants to determine the overall performance level.
Where common areas and tenanted areas are assessed together:

The assessment must include evidence of a representative sample of the tenants to ensure that central management practices are in place and fully implemented in line with the assessment criteria.</td></tr>
<tr><td>2: Management Performance</td></tr>
</table>

Part	Multi-tenanted assessment
	Note: The evidence provided for these samples must be representative of the asset and must include at least one sample of each type of space use within the asset. For example, where there are: shops, offices and food space uses within the asset, the sample must include evidence that central management practices are in place for a representative sample of each of these space uses.

*Common areas are facilities or access that is not owned or controlled by any one individual tenant but used by all. These 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/reception.

Example situations for multi-tenanted assets can be seen in Figure 2 and Figure 3.

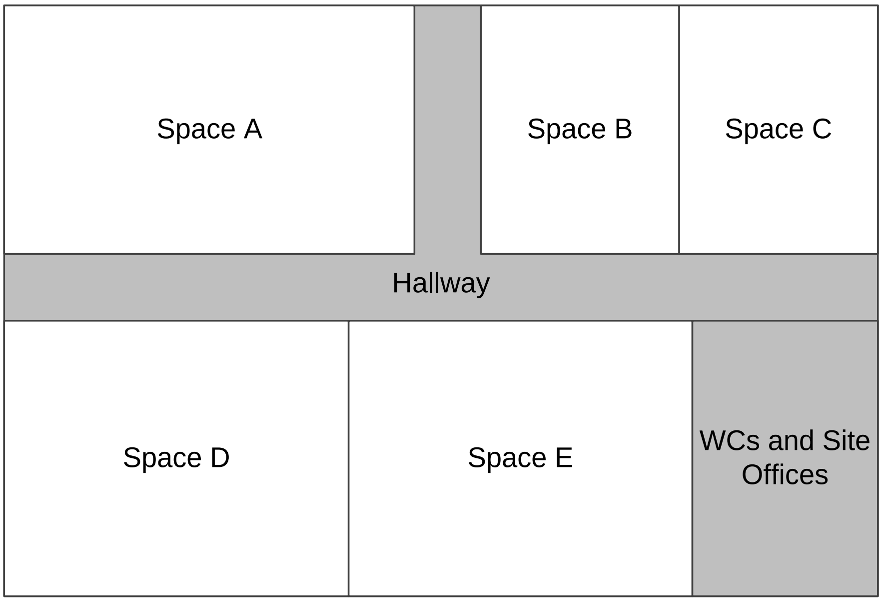

Figure 2: Multi-tenanted asset with common areas assessed only (assessed area in grey).

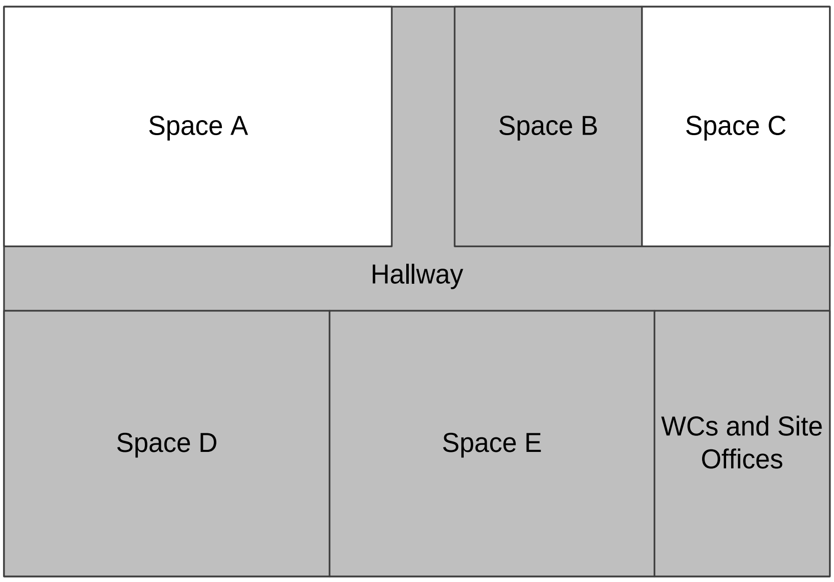

Figure 3: Multi-tenanted asset with common areas and spaces B, D and E assessed owing to the tenants making the necessary data available to the asset owner (assessed are in grey).

Asset types that can be assessed

BREEAM In-Use International can be used to assess the sustainability performance of existing non-domestic assets. When looking to assess existing residential assets please refer to SD 243 BREEAM In Use International: Residential technical manual.

BREEAM In-Use International can be used to assess all non-domestic asset types, although the BREEAM In-Use International Online Platform contains a pre-determined list of available asset types. For a full list of these asset types, please refer to Table 5.

Table 5: Asset types that can be assessed using BREEAM In-Use International

Asset type	Asset sub-types
Airport	Airport terminal
Commercial Laboratory	Laboratory
Community	Community hub Library Place of worship
Education	Further/Higher Education: Institutional catering Further/Higher Education: lecture room (non-science) Further/Higher Education: lecture room (science) Further/Higher Education: library Further/Higher Education: laboratory Primary school Secondary school Residential college or school (halls of residence)
Entertainment	Cinema Fast food restaurant or café Performing arts theatre Restaurant
Healthcare	Ambulance station Hospital: acute + maternity Hospital: cottage Hospital: long stay Hospital: teaching + specialist Primary healthcare surgery
Hospitality	Hotel

Industrial	Distribution and storage General manufacturing Light manufacturing
Offices	Cellular office Open plan office
Government services	Fire station Law court Police station Town hall
Supportive Housing	Residential care home Sheltered housing Short stay housing units
Retail	Department store Distribution warehouse Retail store Retail services Small food shop Supermarket
Sport	Fitness centre/gym Ice rink Indoor swimming pool

Each Asset type contains a number of sub-types, the following sub-types apply to all assets:

- Common areas
- Unfitted spaces
- Unoccupied spaces

Where the Assessor feels that the asset type being assessed does not match any of those listed within Table 5, they should contact BRE Global (BREEAMinUse@bregroup.com) for clarity on how to proceed.

Scoring and rating of BREEAM In-Use International assessed assets

There are 4 elements that determine the overall performance of a BREEAM In-Use assessment. They are:

1. The BREEAM In-Use International rating level benchmarks
2. The BREEAM In-Use International minimum standards
3. The BREEAM In-Use International environmental category weightings
4. The BREEAM In-Use International assessment issues and credits

The next sections summarise how these elements combine to produce a BREEAM In-Use rating for a new building and are followed by a description of the process of determining a rating.

BREEAM In-Use International rating benchmarks

The BREEAM rating benchmarks for projects assessed using BREEAM In-Use International are outlined in Table 6.

Table 6: BREEAM In-Use International rating benchmarks

BREEAM In-Use International Rating	% score	Star rating
OUTSTANDING	≥85	★★★★★★
EXCELLENT	≥70 to <85	★★★★★
VERY GOOD	≥55 to <70	★★★★
GOOD	≥40 to <55	★★★
PASS	≥25 to <40	★★
ACCEPTABLE	≥10 to <25	★
UNCLASSIFIED	<10	-

BREEAM In-Use rating benchmarks enable a client and all other stakeholders to compare the performance of assets.

In this respect each BREEAM rating broadly represents:

1. Outstanding: Performance that goes beyond best practice
2. Excellent: Performance that represents best practice
3. Very Good: Performance that represents advanced good practice
4. Good: Performance that represents intermediate good practice
5. Pass: Performance that represents standard good practice
6. Acceptable: Performance that represents performance that meets BREEAM's minimum levels of performance for key environmental issues.

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

Environmental category weightings

Category weightings are fundamental to any building sustainability assessment method and provide a means of defining and ranking the relative importance and impact of sustainability issues. BREEAM uses an explicit category weighting system to determine the overall BREEAM score. The process for defining the BREEAM category weightings is set out in the BREEAM Briefing Paper 'New Methodology for Generating BREEAM Category Weightings' available on the BREEAM website. The methodology has been applied in stakeholder consultation activities to generate consensus-based weightings for all categories across the BREEAM family of schemes, including BREEAM In-Use. The outputs from this exercise have been reviewed by BRE Global for the purposes of application in the BREEAM In-Use International Scheme.

The weightings for each of the nine environmental categories included in the BREEAM In-Use International Scheme are outlined in Table 7.

Table 7: BREEAM In-Use International environmental category weightings

Environmental Category	Weighting	
	1: Asset Performance	2: Management Performance
Management	0%	11%
Health and Wellbeing	20%	17%
Energy	25%	27%
Transport	5%	0%
Water	11%	9%
Resources	13%	11%
Resilience	13%	11%
Land Use and Ecology	4%	7%
Pollution	9%	7%
Total	100%	100%
Exemplary (additional)	10%	9%

Minimum standards

To ensure that performance against fundamental environmental issues is not over-looked in pursuit of a particular rating, BREEAM sets minimum standards of performance in key areas e.g. energy, water etc. The majority of BREEAM credits can, however, be traded, so non-compliance in one area can be offset through compliance in another to achieve the target BREEAM rating.

To achieve a particular BREEAM rating, the minimum overall percentage score must be achieved as well as the minimum standards detailed in Table 8 and Table 9.

Table 8: Minimum BREEAM standards by rating level: Asset Performance

	Minimum standards by BREEAM In-Use rating: Asset Performance					
BREEAM issue	**Acceptable**	**Pass**	**Good**	**Very Good**	**Excellent**	**Outstanding**
Wat 01 – Water monitoring	None		Answer option C or D (Criteria 1-3 only)			
Rsc 02 – Reuse and recycling facilities	None					Answer options C and D (Criteria 1-3)
Rsl 01 – Flood risk assessment	None			Answer option B, C, D,E or F (Criterion 2 and 3 plus 4 where relevant)		

Table 9: Minimum BREEAM standards by rating level: Management Performance

	Minimum standards by BREEAM In-Use rating: Management Performance					
BREEAM issue	**Acceptable**	**Pass**	**Good**	**Very Good**	**Excellent**	**Outstanding**
Man 02 – Management engagement and feedback	None				Answer option F or G (Criteria 5 and 6)	
Man 04 – Environmental policies and procedures	None			Answer option B (Criterion 1)		
Rsc 05 – Sustainable procurement	Answer option C (Criterion 1)					
Rsl 09- Fire risk management	Answer option C and G or Answer option D (Criteria 2 - 5)					

BREEAM assessment issues and credits

BREEAM In-Use International is made up of two different Parts, each of which can be assessed independently. Each Part consists of individual assessment issues across the various BREEAM environmental categories. Each assessment issue addresses a specific building related environmental impact or issue and is assigned a number of credits.

BREEAM credits are awarded where an asset meets the best practice performance levels defined for an assessment issue, i.e. the impact has been mitigated. For example, in the case of the health and wellbeing category, a specific building occupant-related issue has been addressed, e.g. thermal comfort.

The number of credits available for an individual assessment issue will vary and generally reflect the importance of mitigating the impact of the assessment issue. 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.

In addition to the category score, 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 building impacts. It is therefore possible to use the method to define performance levels in support of specific organisational policy objectives for individual environmental issues as well as using BREEAM to define overall targets. However, be aware that cost implications can occur if targets are set using individual issues and credit levels.

Credits for exemplary-level performance

BREEAM seeks to support higher levels of performance within the built environment. One way it does this is through the availability of additional credits to recognise sustainability-related benefits or performance levels not currently recognised by standard BREEAM assessment issues and criteria. This rewards developments that go beyond established best practice in a particular aspect of sustainability.

Awarding credits for exemplary level of performance enables clients to boost their building's BREEAM performance. BREEAM In-Use currently awards exemplary-level credits, where assets meet exemplary performance criteria defined within an existing BREEAM issue, i.e. going beyond the standard BREEAM assessment criteria.

Each exemplary-level credit achieved adds 1% to an asset's overall score. The maximum number of 'exemplary-level credits' that can be awarded for any one asset is 10 per Part; therefore, the maximum additional score available is 10%.

Exemplary-level credits can be awarded regardless of the asset's final BREEAM rating, i.e. they can be awarded at any BREEAM rating level, and no assessment can exceed 100% for the overall score.

Table 10: Exemplary level credits

Part	Issue	Answer Option	Credits
Asset Performance	Hea 01 – Daylighting	Option F	1
Asset Performance	Hea 12 – Inclusive design	Option F	1
Asset Performance	Ene 10 – Demand side management (DSM) capabilities for electricity	N/A	4
Asset Performance	Wat 01 – Water monitoring	Option F	1

Asset Performance	Rsc 02 – Reuse and recycling facilities	Option E	1
		Option F	1
Asset Performance	Rsc 04 – Future adaptation	Option D	1
Asset Performance	Rsl 01 – Flood risk assessment	Option G	1
Asset Performance	Lue 02 – Ecological features of planted area	Option E	1
Management Performance	Man 04 - Environmental policies and procedures	Option E	1
Management Performance	Ene 24 – Reduction of carbon emissions	N/A	3
Management Performance	Rsc 05 – Sustainable procurement	Option H	1
		Option I	1
Management Performance	Rsl 06 – Emergency Plans and Climate-Related Physical Risks	Option D	1
		Option H	1
Management Performance	Rsl 10 – Security Risk Assessment	Option D	1

Calculating an asset's BREEAM rating

A BREEAM In-Use Assessor must determine the BREEAM In-Use International rating using the relevant reporting tool/software and in compliance with the requirements as set out in this technical manual. The process of determining a BREEAM In-Use International rating for Asset Performance and Management Performance is outlined below. As mentioned previously, an independent score is provided for each Part assessed.

1. For each of BREEAM's environmental categories the number of credits awarded is determined by the BREEAM In-Use Assessor according to the number of credits available when the criteria of each assessment issue have been met.
2. The percentage of available credits achieved is calculated for each category.
3. The percentage of available credits achieved in each category is then multiplied by the corresponding weighting for each category to give the overall environmental category score.
4. The category scores are added together to give the overall BREEAM In-Use International score for the Part being assessed.
5. The overall score is compared with the BREEAM rating benchmark levels and, provided all minimum standards have been met, the relevant BREEAM rating is achieved.
6. An additional 1% can be added to the final BREEAM In-Use International score for each exemplary-level credit achieved with the total BREEAM In-Use International score capped at 100%. The maximum number of 'exemplary-level credits' that can be awarded for any one asset is 10 per Part; therefore, the maximum additional score available is 10%.

Table 11: Calculating an assets BREEAM Rating for Part 1: Asset Performance

Environmental category	Credits achieved	Credits available	% of Credits achieved	Category weighting	Category score (%)
Management	-	-	-	-	-
Health and Wellbeing	3	47	6.38	0.20	1.28
Energy	46	66	69.70	0.25	17.42
Transport	15	22	68.18	0.05	3.41
Water	29	38	76.32	0.11	8.39
Resources	20	23	86.96	0.13	11.30
Resilience	16	18	88.89	0.13	11.56
Land Use and Ecology	4	6	66.67	0.04	2.67
Pollution	11	18	61.11	0.09	5.50
Exemplary	4	10	40.00	0.10	4.00
Final BREEAM score					65.5%
BREEAM rating					VERY GOOD

BREEAM evidential requirements

BREEAM is a third-party certification scheme operated in accordance with international standards to ensure it is applied in a consistent, impartial and robust manner. The BREEAM In-Use International Assessor's assessment report and the BRE Global Quality Assurance and certification process are core elements of BREEAM, and they are designed to ensure that clients can have confidence in the BREEAM In-Use International rating determined by the Assessor.

To maintain consistency and confidence certification requires that, all assessment decisions be based on verified and credible information that can be traced, i.e. decisions are evidence based. This is not only important for compliance with the international standards to which BRE Global is accredited as a certification body, but also manages risk to clients and BREEAM In-Use International Assessors in the event that a certification outcome is challenged.

The BREEAM In-Use International Assessor role

The role of the BREEAM In-Use International Assessor is to gather information in a competent and impartial manner and use it to assess performance against the BREEAM scheme. To award a BREEAM credit, the Assessor must be satisfied that the evidence gathered demonstrates unambiguous compliance with all relevant criteria defined in the BREEAM scheme. All evidence must be referenced appropriately by the Assessor in their assessment submissions and made available to BRE Global Ltd for quality assurance checks.

Within each BREEAM issue, the BREEAM In-Use International Assessor must determine the level of performance within the relevant spaces. Where a consistent level of performance is not provided across the entire asset for a particular issue, the final score for that issue is determined by the space with the lowest level of performance. This applies to all BREEAM In-Use International issues for all assessments, unless stated within the respective issue. Where an asset is made from a variety of asset types, the Assessor must provide evidence that demonstrates the level of performance from each asset type for each issue. For example, where there is retail and office space within a single assessment, the sample of evidence must include documentation for each type. This should be supported by a verification statement from the Assessor outlining what has been witnessed and verified during the site visit, clarifying the situation to BRE Global quality assurance.

Clear, ordered and well referenced evidence for each BREEAM issue and criterion facilitates efficient quality assurance and a certification decision. The submission of Assessor Verification Comments and the collection and referencing of evidence can all be undertaken within the BREEAM In-Use International Online Platform.

The evidence file name should include the BREEAM In-Use International Issue reference number as well as the name of the document/file (e.g. Rsc01_Condition survey) to ensure ease of reference in the BREEAM In-Use International Assessor’s comments and for Quality Assurance.

If large, multipage documents are used as evidence, the BREEAM In-Use International Assessor should highlight the page or section of the document that demonstrates compliance and reference this specifically in their Assessor verification comments. If photos are used as evidence, these must clearly show how compliance with a criterion is sought and, where needed, be annotated. Photos must also be date stamped to confirm when they were taken.

The BREEAM In-Use International Assessor determines the BREEAM rating and the submission of Assessor Verification Comments via the BREEAM In-Use International Online Platform. This 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, i.e. the assessment and determination of the BREEAM rating has been conducted in accordance with the requirements of the scheme.

Evidence types

Evidence does not necessarily need to be prepared specifically for the purpose of the BREEAM assessment. In many instances, the Assessor should source readily available and prepared information to demonstrate compliance. For this reason, BREEAM aims to avoid being prescriptive on the type of evidence required, although some issues do require specific documents.

The BREEAM In-Use International Assessor will find that many assessment issues require more than one piece or type of information to demonstrate compliance with one criterion. Alternatively, one piece of information may be sufficient to demonstrate compliance with multiple criteria.

To help the BREEAM In-Use International Assessor understand how the different types of documentation they collate can be used as evidence, evidence types are grouped broadly into three categories:

1) **General evidence** includes a broad list of defined information commonly produced for an asset. One or more pieces of this type of information can be used to demonstrate compliance for one or more of the assessment issues and criteria, as deemed appropriate by the BREEAM In-Use International Assessor.

   General BREEAM evidence types are listed in Table 13 and not specifically in the Evidence section within each BREEAM issue. Not all general evidence types will be appropriate for all assessment issues and it is the responsibility of the BREEAM In-Use Assessor to ensure that the evidence provided specifically demonstrates compliance and is fully referenced in the assessment submission.

2) **Specific evidence** is particular information that must be provided to verify compliance with the relevant criteria for the BREEAM credit sought. In all cases this is the only type of evidence acceptable to BRE Global Ltd for that particular issue or criterion. If the specific evidence is not provided and referenced appropriately in the assessment submission, the Quality Assurance audit will identify it as a non-conformity and a certification decision will be delayed until such time as the non-conformity is addressed.

   When required, specific evidence is defined and listed in the Evidence section of the assessment issue. Specific evidence required to demonstrate compliance with particular criteria is listed but this evidence alone may not be sufficient to demonstrate full compliance. Additional general evidence types may also be required. Not all BREEAM In-Use issues have specific evidence requirements.

3) **Other types** of evidence provided by a client not listed in Table 13 or the 'Evidence' section for each issue, can still be used. To avoid non-conformities and delays in certification, other types of evidence must be credible, robust and traceable to the same assurance level as, or better than, specified or general evidence types defined in the technical manual. If in doubt, BRE should be contacted prior to awarding credits and referencing such evidence in the submission for QA and certification decision.

For some assessment issues, the BREEAM In-Use Assessor will require a mix of general and specific evidence types.

Evidence principles

BREEAM Assessors and the BRE Global Ltd Quality Assurance work to the following evidence principles.

Where specific evidence is defined and listed in the 'Evidence' section within each assessment issue, this must be sourced and verified by the BREEAM In-Use International Assessor.

Where no specific evidence is listed, this means there are potentially a number of different types of 'general' asset information, as outlined in Table 13 that the BREEAM In-Use International Assessor can source and use to demonstrate compliance.

To determine whether general evidence types are appropriate for an assessment issue, the BREEAM In-Use International Assessor must consider the BREEAM evidence principles outlined in Table 12. Where the 'general evidence types' meet the principles outlined in Table 12 and the guidance provided in the 'robustness of evidence' section, where appropriate, such evidence is admissible for the assessment and the BRE Global Quality Assurance audit.

These principles are not listed in a hierarchical order and are all equally important when considering which evidence type to assess, reference and submit.

Table 12: BREEAM evidence principles

Principle	Objective	A question to ask to check
1 – Evidence for all criteria and all credits sought		
Evidence demonstrates that ALL relevant criteria and sub-criteria are achieved for each credit sought and where relevant, is provided to support definitions etc.	Completeness	Are all criteria and sub-criteria covered? Have all relevant and definitions been addressed?
2 – Unambiguous assessment		
The assessment demonstrates unambiguous compliance and the evidence support this assessment. Evidence (and supporting notes) clearly demonstrate to a third-party reviewer that the criteria have been met.	Independent review compatibility	Would a third party (e.g. BRE Global Ltd) come to the same assessment decision based on the evidence submitted?
3 - Robust		
Always ensure the evidence type is robust. Evidence selected contains all the relevant basic information along with robust constituent parts that are needed. (see Robustness of evidence section for further details on both of the above)	Proof that evidence is robust and from a reliable source	Using a BREEAM In-Use International Assessor's judgement, is the evidence robust enough to demonstrate compliance with this criterion? Does the evidence contain all the relevant basic information? Does it provide a fully auditable trail of compliance?
4 – Use existing evidence		
Use existing asset 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 an existing type of asset information robustly demonstrate compliance for the credits sought?

Robustness of evidence

Robust evidence provides confirmation that the assessment has been carried out correctly and the asset 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 robust and appropriate 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. The minimum information the BREEAM In-Use International Assessor must expect to see when certain types of evidence are submitted is listed below:

- **Communication records**: Any communication records used as evidence must provide clear confirmation of the asset name, author's identity and role, the date and the identity of the recipients.
- **Formal letters of correspondence**: Letters should be on company or organisation headed note-paper with a signature (electronic signatures are acceptable). Ideally letters should be a secured document.
- **Drawings/site plans/maps/installation diagrams:** All of these should include the building or site name, title of drawing, date, revision number and a scale.
- **Specification/building manual:** A specification or building manual clearly relates to the asset under assessment, and it has a date and revision number. Where sections of a specification or building manual are provided, the Assessor should reference the extract and as a minimum submit the front and contents page of the document detailing the project name, revision number and date. Specifications must always refer to operational conditions.
- **Photographic evidence:** This should be dated and have a title/description to clearly link it to the asset and issue concerned.

For other types of evidence not listed, the BREEAM In-Use International Assessor should use this minimum information list as a guide to suitable evidence. As a minimum the evidence used to assess compliance must contain key information such as the author, date, revision numbers etc.

Table 13: Evidence types

Ref	Document or evidence type	Description and notes
E1	Billing data	Evidence in the form of billing that supports the requirements outlined in the criteria. Billing data must be from the organisation providing the billed services to the asset.
E2	Building (Energy) Management Systems(B(E)MS)/Metering data	Evidence on consumption of metered utilities, such as gas, electricity and water. This data can either be from individual sub-meters or collected through B(E)MS that is installed in the asset.
E3	Building information model (BIM)	The BIM (or BIM files) used for the project containing relevant information/evidence of compliance.

Ref	Document or evidence type	Description and notes
E4	BRE Global correspondence reference number	For example, the reference number for a BRE Global response to a BREEAM In-Use International Assessor’s technical query.
E5	BREEAM In-Use Assessor’s site inspection report	A formal report based on the BREEAM In-Use Assessor's own survey of the site or building to confirm compliance with BREEAM criteria. A BREEAM In-Use International Assessor’s Site Visit Report (SVR) can serve as a form of evidence of compliance in its own right and should include photographs taken by the BREEAM In-Use International Assessor as part of the survey.
E6	Certificates of compliance (third party)	Examples include ISO 14001, BES 6001, FSC (Forest Stewardship Council), EPC (Environmental Profile Certificate), EPD (Environmental Product Declaration) etc.
E7	Communication records	Formal communication records between or from relevant project stakeholders or other third parties confirming an appointment, action or outcome. This may be in the form of a letter, meeting minutes, email correspondence, publication or another form of media (see also additional guidance on following pages).
E8	Computer aided modelling results and outputs	Examples include thermal modelling, flooding, life cycle assessment/modelling, life cycle costing, ventilation modelling etc.
E9	Contractual information	Documents/contracts outlining how certain maintenance/monitoring/testing or other service is carried out by a (third) party.
E10	Other third-party information	For example, maps, public transport timetables, product data or details, manufacturers’ literature, government or local standards or codes, product labelling.
E11	Photographic evidence	Digital images that support or confirm that building services/ elements or other relevant infrastructure or product is in place/ installed at the asset.
E12	Professional services contract	An agreement to provide professional or consulting services such as: maintenance, testing, or legal or technical advice.
E13	Risk assessment	The risk assessment considers the various design risks and other risks on a project and how each risk will be managed and the party responsible for managing each risk.

Ref	Document or evidence type	Description and notes
E14	Professional specialist reports	Professional reports resulting from specialist surveys/studies/test results including (but not limited to): • Environmental Management Systems/Plans • Flood risk assessment • Acoustics • Indoor air quality • Transportation analysis • Commissioning and maintenance reports and • strategies • Landscape and habitat management plan • Legionella management plan, etc.
E15	Schedule of services	A list of specific services and tasks to be undertaken by a party involved in the project which is incorporated into their professional services contract.
E16	Staff interviews	Interviews with staff members that support that specified (management) practices/reviews are being carried out in the asset. Staff interviews are an important part of the verification that formal processes/procedures/documents are made available to staff/building users.

Building Details

Asset

The following details should be entered when an asset is created.

Note: Fields marked * are mandatory.

Basic asset details

Field name	Description
Asset Manager*	Select the Asset Manager. **Note**: This is a user type in the BREEAM In-Use online platform. Clients can create users and designate them as an Asset Manager to give them read/ write access to the assessment.
Name of Asset*	Enter the name of the asset. **Note:** The name of the asset entered here will appear above the asset's address on any certificates produced for this asset. The certificate shows a maximum of 28 characters.
Asset Description	Enter a short description of the asset. **Note:** Asset Description cannot be more than 500 characters.
Year Built*	Select the period in which the asset was constructed.
Year Built specific	Enter the year construction was completed (if known).
Most recent major refurbishment	Select the year of the most recent major refurbishment.

Full asset address

Field name	Description
Address Line1*	First line of address for the asset (if the asset only comprises part of a building, additional details relating to the entire building should also be entered).
Address Line2	Second line of address for the asset. **Note:** Address line 1 and Address line 2 will be combined as a single line on the certificate and a maximum of 28 characters will be shown.
Address Line3	Third line of address for the asset.
Address Line4	Fourth line of address for the asset. **Note:** Address line 3 and Address line 4 will be combined as a single line on the certificate and a maximum of 28 characters will be shown.

Town/City*	Address Town or City.
Country*	Select country.
County/Region*	Select county or region.
Postcode/ZIP code*	Address Postcode or Zip code.

Basic building details

Basic building details should be completed when a measurement is created. This section is divided into three parts: Assessment Scope, Asset Dimensions, and Asset Type.

Note: Fields marked * are mandatory.

Assessment scope

Asset Ownership/Occupier

Asset Ownership/Occupier contains questions about the asset owner and its occupier(s). Filling out this data will assist in determining who carries the responsibility for carrying out or implementing the requirements as outlined in the criteria.

Field name	Description
Name of the organisation or person that owns the asset	Enter the name of the person or organisation that owns the asset.
Name of the organisation that manages the tenancy of the asset	Enter the name of the organisation that manages the tenancy of the asset.
Name of the organisation or person that occupies/leases the asset	Enter the name of the organisation or person that occupies/leases the asset.
Name of the organisation leading the BREEAM In-Use International assessment	Enter the name of the organisation leading the BREEAM In-Use International assessment.

Occupancy

Occupancy contains questions about the number of occupants and operating hours. Filling out this data will assist in determining whether requirements relating to services or fixtures that have been provided to occupants have been met.

Field name	Description
Number of occupants	Enter the number of occupants. **Note:** To calculate the number of full-time occupiers: Divide the total hours worked by contracted building occupants during the reporting period by the total number of contracted building occupants. Then divide the answer by the typical number of hours within the period, assuming that a typical working day is 8 hours and the typical number of working days in a full reporting year is 250.

Annual operational days	Enter the total number of days per year that the asset is operating.
Daily operational hours	Enter the total number of hours per day that the asset is operating.

Asset dimensions

The following questions relating to the floor area of the asset **only refer to the area of the asset that will be assessed.** Please refer to Eligibility criteria for further details.

Field name	Description
Gross Internal Area (m^2)*	Enter the Gross Internal Area (GIA) in m^2 of the assessed space.
Measurement standard*	Select/enter the measurement standard used to determine GIA (if known). Examples can include, but are not limited to: • Code of Measuring Practice (RICS) • International Property Measurement Standards (IPMSC) • A Unified Approach to Measuring Office Space (BOMA and IFMA) • Other (please state) • Unknown measurement standard used.
Generally, the Gross Internal Area is the area of an asset measured to the internal face of the perimeter walls at each floor level. In a single occupier asset, the GIA should equal the GLA. In a multi-tenanted asset, the GIA is the sum of Gross Lettable Area (GLA) and Non-Lettable Area (NLA). Furthermore, for the purposes of BREEAM In-Use International: a) If an assessment is only carried out for the common areas, the GIA equals NLA. b) If an assessment is carried out for a multi-tenanted asset's common areas AND tenanted areas that are managed by the asset's facility/building manager, the GIA should equal the sum of NLA and GLA of the tenanted areas. The BREEAM In-Use International Assessor (herein referred to as the Assessor) **must** ensure that **all** consumption data that is filled out in the BREEAM In-Use International Online Platform relates to the area entered as the GIA. If the asset comprises multiple types, the GIA must be equal to the sum of the floor area of all asset types.	

Field name	Description
Non-Lettable Area (m^2)	Enter the Non-Lettable Area (NLA) in m^2
Non-Lettable Areas or common areas are understood to be floor space area within a building from which no income can be derived. Examples include common use areas, lift lobbies, stairwells, plant and technical rooms, management offices or rooms, non-exclusive public spaces and thoroughfares. Within BREEAM In-Use International, it has been agreed that parking areas, whether enclosed, multi-storey or surface facilities, will be **excluded** from Non-Lettable Areas.	

Field name	Description
Gross Lettable Area (m^2)	Enter the Gross Lettable Area (GLA) in m^2
Gross Lettable Area of an asset is the floor space contained within a tenancy at each floor level measured from the inside of main faces of external walls and, where applicable, the inside faces of internal inter-tenancy, partition and common area walls. Within BREEAM In-Use International, it has been agreed that parking areas, whether enclosed, multi-storey or surface facilities, will be **excluded** from Gross Lettable Areas.	

Field name	Description
Planning restrictions	Select any planning restrictions that might be in place.
Width (external) (m)	Enter the building width in m. This is only the width of external façade.
Length (external) (m)	Enter the building length in m. This is only the length of external façade.
Height (floor-to-floor height) (m)	Enter the floor to floor height in m.
Number of floors above ground	Enter the number of floors above ground in your building.
Number of floors below ground	Enter the number of floors below ground in your building.
Area covered by hard landscaping (m^2)	Enter the area covered by hard landscaping in m^2
Area covered by soft landscaping (m^2)	Enter the area covered by soft landscaping in m^2

Asset type

Asset type contains questions relating to the space type(s) within the asset. For a full list of these asset types, please refer to Table 5.

Note: Questions marked * are mandatory, as the inputs are used to generate the energy scores. If the asset comprises multiple types, the Gross Internal floor Area filled in under Asset dimensions must be equal to the sum of all asset types.

Field name	Description
Asset type*	Select the main asset type.
Asset sub-type*	Select the main asset sub-type.
Gross Internal Area (m^2)*	Enter the main asset type Gross Internal Area.

The main asset type is the space type within the assessed area that accounts for the largest percentage of the total assessed area.

For each additional space type, select the Type and Subtype and enter the Gross Internal Area in m^2.

Part 1 Asset Performance

Table 14: Asset Performance categories, credits available and environmental weightings

Environmental category	Credits available	Category weighting
Management	n/a	0%
Health and Wellbeing	47	20%
Energy	66	25%
Transport	22	5%
Water	38	11%
Resources	23	13%
Resilience	18	13%
Land Use and Ecology	06	4%
Pollution	18	9%
Total	**238**	**100%**
Exemplary (additional)	12	10%

Asset Performance:
Health and Wellbeing

20%

Summary

This category encourages provision of healthy, safe, comfortable and accessible environments, both internally and externally, for all users.

Context

The World Health Organisation (WHO) defines health as “a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity” and that “the enjoyment of the highest attainable standard of health is one of the fundamental rights of every human being without distinction of race, religion, political belief, economic or social condition”. The United Nations has made “Good Health and Wellbeing” one of its 17 Sustainable Development Goals (SDGs) with the aim to “ensure healthy lives and promote wellbeing for all at all ages” (Goal 3). On average, people spend over 90% of their lives in and around buildings and much of the rest of their time travelling between them. Consequently, the built environment is critical to our health and wellbeing as a result of the conditions and facilities that it provides and the behaviours that it encourages. Additionally, staff costs typically contribute 90% of the total financial burden associated with a building-based business. The impact of productivity, attraction and retention, and general employee satisfaction on the bottom line means that staff wellbeing is vital to business success. The environments in which staff work, live and play are fundamental to all these factors. There is well established evidence that shows that the internal environmental conditions in buildings, including visual comfort, indoor air quality, thermal comfort and acoustic comfort, can have a significant impact on our physical and mental health. Health impacts associated with buildings include eyestrain, cardiovascular and coronary problems, bronchial complaints including asthma and allergies, dermatological complaints, musculoskeletal problems and a range of psychological impacts such as fatigue, stress, anxiety and depression. Higher risk individuals, including: the young, elderly, disabled and sick, can experience a range of other health impacts arising from their environment, many of which can have major and sometimes life-threatening effects.

Issues

Hea 01	Daylighting	4 credits +1 Exemplary

Aim:

To ensure asset users have access to good levels of daylight.

Value:

Provides a connection to nature to enhance mood and helps to regulate circadian rhythms.

Helps to reduce energy costs and environmental impact by reducing the need for electric lighting.

Hea 02	Control of glare from sunlight	4 credits

Aim:

To recognise and encourage features that control glare from sunlight in occupied spaces.

Value:

Prevents visual discomfort, eye fatigue and headaches.

Reduces overheating and provides privacy.

Hea 03	Internal and external lighting levels	6 credits

Aim:

To ensure appropriate lighting is provided to enable asset users to perform visual tasks efficiently and accurately.

Value:

Allows asset users to perform relevant tasks safely, efficiently and comfortably.

Improves asset users' perception of a space and ability to accurately perceive the surroundings and to differentiate between objects.

Hea 04	Lighting control	4 credits

Aim:

To encourage the provision of lighting that allows asset users to have an appropriate level of control.

Value:

Allows asset users to meet their individual needs commensurate with the tasks being undertaken in the space.

Improves user satisfaction of the space.

Hea 05	Minimising flicker from lighting systems	4 credits

Aim:

To encourage the installation of lighting systems that minimise the impact of flicker on asset users.

Value:

Prevents visual distraction, fatigue and decreased visual performance.

Reduces physiological effects such as headaches, eyestrain and the risk of epileptic seizures.

Hea 06	View out	4 credits

Aim:

To allow asset users the opportunity for the relaxation afforded by a change of scene and a change from a constant focus at workstations.

Value:

Provides a connection to outdoor space and nature to enhance mood and productivity.

Hea 07	User comfort control	4 credits

Aim:

To recognise the provision of controls allowing asset users to optimise their comfort levels.

Value:

Ensures asset users can maintain comfort levels if internal temperatures or indoor air quality levels become uncomfortable.

Reduces the impact on the environment and operating costs through unnecessary heating or cooling.

Hea 08	Ventilation system air intakes and exhausts	2 credits

Aim:

To ensure that the asset ventilation system minimises the entry of external sources of air pollution.

Value:

Reduces the potential for indoor air pollution from a variety of pollution sources.

Supports the physical health of building occupants by reducing the risk of health concerns associated with indoor air pollution from external sources.

Hea 09	Carbon dioxide sensors	4 credits

Aim:

To encourage the monitoring of internal conditions to ensure a healthy indoor environment is provided.

Value:

Ensures good levels of indoor air quality are maintained.

Alerts asset users to changes in indoor air quality.

Hea 10	Carbon monoxide detection	2 credits

Aim:

To protect asset users from harmful levels of carbon monoxide associated with the asset's combustion appliances and enclosed parking areas.

Value:

Ensures asset users are protected from the harmful effects of carbon monoxide.

Assists in the identification of problems with combustion appliances or ventilation systems.

Hea 11	Provision of rest areas	3 credits

Aim:

To recognise and encourage the provision of rest areas for asset users.

Value:

Facilitates asset users to take breaks away from work areas to help improve wellbeing and productivity.

Encourages activities that have physical, mental and social benefits for asset users.

Hea 12	Inclusive design	4 credits +1 Exemplary

Aim:

To recognise and encourage assets that are inclusive for users.

Value:

Ensures safe and convenient access to, and movement around the asset for all users.

Ensures assets can accommodate users with the widest range of characteristics and capabilities.

Hea 13	Drinking water provision	2 credits

Aim:

To ensure clean and fresh sources of drinking water are provided for asset users.

Value:

Ensures asset users can stay hydrated, driving physical and mental wellbeing.

Helps to offset potential safety risks from reduced concentration caused by dehydration.

Asset Performance: Hea 01 Daylighting

4 Credits 1

No Minimum Standard

Aim

To ensure asset users have access to good levels of daylight.

Question

Do relevant occupied spaces have glazed areas that allow asset users to experience daylight?

Credits	Answer	Select a single answer option
0	A.	Question not answered
0	B.	No
1	C.	Yes, ≥ 10% of the total area of the asset's external walls and roof is glazed
2	D.	Yes, ≥ 50% of occupied space meets the minimum performance requirements for glazed area as a percentage of floor area
4	E.	Yes, ≥ 80% of occupied space meets the minimum performance requirements for glazed area as a percentage of floor area
Exemplary	F.	Yes, all occupied space meets the minimum performance requirements for glazed area as a percentage of floor area

Assessment criteria

Criterion	Assessment criteria	Applicable Answer
1.	**Filtering** This assessment issue can be filtered out where the only relevant occupied space requires daylight to be excluded or lighting conditions to be strictly controlled.	All
2.	Glazed areas must let daylight pass directly into the asset and include side windows and roof lights.	C – F
3.	For each relevant occupied space, the glazed area expressed as a percentage of the floor area (see Methodology) meets or exceed, the minimum performance requirements in Table 15. Credits are awarded based	D – F

Criterion	Assessment criteria	Applicable Answer
	on the percentage of all relevant occupied space (weighted by floor area) that meets the minimum performance requirements.	
4.	Only relevant occupied spaces are to be included in the assessment. Spaces that do not need to be assessed include, but are not limited to; changing rooms, break out space, meeting and conference rooms, toilet areas, and circulation space.	D – F

Methodology

Calculating glazed area as a percentage of floor area in occupied spaces and assessment against the minimum performance requirements

The following steps must be followed in order to assess whether the asset demonstrates compliance with the minimum performance requirements. Where daylight needs to be excluded from or lighting conditions need to be strictly controlled in an occupied space, e.g. media or arts production areas, special education needs sensory space or x-ray rooms, these spaces can be excluded from assessment.

1. Determine the latitude for the asset's location.
2. Calculate the net internal area (m^2) for each relevant occupied space and the total net internal area (m^2) for all relevant occupied spaces.
3. For each relevant occupied space, calculate the total glazed area (m^2) of all windows and roof lights within the space. The frames are not included in the calculation, only the area of glass.
4. For each relevant occupied space, calculate the percentage of glazed area to floor area as follows:

$$\boldsymbol{Percentage\ glazed\ area\ to\ floor\ area} = \left(\frac{\boldsymbol{Total\ glazed\ area\ in\ occupied\ space}}{\boldsymbol{Net\ internal\ area\ of\ occupied\ space}}\right) \times \mathbf{100}$$

5. For occupied spaces with tinted or diffusing glazing, it is necessary to apply a glass transmittance weighting to the glazed area to floor area percentage. For clear or low emissivity single, double or triple glazing, no weighting correction is required. For tinted or diffusing glazing, the glazing to floor area percentage is multiplied by T/0.8, where T is the light transmittance of the glazing (expressed as a decimal). If the glass transmittance is not known, the glazing to floor area percentage is multiplied by 0.25 for tinted glazing and by 0.60 for diffusing glazing.
6. For each relevant occupied space, check that no part of the occupied space is more than x metres on plan from the glazed area, where x is three times the height of the top of the glazed area above the floor level. For example, if the height to the top of a glazed area from the floor is 3m, then no part of the occupied space must be further than 9m from the glazed area. Where an occupied space does not meet this distance requirement, it is not possible for the space to comply with the minimum performance requirements.
7. For each relevant occupied space, check if there are any external obstructions (e.g. adjacent buildings or structures, trees or hedges, etc.) that will potentially limit the amount of daylight reaching the space. If there is an obstruction, its horizontal distance away from the glazing must be greater than its height above the centre of the glazing. For example, if an obstruction's height is 10m above the centre of the glazing, then the obstruction must be at least 10m away from the glazing. Where an obstruction does not meet this distance requirement, the obstructed glazing does not count towards the total glazed area in the calculation.

8. For each relevant occupied space, compare the transmittance weighted glazed area to floor area percentage to the minimum performance requirements in Table 15 for the asset's latitude to assess whether the occupied space is compliant or not.
9. Calculate the percentage of all relevant occupied space within the asset that meets the minimum performance requirements in accordance with steps 4 - 8 above, and therefore determine the number of credits that can be awarded, as follows:

$$\textit{Percentage of relevant occupied space} = \left(\frac{\textit{Total net internal area of compliant occupied space}}{\textit{Total net internal area of all relevant occupied space}}\right) \times 100$$

Daylighting calculations, measurement and simulation

Where daylighting calculations, measurement or simulation have previously been performed for the asset, for example as part of the asset's design and construction, and there have been no changes to the layout or glazing in relevant occupied space and there are no new external obstructions, then these studies may be used as an alternative method of demonstrating compliance with the criteria. The daylighting studies must demonstrate that daylight levels in ≥ 50% or ≥ 80% of relevant occupied space meet local good practice requirements (e.g. achievement of the BREEAM New Construction or Refurbishment and Fit-out scheme 'Daylighting' credits).

Checklists and Tables

Table 15: Minimum performance requirements for glazed area as a percentage of floor area in occupied space

Latitude	< ±40°	≥ ±40° < ±45°	≥ ±45° < ±50°	≥ ±50° < ±60°	≥ ±60°
Glazed area to floor area	≥ 7%	≥ 8%	≥ 9%	≥ 10%	≥ 11%

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
2 - 4	Documentation specifying the floor area and glazed area in occupied spaces and calculations in accordance with the Methodology.
2 - 4	Photographic evidence of building elevations, glazed areas in occupied space and any obstructions.

Definitions

Occupied space:

A room or space within the asset that is likely to be continuously occupied for 30 minutes or more per day by an asset user.

Additional information

Glazed areas and overheating

This assessment issue focuses on the provision of minimum glazed areas for the purposes of allowing good levels of daylight within occupied space. As such, no maximum limit has been stipulated. However, overheating in a space can be a problem if glazed areas are too large.

Asset Performance:

Hea 02 Control of glare from sunlight

4 Credits

No Minimum Standard

Aim

To recognise and encourage features that control glare from sunlight in occupied spaces.

Question

Are features that control glare from sunlight provided in relevant occupied space?

Credits	Answer	Select a single answer option
0	A.	Question not answered
0	B.	No
2	C.	Yes, in ≥ 50% of all relevant occupied space
4	D.	Yes, in ≥ 80% of all relevant occupied space

Assessment criteria

Criterion	Assessment criteria	Applicable Answer
1.	Credits are awarded based on the percentage of relevant occupied space (weighted by floor area) that contains compliant glare control features (see Methodology).	C, D
2.	Control of glare from sunlight is required in occupied space where glare could be problematic for regular asset users. This includes in spaces with computer workstations that are used regularly (e.g. in offices, laboratories, libraries, control rooms and reception desks) and in spaces where people are likely to spend a significant amount of time in fixed locations (e.g. classrooms, hospital wards, retail checkouts, court rooms and factory production lines). Glare control must provide shading from both high-level summer and low-level winter sun where relevant to the sun positions found year-round in the country of assessment. Where relevant, glare control features must cover roof lights as well as side windows.	C, D
3.	Where a relevant occupied space does not have any windows or roof lights and is not at risk of glare from sunlight from connected spaces without glare control measures, e.g. atria, then the space can be considered to be compliant with the criteria and can be included in the calculation of the	C, D

Criterion	Assessment criteria	Applicable Answer
	percentage of relevant occupied space with compliant glare control features (see Methodology).	
4.	Potentially compliant glare control features include: • Building-integrated measures, e.g. overhangs or fins. • Occupant-controlled devices such as opaque Venetian or close weave fabric blinds, where the openness factor of blinds is 1% or less, and where the fabric light transmittance value is < 0.1 (10%). • External shading or brise soleil. • The asset's form or layout mitigates the potential for glare from sunlight, e.g. adjacent buildings provide adequate shade, north facing side windows for locations in the northern hemisphere, etc. • A combination of the above. The use of curtains, tinted glazing or window films are not compliant glare control features as they do not provide sufficient control to optimise daylight into the space and are likely to cause asset users to rely more on artificial lighting.	C, D

Methodology

Calculating the percentage of occupied space with compliant glare control features

The percentage is calculated based on the net internal area of relevant occupied space as follows:

Percentage of relevant occupied space with compliant glare control features =

$$\left(\frac{\begin{array}{c}\textbf{\textit{Net internal area of relevant occupied space}}\\ \textbf{\textit{with compliant glare control features}}\end{array}}{\begin{array}{c}\textbf{\textit{Total net internal area of all relevant occupied space}}\\ \textbf{\textit{requiring compliant glare control features}}\end{array}}\right) \times \mathbf{100}$$

For example, for an asset with a total net internal area of all occupied space of 1,000 m^2, at least 500 m^2 of net internal floor area of occupied space must have compliant glare control features to achieve any credits.

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
1 - 4	Photographic evidence of glare control features.

Definitions

Glare:

Condition of vision in which there is discomfort or a reduction in the ability to see details or objects, caused by an unsuitable distribution or range of luminance, or by extreme contrasts.

Additional information

Solar shading guidance

The following reference sources provide guidance on commonly used glare control features and shading devices and may be used to help find the best solution(s) for an asset's situation:

- BR 364 Solar shading of buildings (Second edition), BRE, 2018
- Tips for Daylighting with Windows: The Integrated Approach, Lawrence Berkeley National Laboratory and US Department of Energy, 2013.

Asset Performance:

Hea 03 Internal and external lighting levels

6 Credits

0

No Minimum Standard

Aim

To ensure appropriate lighting is provided to enable asset users to perform visual tasks efficiently and accurately.

Question

Do internal and external lighting levels meet best practice illuminance (lux) levels in occupied space?

Credits	Answer	Select either B, C or D, Answer E can be selected independently
0	A.	Question not answered
0	B.	No
2	C.	Yes, ≥ 50% of occupied space meets best practice illuminance (lux) levels for internal lighting
4	D.	Yes, ≥ 80% of occupied space meets best practice illuminance (lux) levels for internal lighting
2	E.	Yes, ≥ 80% of relevant external space meets best practice illuminance (lux) levels for external lighting

Assessment criteria

Criterion	Assessment criteria	Applicable Answer
1.	**Filtering** The external lighting credits can be filtered out in the following circumstances: a) Where no external light fittings are installed (either separate from or mounted on the external asset's façade or roof) and external lighting is not required for safety or task performance reasons. OR b) External spaces are not within scope of the assessment.	E
2.	Credits are awarded based on the proportion of internal or external space that meets the relevant best practice illuminance levels (average illuminance and illuminance uniformity) for task areas in each space. For the	C – E

Criterion	Assessment criteria	Applicable Answer
	purposes of this assessment issue, the following standards are considered to contain best practice illuminance (lux) levels: • EN 12464-1:2011 Light and lighting – Lighting of work places - Part 1: Indoor work places • EN 12464-2:2014 Light and lighting – Lighting of work places - Part 2: Outdoor work places • Society of Light and Lighting (SLL), Code for Lighting, 2012 • Illuminating Engineering Society (IES), The Lighting Handbook 10th Edition, 2011. Alternatively, where local standards have similar requirements to any of the above standards, the local standard may be used to demonstrate compliance with this criterion.	
3.	Illuminance levels are measured in occupied space by a suitably qualified person in accordance with the procedure(s) in the relevant best practice standard (criterion 2). Where the best practice standard does not stipulate procedures for measuring illuminance, the procedure in the methodology section must be followed. If during measurement light fittings need to be added or removed or covered in an occupied space to achieve the best practice illuminance levels, the occupied space would not comply with the criteria.	C – E
4.	External spaces within the scope of the external lighting requirements include, but are not limited to, the following: • Walkways exclusively for pedestrians • Traffic areas for slowly moving vehicles (maximum 10 km/h), e.g. bicycles, trucks and excavators • Regular vehicle traffic (maximum 40 km/h) • Vehicle turning, loading and unloading points • Parking areas.	E

Methodology

Procedure for measuring illuminance

The suitably qualified person must confirm that they have used either the illuminance verification procedure(s) stipulated within the relevant best practice standard (criterion 2) or where the best practice standard does not stipulate procedures for measuring illuminance, the following procedure:

- Illuminance measurements should be undertaken using calibrated illuminance meters with a photocell that is both colour/spectrally and cosine corrected. The deviation of the calibration values as per the calibration certificate should be applied when analysing the measurement results. Additionally, it should be checked that the ambient temperature during the measurements does not depart markedly from the ambient temperature for which the photocell had been calibrated (typically, this is 25°C); if this is the case, then the measured values should also be corrected for ambient temperature.

- Illuminance meters with an integrated photocell should be checked for the correct levelling on the measurement surface. In the case of illuminance meters that have a detachable photocell, the photocell should be secured inside a specially designed holder and the holder should be checked for the correct levelling on the measurement surface.
- The mains voltage supply in the test areas should be stable during measurements.
- It should be checked that there are no unusual temperature differences between different zones of the test areas. The artificial lighting should also be kept on long enough so that its light output stabilises (e.g. at least 20 minutes for fluorescent, discharge or LED lighting).
- Indoor illuminance measurements should be carried out so that daylight penetration is avoided completely whilst taking the readings. In spaces with windows, illuminance measurements would ideally be undertaken after dusk; if blinds are fitted, these should be closed in order to minimise any potential stray light from buildings nearby and external lighting. Measurements of outdoor illuminance should be carried out when it is fully dark and in good weather conditions.
- Items within the measurement areas should be kept to a level that would be expected during normal use. Additionally, the suitably qualified person should be far enough away from the photocell, ideally below its height if possible, to avoid casting shadows or preventing light from being reflected onto the photocell.
- Illuminance measurements are normally required to assess average illuminance or illuminance uniformity on the working plane or other task areas that can be horizontal, vertical or inclined. In existing buildings, task areas, e.g. fixed desks, inclined planes of industrial equipment or vertical storage rack faces, are generally known. In an open task area, a grid of measurement points should be set out. The distance between the measurement points p is calculated using the formula:

$$p = 0.2 \; x \; 5^{(log_{10} d)}$$

Where d is the length of the longer dimension of the area being measured, and thus the number of points in the relevant dimension is given by the nearest whole number of d/p. The resulting spacing between the grid points is used to calculate the nearest whole number of grid points in the other dimension. Once illuminance is measured at each grid point, average illuminance can be determined as the arithmetic mean of the measured values. Illuminance uniformity can be calculated as the ratio of the minimum illuminance (as measured) to the average illuminance (as calculated).

- For horizontal task planes, a perimeter zone of 0.5m from the walls can be excluded from the measurement area except when a task area is in or extends into this perimeter zone.
- Alternatively, spot readings of illuminance may be taken at all locations where people are working, for example on each desk in an open plan office. This is acceptable practice where measurement grids cannot be defined due to the presence of obstructions in the measured areas. An occupied space is deemed compliant if both the average illuminance and the average uniformity ratio (given by minimum illuminance divided by average illuminance) are within standard recommendations.
- For spaces with more than one type of task area, each with different best practice illuminance levels, compliance is achieved if the average illuminance and the average uniformity ratio for all task area types are within the best practice recommendations.
- For assets with identical lighting systems and floor layouts across multiple areas or floors, illuminance levels in a representative sample of areas or floors may be measured, if in the professional opinion of the suitably qualified person, these are likely to give measurements that reflect the performance of the lighting in all relevant spaces within the asset. Illuminance measurements must be taken at least every

five years and after any changes to lighting systems. Where the asset is less than five years old and illuminance levels were assessed as part of the design or construction of the asset that demonstrate compliance with the criteria in this assessment issue, then the results of these studies may be used as evidence (assuming there have been no changes to the lighting systems in the intervening period).

Calculating percentage of internal and external space with compliant illuminance levels

For internal lighting, this is based on net internal floor area as follows:

Percentage of occupied space with compliant illuminance levels for internal lighting =

$$\left(\frac{\begin{array}{c}\textit{Net internal area of occupied space with compliant illuminance}\\ \textit{levels for internal lighting}\end{array}}{\begin{array}{c}\textit{Total net internal area of all occupied space requiring compliant illuminance}\\ \textit{levels for internal lighting}\end{array}}\right)\times 100$$

For example, for an asset with a total net internal area of all occupied space of 1,000 m^2, at least 500 m^2 of net internal floor area of the occupied space must meet the best practice illuminance levels for internal lighting to achieve any credits.

For external lighting, this is based on the area of relevant external space as follows (where any external space does not fall within the scope of criterion 4, then this should be excluded from this calculation):

Percentage of external space with compliant illuminance levels for external lighting =

$$\left(\frac{\begin{array}{c}\textit{Area of relevant external space with compliant illuminance}\\ \textit{levels for external lighting}\end{array}}{\begin{array}{c}\textit{Total area of all relevant external space requiring compliant illuminance}\\ \textit{levels for external lighting}\end{array}}\right)\times 100$$

For example, for an asset with a total area for all relevant external spaces of 1,000 m^2, at least 800 m^2 of the relevant external spaces must meet the best practice illuminance levels for external lighting to achieve the credits.

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the ‘BREEAM evidential requirements’ section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
2 - 4	Documentation confirming the illuminance levels in occupied space meet the best practice levels and have been measured in accordance with the ‘Procedure for measuring illuminance’ (see Methodology).

Definitions

Illuminance:

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

Occupied space:

A room or space within the asset that is likely to be continuously occupied for 30 minutes or more per day by an asset user.

Suitably qualified person:

Someone that has demonstrable experience or training in undertaking lighting measurements in internal and external spaces.

Asset Performance:

Hea 04 Lighting control

4 Credits

0

No Minimum Standard

Aim

To encourage the provision of lighting that allows asset users to have an appropriate level of control.

Question

Are there lighting controls in relevant occupied space that allow control by asset users?

Credits	Answer	Select a single answer option
0	A.	Question not answered
0	B.	No
2	C.	Yes, in ≥ 50% of relevant occupied space
4	D.	Yes, in ≥ 80% of relevant occupied space

Assessment criteria

Criterion	Assessment criteria	Applicable Answer
1.	Credits are awarded based on the percentage of occupied space (weighted by floor area) that contains compliant lighting controls (see Methodology).	C, D
2.	Light switches or controls for each occupied space or lighting zone must be able to be accessed and operated by the asset users occupying that space or zone. Controls must be located in the immediate vicinity of the zone or space they control.	C, D
3.	Zoning of lighting controls is required for the following relevant occupied space: a) Office areas: zones of no more than four workstations (unless criterion 5 is applicable). Workstations adjacent to windows or atria and other building areas separately zoned and controlled. b) Hotel bedrooms: separate zoning of hallway, bathroom, desk and sleeping area (where present in the room). In the following spaces, control can be from a single location within the space (e.g. a supervisor's workstation):	C, D

Criterion	Assessment criteria	Applicable Answer
	a) Seminar and lecture rooms: zoned for presentation and audience areas. b) Teaching space and demonstration areas, including zoning of whiteboards and display screens. Areas adjacent to windows or atria and other building areas separately zoned and controlled. c) Library spaces: separate zoning of shelving, reading and counter areas. d) Auditoria: zoning of seating areas, circulation space and lectern area. e) Dining, restaurant, café areas: separate zoning of servery and seating or dining areas. Areas adjacent to windows or atria and other building areas separately zoned and controlled. f) Retail: separate zoning of display and counter areas, and shop windows. g) Bar areas: separate zoning of bar and seating areas. h) Day rooms and waiting areas: zoning of seating and activity areas and circulation space with controls accessible to staff. Areas adjacent to windows or atria and other building areas separately zoned and controlled. The following internal areas are excluded from the lighting zone requirements: a) Media and arts production spaces. b) Sports facilities (exercise spaces only, including hydrotherapy and physiotherapy areas). c) Transport interchanges. d) Areas with hazardous processes where switching off the lighting could be a safety risk.	
4.	Small rooms or spaces that are less than 25m² that do not require any subdivision of lighting zones or control will meet the zoning criteria by default.	C, D
5.	The limit of four workstations per zone in office areas is not a fixed requirement and is an indication of the required performance. Where the adopted lighting strategy exceeds the limit, compliance can be demonstrated if, using the Assessor's best judgement, it achieves the aim of the issue, i.e. where the zoning and control of lighting enables a satisfactory level of occupant control over lighting in their work area. This may include the provision of individual task lighting, e.g. desk lamps.	C, D
6.	For occupied spaces that are not listed in the above criteria, the Assessor can exercise an element of judgement when determining whether what is specified is appropriate for the space, given its end use and the aim of the issue.	C, D

Specific notes

Asset type specific	
1.	**Educational buildings** Areas used for teaching, seminar or lecture purposes must have lighting controls specified in accordance with the size and use of the space. For teaching spaces, controls are easily accessible to the teacher while teaching and on entering or leaving the teaching space. 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: a) Full lighting. b) Reduced lighting (to be considered the primary setting). c) Audience area lighting reduced to a low level and demonstration area lighting off (for video/image projection but allowing audience to take notes). d) All lighting off (for projection of specific content and for visual demonstrations). e) Separate localised lectern lighting (if present).

Methodology

Calculating the percentage of relevant occupied space with compliant zoning of lighting controls

Where zoning of lighting controls is not provided in all relevant occupied space as stipulated in the criteria, a reduced number of credits can still be achieved where ≥ 50% of relevant occupied spaces contain compliant zoning of lighting controls. This is based on floor area as follows:

Percentage of relevant occupied space with compliant lighting controls =

$$\left(\frac{\textit{Net internal area of relevant occupied space with compliant lighting controls}}{\textit{Total net internal area of all relevant occupied space requiring compliant lighting controls}}\right) \times 100$$

For example, for an asset with a total net internal area for all relevant occupied space of 1,000m^2, at least 500m^2 of net internal floor area of the occupied space must contain compliant lighting controls to achieve any credits.

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the ‘BREEAM evidential requirements’ section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
All	Lighting plans, data sheets or schedules.
All	Photographic evidence of lighting controls.

Definitions

Occupied space:

A room or space within the asset that is likely to be continuously occupied for 30 minutes or more per day by an asset user.

Asset Performance:

Hea 05 Minimising flicker from lighting systems

4 Credits
0
No Minimum Standard

Aim

To encourage the installation of lighting systems that minimise the impact of flicker on asset users.

Question

Do the asset's lighting installations have features that minimise or prevent flicker?

Credits	Answer	Select a single answer option
0	A.	Question not answered
0	B.	No
1	C.	Yes, ≥ 25% of lighting installations have features that minimise or prevent flicker
2	D.	Yes, ≥ 50% of lighting installations have features that minimise or prevent flicker
3	E.	Yes, ≥ 75% of lighting installations have features that minimise or prevent flicker
4	F.	Yes, all lighting installations have features that minimise or prevent flicker

Assessment criteria

Criterion	Assessment criteria	Applicable Answer
1.	The number of credits awarded should be based on the proportion of lighting installations with features that minimise or prevent flicker compared to the total number of lighting installations.	C – F
2.	The following are examples of lighting installations that are considered to contain features that minimise or prevent flicker: a) Fluorescent and gas discharge lighting where the light is controlled by electronic high frequency control gear. b) LED lighting without dimming. c) LED lighting with dimming where dimming occurs through controlling the current. d) Incandescent lighting, e.g. halogen lamps.	C – F

Criterion	Assessment criteria	Applicable Answer
	Where Digital Addressable Lighting Interface (DALI) or similar systems are used to dim LED lighting, evidence must be provided to demonstrate that the LED products do not flicker.	

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
All	Visual inspection and photographic evidence by the Assessor that the installed lighting meets the criteria.
All	Technical specifications for the installed lighting.

Definitions

High frequency control gear:

Device connected between the supply and one or more discharge lamps which serves mainly to limit the current of the lamp(s) to the required value. Control gear may also include means for transforming the supply voltage, correcting the power factor and, either alone or in combination with a starting device, provide the necessary conditions for starting the lamp.

Flicker:

Impression of unsteadiness of visual sensation induced by a light stimulus whose luminance or spectral distribution fluctuates with time.

Asset Performance: Hea 06 View out

4 Credits 0

No Minimum Standard

Aim

To allow asset users the opportunity for the relaxation afforded by a change of scene and a change from a constant focus at workstations.

Question

Do relevant spaces with workstations for asset users have an adequate external view out of a window?

Credits	Answer	Select a single answer option
0	A.	Question not answered
0	B.	No
1	C.	Yes, ≥ 80% of the net internal area within each relevant space provides an adequate view out in ≥ 50% of all relevant spaces within the asset
2	D.	Yes, ≥ 95% of the net internal area within each relevant space provides an adequate view out in ≥ 50% of all relevant spaces within the asset
3	E.	Yes, ≥ 80% of the net internal area within each relevant space provides an adequate view out in ≥ 80% of all relevant spaces within the asset
4	F.	Yes, ≥ 95% of the net internal area within each relevant space provides an adequate view out in ≥ 80% of all relevant spaces within the asset

Assessment criteria

Criterion	Assessment criteria	Applicable Answer
1.	Credits are awarded based on the percentage of relevant spaces that contain a compliant view out (see Methodology).	C – F
2.	Relevant spaces should be within 8m horizontal distance from a window or permanent opening providing a view out. The area of the window or opening must be at least 20% of the surrounding wall area. The view out must be a view of a landscape or buildings (rather than just the sky) at seated eye level (1.2 – 1.3m) within the relevant space and should ideally be through an external window. A view into an internal courtyard or atrium will comply	C – F

Criterion	Assessment criteria	Applicable Answer
	provided the distance from the opening to the back wall of the courtyard or atrium is at least 10m.	
3.	Relevant spaces requiring a view out include: a) Spaces with fixed workstations or desks that are used by regular asset users (e.g. members of staff) for 30 minutes or more per day. b) Spaces where close work is performed or visual aids are used by regular asset users (e.g. members of staff) for 30 minutes or more per day. c) Where a view out will be of benefit to the asset users, e.g. in spaces where occupants are likely to spend a significant amount of time. Spaces that do not require a view out include: a) Nurse bases where they are located centrally in a ward or patient area in order to enable patient observation. b) Courts and interview rooms where compliance is not possible due to security or privacy criteria. c) Clinical areas where the control of environmental or operational conditions prevents such spaces from providing a view out. d) Conference rooms, lecture theatres, sports halls, cinemas, space used for acute special educational needs, etc. e) Where exclusion or limitation of natural light is a functional requirement of the space, e.g. laboratories, media spaces, etc. f) Isolated workstations for intermittent, short-term work, e.g. within a server room.	C – F

Specific notes

Asset type specific	
1.	**Supportive housing and Educational Halls of Residence** For living rooms in self-contained flats and for communal lounges, individual bedrooms and bedsits in sheltered housing, all relevant space must 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.
2.	**Healthcare buildings** Patient-occupied spaces, e.g. wards and dayrooms, with inpatient areas must meet the minimum room depth and window area in criterion 2, PLUS the distance between the wall with the window or opening and the nearest external solid object (e.g. building, screen, wall or fence) is ≥ 10m.

Methodology

Calculating the percentage of relevant space with a compliant view out

For each relevant space, the percentage net internal area with a compliant view out is calculated as follows:

Percentage of relevant space with a compliant view out =

$$\left(\frac{\textbf{Net internal area of relevant space with a compliant view out}}{\textbf{Total net internal area of relevant space}}\right) \times \mathbf{100}$$

For example, for a relevant space with a net internal area of 10m^2, at least 8m^2 or 9.5m^2 of net internal floor area within the relevant space must have a compliant view out to demonstrate compliance with the criteria for the respective credit levels.

At least 85% of all the relevant spaces within the asset must comply with the criteria. This is calculated based simply on the number of relevant spaces with a compliant view out as follows:

Percentage of all relevant spaces with a compliant view out =

$$\left(\frac{\textbf{Number of relevant spaces with a compliant view out}}{\textbf{Total number of relevant spaces}}\right) \times \mathbf{100}$$

For example, if there are 20 relevant spaces within the asset, at least 10 of these spaces would need to have a compliant view out to achieve any credits. In this example, to achieve maximum credits, at least 95% of the net internal area in at least 16 spaces must have a compliant view out.

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the ‘BREEAM evidential requirements’ section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
All	Photographic evidence.
All	Floor plans illustrating the room depths and window areas for each relevant space.

Asset Performance:

Hea 07 User comfort control

4 Credits

No Minimum Standard

Aim

To recognise the provision of controls allowing asset users to optimise their comfort levels.

Question

Can asset users control the temperature and ventilation in occupied spaces?

Credits	Answer	Select all answers that apply
0	A.	Question not answered
0	B.	No
2	C.	Yes, at least one compliant form of temperature control
2	D.	Yes, at least one compliant form of ventilation control

Assessment criteria

Criterion	Assessment criteria	Applicable Answer
1.	User controls that allow independent adjustment of heating, cooling or ventilation within the asset are required in the following spaces: a) Owned spaces: small rooms for one or two people, e.g. cellular offices, consulting room. b) Shared spaces: multi-occupied areas, e.g. open-plan offices, workshops, hospital ward. c) Temporarily owned spaces: where occupants expect to operate the controls while they are there, e.g. meeting rooms, hotel bedrooms, school classroom.	C, D
2.	User controls which allow independent adjustment of heating, cooling or ventilation within the asset are not required in the following areas: a) Occasionally visited spaces: where users generally stay for a relatively short period each time they visit, e.g. storerooms, shelving areas in libraries, aisles of warehouses, toilets, plant room. b) Unowned spaces: where areas are expected to be heated but the controls are not operated by the users, e.g. circulation areas.	C, D

Criterion	Assessment criteria	Applicable Answer
	c) Managed spaces: where someone is responsible for controlling the heating, cooling or ventilation and individual users do not expect to have control, e.g. atria, cinemas, concourses, entrance halls, lecture theatres, libraries, restaurants, shops, sports halls and theatres. d) Spaces that require controlled environmental conditions for reasons other than user comfort, e.g. industrial operational and storage areas, laboratories, museum display areas.	
3.	Compliant forms of temperature control include, but are not limited to: a) Room thermostats b) Thermostatic radiator valves (TRVs) c) Openable windows, doors or roof lights d) Ceiling fans e) Fan coil units with user control f) Building Management System controlled set points with local override controls limited to a set range. Where openable windows, doors or roof lights are provided, these can only be used as a compliant form of control for either temperature or ventilation, not both. To achieve both sets of credits, a different form of temperature or ventilation control must also be provided.	C
4.	Compliant forms of ventilation control include, but are not limited to: a) Openable windows, doors or roof lights b) Trickle ventilators c) Ventilation fans with user control (including fan coil units with ventilation control) d) Building Management System controlled set points with local override controls limited to a set range. Where openable windows, doors or roof lights are provided, these can only be used as a compliant form of control for either temperature or ventilation, not both. To achieve both sets of credits, a different form of temperature or ventilation control must also be provided.	D
5.	Portable equipment, e.g. electric desk fans or fan heaters, do not comply with the criteria.	C, D
6.	User controls must be located in the vicinity of the zone or space they control and be easily accessible to users of the space.	C, D

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
All	Photographic evidence of controls
All	Building plans illustrated location of controls and zoning

Definitions

Occupied space:

A room or space within the asset that is likely to be continuously occupied for 30 minutes or more per day by an asset user.

Asset Performance:

Hea 08 Ventilation system air intakes and exhausts

2 Credits

No Minimum Standard

Aim

To ensure that the asset ventilation system minimises the entry of external sources of air pollution.

Question

Are ventilation system air intakes and exhausts located to minimise the entry of air pollutants into the asset?

Credits	Answer	Select a single answer option
0	A.	Question not answered
0	B.	No
2	C.	Yes

Assessment criteria

Criterion	Assessment criteria	Applicable Answer
1.	For assets with air-conditioned or mixed-mode ventilation systems: EITHER a) The location of the asset's air intakes and exhausts, in relation to each other and to sources of external pollution, are in accordance with either of the following standards: • Sections 8.8.2-8.8.4 of PD CEN/TR 16798-4:2017 Energy performance of buildings - Ventilation for buildings - Part 4: Interpretation of the requirements in EN 16798-3 - For non-residential buildings - Performance requirements for ventilation and room-conditioning systems (Modules M5-1, M5-4) • Section 5.5 and Normative Appendix B of ANSI/ASHRAE Standard 62.1-2019 Ventilation for Acceptable Indoor Air Quality. Alternatively, where local standards have similar requirements to any of the above standards, the local standard may be used to demonstrate compliance with this criterion. OR	C

Criterion	Assessment criteria	Applicable Answer
	b) The asset's air intakes are positioned at least 10m horizontal distance from sources of external pollution, including the location of air exhausts from the asset and other buildings. Exhausts or other pollutant sources are not to be discharged into enclosed external spaces, such as courtyards, in which intakes are also located.	
2.	For naturally ventilated assets, background ventilators and openable windows, skylights and doors are positioned at least 10m horizontal distance from sources of external pollution, including the location of air exhausts from other buildings. Exhausts or other pollutant sources are not to be discharged into enclosed external spaces, such as courtyards, in which intakes are also located.	C

Methodology

Pollutant dispersion modelling

If compliance cannot be demonstrated using the methods stipulated in the assessment criteria, it may be feasible to demonstrate compliance using pollutant dispersion modelling if this shows that, under normal asset operational and typical external environmental conditions, the location of the asset's air intakes and exhausts in relation to each other and sources of external pollution minimises the entry of air pollutants into the asset. This can be achieved using either wind tunnel modelling or numerical modelling. Pollutant dispersion modelling in urban areas is complex, so it is important that the person carrying out the modelling is a competent individual.

Jet exhaust systems

Jet exhaust systems may be used as an alternative method of demonstrating compliance with criterion 1 if evidence from pollutant dispersion modelling demonstrates that the location and separation of air intakes and the jet exhausts, the jet exhaust nozzle direction, and the average jet exhaust velocity prevents significant recirculation of exhaust air under typical wind conditions.

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
All	Documentation (e.g. plans, photographs or scaled drawings of the asset) showing the location of air intakes and exhausts and external sources of pollution and the distances between them.

Definitions

Competent individual – wind tunnel modelling:

An individual with the following qualifications and experience:

- Holds a degree or equivalent qualification in a relevant engineering field (mechanical, chemical), physics, mathematics, or meteorology AND holds a membership of an appropriate professional body.

- Has a minimum of three years relevant experience, which must clearly demonstrate a practical understanding and experience of wind tunnel modelling and factors affecting outdoor pollutant dispersion in relation to ventilation and the built environment.

Competent individual – numerical modelling:

An individual with one or more of the following qualifications and experience:

- Holds a degree or equivalent qualification in a relevant engineering field (mechanical, chemical), physics, mathematics, meteorology, environmental sciences, environmental engineering or a related environmental discipline, AND holds a membership of an appropriate professional body,
- Demonstrable ability to interpret environmental guidelines, policies, plans and legislative requirements.

Numerical modelling:

A computer-based stimulation method for modelling pollutant dispersion and air quality in the outdoor environment. Various numerical models are commercially available which may be used to investigate the location of ventilation intakes and exhausts, including those based on empirical methods and computational fluid dynamics (CFD).

Sources of external pollution:

These include but are not limited to the following:

- Highways and the main access roads associated with the asset
- Car parks, delivery and vehicle pick-up, drop-off or waiting bays
- Other building-related emissions, including from building services exhausts, industrial or agricultural processes, and external smoking areas.

Service and access roads with restricted and infrequent access, e.g. roads used only for waste collection, are unlikely to represent a significant source of external pollution. These roads can therefore be excluded from assessment.

Wind tunnel modelling:

This is a versatile physical technique which allows many variables (for example building design, intake and exhaust positions, local pollutant sources, wind speed and direction), to be investigated for complex urban areas. Wind tunnel modelling provides reliable and detailed data, both visual and quantitative, on outdoor pollution distribution. This enables the effective siting of intakes and exhausts to be evaluated for both mechanically and naturally ventilated buildings.

Asset Performance:

Hea 09 Carbon dioxide sensors

4 Credits

0 No Minimum Standard

Aim

To encourage the monitoring of internal conditions to ensure a healthy indoor environment is provided.

Question

Are sensors installed in the asset that monitor the levels of carbon dioxide in indoor air?

Credits	Answer	Select a single answer option
0	A.	Question not answered
0	B.	No
2	C.	Yes, in areas subject to large and unpredictable or variable occupancy patterns
4	D.	Yes, in areas subject to large and unpredictable or variable occupancy patterns and in all regularly occupied space

Assessment criteria

Criterion	Assessment criteria	Applicable Answer
1.	Carbon dioxide sensors are installed as follows: a) In mechanically ventilated spaces, the sensors EITHER: • Are linked to the mechanical ventilation system and provide demand-controlled ventilation to the space. OR • Visibly or audibly alert the asset owner or manager or users of the space when carbon dioxide levels exceed the recommended set point. b) In naturally ventilated spaces, the sensors can EITHER: • Visibly or audibly alert the asset owner or manager or users of the space when carbon dioxide levels exceed the recommended set point. OR • Are linked to controls with the ability to adjust the quantity of fresh air, e.g. automatically open windows or roof vents.	C, D
2.	Sensors must be installed, tested, calibrated and maintained in accordance with the manufacturer's instructions. Sensors should be placed to provide	C, D

Criterion	Assessment criteria	Applicable Answer
	representative readings of conditions within each space. Sensors should be wall-mounted and at a height above floor level that corresponds to an average seated or standing head height for the main activity performed within the space.	

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
All	Photographic evidence of the sensors.
All	Description of how the sensors work in terms of actuating ventilation or alerting users.
All	Operation and maintenance manuals or records for the installed system(s).

Definitions

Areas with a large and unpredictable occupancy:

The following are examples of these types of spaces:

a) Auditoria

b) Gyms

c) Retail stores or malls

d) Cinemas

e) Waiting rooms.

Occupied space:

A room or space within the asset that is likely to be occupied for 30 minutes or more by an asset user. For the purpose of this issue, the definition excludes the following:

a) Atria or concourses

b) Entrance halls or reception areas

c) Ancillary space, e.g. circulation areas, storerooms and plant rooms.

Additional information

Set points for sensors

Table 16 provides guidance on appropriate set points for carbon dioxide sensors based on the recommendations in the European Technical Report 'PD CEN/TR 16798-2:2019 Energy performance of buildings - Ventilation for buildings - Part 2: Interpretation of the requirements in EN 16798-1 – Indoor environmental input parameters for design and assessment of energy performance of buildings addressing indoor air quality, thermal environment, lighting and acoustics (Module M1-6)'. This information is provided as guidance to inform Assessors and project teams of current industry practice on set points for sensors. The assessment criteria do not specify a target set point in order to allow building or facilities managers to select an appropriate set point for the asset's ventilation system. However, set points should not exceed 1750 ppm and it is recommended that projects aim to achieve the Category II requirements as a minimum.

Table 16: Default design carbon dioxide concentrations

Indoor Environmental Quality (IEQ) Category	Level of expectation	Explanation	Maximum indoor carbon dioxide concentration (ppm)
I	High	For occupants with special needs, e.g. children, elderly, persons with disabilities	950
II	Medium	The normal level used for design and operation	1200
III	Moderate	Will still provide an acceptable environment, but some risk of reduced performance of the occupants	1750
IV	Low	Should only be used for a short time of the year or in spaces with very short time of occupancy	1750

Note: The above values correspond to the equilibrium concentration when the air flow rate is 10, 7 and 4 litres per second per person for Category I, II, and III and IV, respectively; the carbon dioxide emission is 20 litres per hour per person; and assumes an average outdoor air carbon dioxide concentration of 400 ppm.

Asset Performance:

Hea 10 Carbon monoxide detection

2 Credits

No Minimum Standard

Aim

To protect asset users from harmful levels of carbon monoxide associated with the asset's combustion appliances and enclosed parking areas.

Question

Are carbon monoxide detection and alarm systems installed in the asset in spaces that contain combustion appliances and in enclosed parking areas?

Credits	Answer	Select all answers that apply
0	A.	Question not answered
0	B.	No
1	C.	Yes, in all spaces containing combustion appliances
1	D.	Yes, in all enclosed parking areas

Assessment criteria

Criterion	Assessment criteria	Applicable Answer
1.	**Filtering** Where there are no combustion appliances or enclosed parking areas present in the asset, the associated credits can be filtered out of the assessment.	C, D
2.	The carbon monoxide detection system must alert asset users to acute levels of carbon monoxide, therefore enabling users to react before being exposed to a significant risk (rather than monitoring low levels for health purposes only). A detection system should consist of: a) A carbon monoxide detector in every space containing a combustion appliance, e.g. those used for space and water heating and cooking. b) A carbon monoxide detector in every space where a combustion appliance's flue passes through rooms or space used as sleeping accommodation.	C, D

Criterion	Assessment criteria	Applicable Answer
	c) Carbon monoxide detectors in the asset's enclosed parking areas (where these are within scope of the assessment), e.g. underground car parks.	
3.	Carbon monoxide detector/alarm systems must be permanently installed. They may be self-contained detector and alarm units powered by a battery designed to operate for the working life of the detector or they may be connected to the asset's electricity supply, either with a built-in sounder or connected to a central control panel. The detector should incorporate a warning device to alert asset users when the working life of the detector is due to expire or, if connected to the electricity supply, fitted with a sensor failure warning device.	C, D
4.	Carbon monoxide detection systems must be installed and maintained in accordance with the manufacturer's instructions and must be suitable for application in the relevant asset type and space. Detectors intended for application in domestic or residential assets may be used where manufacturer's instructions state that the detectors can also be used for commercial application within the asset type under assessment.	C, D
5.	Carbon monoxide detectors that are in spaces or areas that asset users will not normally frequent, for example, those located within boiler rooms or car parks, should be linked to a visual or audible alarm or control panel sited at a staffed location, such as a reception desk.	C, D
6.	The provision of a carbon monoxide detection system should not be regarded as a substitute for the correct installation and regular servicing of a combustion appliance.	C

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
2 – 6	Photographic evidence of the detection and alarm system(s).
2 – 6	Specifications, procedures or monitoring logs for the detection and alarm system(s).
2 – 6	Diagrams, photographs or plans indicating location of combustion appliances and enclosed car parks and associated carbon monoxide detectors.
2 – 6	Confirmation from the asset owner or management team where no combustion appliances are installed in the asset or where there are no enclosed parking areas.

Definitions

Carbon monoxide:

Carbon monoxide is a colourless, odourless, and tasteless gas. Low levels of carbon monoxide gas can be present in the atmosphere; however, it is highly toxic and dangerous to humans and animals in higher quantities. The gas is produced in high levels from appliances where incomplete combustion of a carbon-based fuel occurs. Incomplete combustion could occur in appliance installations that are defective, lack proper maintenance or have inadequate provision for combustion air.

Asset Performance:

Hea 11 Provision of rest areas

3 Credits

0 No Minimum Standard

Aim

To recognise and encourage the provision of rest areas for asset users.

Question

Are indoor or outdoor rest areas provided for asset users?

Credits	Answer	Select all answers that apply
0	A.	Question not answered
0	B.	No
1	C.	Yes, indoor seated rest areas
1	D.	Yes, facilities to prepare food and drinks
1	E.	Yes, dedicated outdoor space with seating

Assessment criteria

Criterion	Assessment criteria	Applicable Answer
1.	All rest areas, spaces and facilities must: a) Be appropriate in size and number to serve the number of asset users, as determined by the Assessor's best judgement and where there is no evidence from asset users that the space is proving to be too small to meet demand. b) Be accessible to all regular asset users (e.g. members of staff), including those with disabilities. c) Be available with unrestricted access during the asset's operational hours and not be used for other purposes, e.g. as a meeting room. d) Prohibit smoking and vaping.	C – E
2.	Compliant areas include, but are not limited to, lounge areas, space provided for contemplation or mindfulness, dining areas, canteen facilities with seating areas, and food outlets with seating provision.	C

Criterion	Assessment criteria	Applicable Answer
3.	Food and drink preparation facilities must include as a minimum a refrigerator, a microwave and a sink. Facilities must be within close proximity to a compliant indoor seated rest area, such as an adjacent room. The facilities are primarily intended for use by asset staff, but other users such as visitors could have access.	D
4.	Outdoor space should allow staff to gather, socialise, relax and connect with the natural environment during breaks from work. The space is primarily intended for use by asset staff but could also be used by other users such as visitors. The space must: a) Be an outdoor landscaped area with a view of the sky, e.g. garden, balcony or terrace. b) Have a degree of shelter from the wind, rain and sun. c) Be located as far away as possible from sources of noise or air pollution, e.g. building services, car parks, busy roads, delivery areas, etc.	E
5.	Areas, spaces and facilities do not necessarily have to be provided within the asset or be owned by or associated with the asset (e.g. facilities could be provided in an adjacent asset). For example, it is possible that a local park could meet the requirements for provision of outdoor space. However, where these are not provided within the asset: a) Users must have free and unrestricted access during the asset's operational hours. b) Are accessible via safe pedestrian routes. c) Are within 250 metres or 3 minutes' walk from the asset's main entrance.	C – E

Specific notes

Asset type specific	
1.	**Assets with large numbers of visitors** Where an asset contains space that is used by large numbers of visitors (e.g. shopping centres and malls), to achieve the credits for 'indoor seated rest areas' and 'dedicated outdoor space with seating', these facilities must be provided for use by visitors, as well as for regular asset users. It is not necessary to provide separate facilities for visitors if compliant facilities provided for regular asset users can also be used by visitors.

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the ‘BREEAM evidential requirements’ section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
All	Photographic evidence, demonstrating provisions available to asset staff and visitors.
All	Plans illustrating location of facilities.

Definitions

Safe pedestrian route:

These include, but are not limited to, pavements and safe crossing points or, where provided, dedicated pedestrian crossing points. An element of Assessor judgement is required and if in doubt, their justification of safe crossing points should be provided.

Asset Performance:

Hea 12 Inclusive design

4 Credits

1

No Minimum Standard

Aim

To recognise and encourage assets that are inclusive for users.

Question

Does the asset contain features to allow all users regardless of age, size, ability or disability to use the asset effectively?

Credits	Answer	Select a single answer option
0	A.	Question not answered
0	B.	No features
1	C.	Yes, limited standard accessibility features
2	D.	Yes, several standard accessibility features
4	E.	Yes, several standard and advanced accessibility (Universal Design) features
Exemplary	F.	Yes, extensive standard and advanced accessibility (Universal Design) features

Assessment criteria

Criterion	Assessment criteria	Applicable Answer
1.	The asset must contain at least one of the standard accessibility features in each of the four sections of Checklist Hea 12a.	C
2.	The asset must contain at least 50% of the applicable standard accessibility features in each of the four sections of Checklist Hea 12a.	D
3.	The asset must contain at least 50% of the applicable standard accessibility features in each of the four sections of Checklist Hea 12a, plus at least one of the applicable advanced accessibility (Universal Design) features in sections 1 - 3 of Checklist Hea 12b.	E

Criterion	Assessment criteria	Applicable Answer
4.	The asset must contain at least 50% of the applicable standard accessibility features in each of the four sections of Checklist Hea 12a, plus at least 50% of the applicable advanced accessibility (Universal Design) features in sections 1 - 3 of Checklist Hea 12b and at least one additional advanced accessibility (Universal Design) feature in accordance with section 4 of Checklist Hea 12b.	F

Methodology

Compliant features

Due to the variation in local legislation and design practices for accessibility, usability and inclusivity, the assessment criteria do not stipulate specific design requirements, dimensions or number of each type of feature within the asset. Therefore, compliance with the criteria must be determined by the Assessor's best judgement on what constitutes a reasonable level of provision and design of features for the type, size and number of users of the asset. Assessors may base their judgement using the following best practice guidance:

- ISO 21542:2011 Building construction - Accessibility and usability of the built environment
- BS 8300-1:2018 Design of an accessible and inclusive built environment - Part 1: External environment - Code of practice
- BS 8300-2:2018 Design of an accessible and inclusive built environment - Part 2: Buildings - Code of practice
- Draft prEN 17210 Accessibility and usability of the built environment - Functional requirements
- Building for Everyone: A Universal Design Approach, Centre for Excellence in Universal Design, 2012 (http://universaldesign.ie/Built-Environment/Building-for-Everyone/)
- Americans With Disabilities Act And Architectural Barriers Act Accessibility Guidelines, United States Access Board, 2004
- Architectural Barriers Act (ABA) Standards, Department of Defense, General Services Administration and U.S. Postal Service, 2015

Alternatively, the Assessor may base their judgment using local standards where these have similar requirements to the above standards.

Checklists and Tables

Checklist Hea 12a: Standard accessibility features

	Standard accessibility feature
1. Access to the asset	a) Step-free external access (i.e. level, gentle slope or ramp) from the site boundary to the main entrance(s) or alternative accessible entrance of the asset. b) Handrails to external stepped and ramped access routes to the main entrance(s) or alternative accessible entrance of the asset. c) Entrance doors that are accessible to all users, particularly persons who use wheelchairs and those with limited physical dexterity, and are wide enough when open to allow unrestricted passage for a variety of users, e.g. those in

	Standard accessibility feature
	wheelchairs, people carrying luggage, people with assistance pets, and parents with pushchairs and small children. d) Where car parking is provided for the asset, designated parking spaces for persons with disabilities are as close as possible to the main entrance(s) of the asset. e) Where car parking is provided for the asset and asset users include parents with young children, designated parking spaces for motorists accompanied by a child in a perambulator (pram) or pushchair (baby buggy).
2. Horizontal and vertical circulation	a) Corridors and passageways that are wide enough to allow all persons to pass through unimpeded or turn in a wheelchair. b) Internal doors that are easy to operate and wide enough to allow free passage for all persons, including those in wheelchairs. c) Handrails for internal stairs, steps and ramps. d) Accessible lift(s) or vertical and inclined lifting platforms that reach all accessible levels of the asset. e) Accessible horizontal and vertical emergency evacuation routes (e.g. in the event of fire) and facilities (e.g. evacuation chairs) or a strategy and plan for assisted evacuation.
3. Use of the asset's facilities	a) Power-operated entrance door(s) (e.g. via push pad or motion sensor). b) Controls and switches (e.g. door handles and locks, taps, activation devices, electric outlets and switches, etc.) that are easy to understand and operate, visible and at a suitable height. c) Where drinking water outlets are provided for asset users, outlets are accessible to persons with disabilities including those who use wheelchairs (a minimum of one per floor for regularly occupied areas). d) Where the asset contains audience and spectator facilities, e.g. lecture and conference facilities, entertainment facilities (e.g. theatres, cinemas, etc.) and sports facilities, accessible space and seating for persons who use wheelchairs, those with mobility and sensory impairment and their companions. e) Where sleeping accommodation is provided (e.g. hotels), a proportion of the accommodation is designed for use by persons who use wheelchairs.
4. Sanitary accommodation	a) Toilet(s) with an assistance alarm accessible by those who use wheelchairs, at least one of which is a gender-neutral facility. b) Where asset users include parents or carers with young children, baby changing facilities accessible for parents or carers regardless of their gender. c) Where showers, bathrooms or changing rooms are provided for asset users, accessible versions to accommodate persons who use wheelchairs, persons with limited mobility, etc.

Checklist Hea 12b: Advanced accessibility (Universal Design) features

	Advanced accessibility feature
1. Orientation and wayfinding	a) Well-planned layouts that clearly identify key elements such as entrances, reception areas, sanitary facilities, etc.

	Advanced accessibility feature
	b) Good lighting conditions with additional illumination at decision points such as access routes, entrances, staircases, lifts, etc. c) Clear information and signage that is legible and easily understood, including availability in different languages where appropriate to the asset's location. d) Use of visual contrast and colour to facilitate orientation and navigation, to provide warnings about potential hazards, and to facilitate reading of information and signs. e) Provision of tactile information, e.g. embossed signage, Braille signage, tactile walking surface indicators (TWSI), tactile maps, models and plans, changes in floor surface, changes in level, tapping rails. f) Audible communication and sounds, e.g. talking signs, announcement systems, audio descriptive way-finding information, changes in walking surface. g) Use of scents or smells to provide additional orientation cues.
2. Assistive technologies	a) Hearing enhancement system(s) (e.g. induction loop) at service or reception counters and in rooms and spaces used for meetings, lectures, classes, performances, spectator sport or films. b) Audible information systems. c) Visual alarm systems. d) Voice or touch screen operated controls.
3. Inclusive spaces	a) All-gender and/or family sanitary accommodation. b) A Changing Places (CP) facility. c) Resting places available at regular intervals along external and internal circulation routes. d) Quiet, wellness, prayer or meditation room(s). e) Lactation room(s). f) Assistance animal relief (toilet) area(s). g) Selected Answer Option E in Hea 11 Provision of rest areas h) Accessible and inclusive fitness spaces and equipment. i) Spaces that promote regular informal social interactions and information exchange with different asset users.
4. Others	As specified within best practice guidance (see 'Compliant features' in Methodology) in addition to those listed above.

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
All	Photographic evidence of listed features.
All	Building plans outlining installed features.

Criteria	Evidence requirement
All	Specifications of installed features.

Definitions

Accessibility:

Provision of buildings, parts of buildings, or outdoor built environments for people, regardless of disability, age or gender, to be able to gain access to them, into them, to use them and exit from them.

Changing place facility:

A room with a WC, hoist, basin, adult-sized changing bench and optional shower, for use by people with complex and multiple impairments who require the help of up to two assistants.

Inclusive design:

Approach to the design of the environment, including buildings and their surrounding spaces, and managed and natural landscapes, to ensure that they can be accessed and used by everyone.

Universal Design:

Design of products, environments, programmes and services to be usable by all people, to the greatest extent possible, without the need for adaptation or specialised design. Universal Design does not exclude the need of assistive devices for particular groups or persons with disabilities where relevant. Terms such as “Universal Design”, “accessible design”, “Design for All”, “barrier-free design”, “inclusive design” and “transgenerational design” are often used interchangeably with the same meaning.

Usability:

Extent to which a product, a service and the built environment can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use.

Wayfinding:

Means of ensuring that someone can find their way, avoid obstacles, and know when they have reached their destination.

Additional information

Principles of Universal Design

The Principles of Universal Design were developed in 1997 by a working group of architects, product designers, engineers and environmental design researchers at the North Carolina State University, with the purpose “to guide a wide range of disciplines including environments, products and communications”. The seven principles "may be applied to evaluate existing designs, guide the design process and educate both designers and consumers about the characteristics of more usable products and environments”. The seven principles are:

- Principle 1: Equitable Use - The design is useful and marketable to people with diverse abilities.
- Principle 2: Flexibility in Use - The design accommodates a wide range of individual preferences and abilities.
- Principle 3: Simple and Intuitive Use - Use of the design is easy to understand, regardless of the user's experience, knowledge, language skills, or current concentration level.

- Principle 4: Perceptible Information - The design communicates necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities.
- Principle 5: Tolerance for Error - The design minimises hazards and the adverse consequences of accidental or unintended actions.
- Principle 6: Low Physical Effort - The design can be used efficiently and comfortably and with a minimum of fatigue.
- Principle 7: Size and Space for Approach and Use - Appropriate size and space is provided for approach, reach, manipulation, and use regardless of user's body size, posture, or mobility.

Asset Performance:

Hea 13 Drinking water provision

2 Credits

No Minimum Standard

Aim

To ensure clean and fresh sources of drinking water are provided for asset users.

Question

Is drinking water available for asset users?

Credits	Answer	Select a single answer option
0	A.	Question not answered
0	B.	No
1	C.	Yes, some or all drinking water outlets are not connected to a public utility water supply network
2	D.	Yes, all drinking water outlets are connected to a public utility water supply network

Assessment criteria

Criterion	Assessment criteria	Applicable Answer
1.	Drinking water outlets must be: a) Appropriate in number and placement to serve all regular asset users (e.g. members of staff) as determined by the Assessor’s best judgement (a minimum of one per floor for occupied space). b) Free of charge. c) Accessible to all regular asset users, including to those with disabilities. d) In a hygienic location and condition. e) Capable of refilling water bottles.	C, D
2.	Compliant drinking water outlets include taps in kitchen areas, water coolers and water fountains. Taps in toilet areas are not compliant due to potential hygiene issues.	C, D

Methodology

Combination of drinking water supplies

Where drinking water outlets within an asset are a combination of those connected to a public utility water supply network and those not connected to a public utility water supply network (e.g. bottled water, treated harvested rainwater), only 1 credit can be awarded.

Specific notes

Asset type specific	
1.	**Hotels** The assessment criteria are only applicable to common areas and areas where hotel staff work. Guest bedrooms do not need to be assessed. Applicable areas include, but are not limited to: a) Lobby and reception areas b) Staff offices c) Dining areas.
2.	**Assets with large numbers of visitors** Where an asset contains space that is used by large numbers of visitors (e.g. shopping centres and malls etc.), compliant drinking water outlets must be provided for use by visitors, as well as for regular asset users. It is not necessary to provide separate outlets for visitors if compliant drinking water outlets provided for regular asset users can also be used by visitors.

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
All	Photographic evidence of drinking water outlets.
All	Building plans showing the location of drinking water outlets.

Definitions

Occupied space:

A room or space within the asset that is likely to be continuously occupied for 30 minutes or more per day by an asset user.

Additional information

Bottled water

The issue aims to ensure that there is a continuous provision of drinking water for all users and therefore, for outlets not connected to a utility company supply, there is the potential for supply to run out. The use of bottled water also produces waste.

Asset Performance: Energy

25%

Summary

This category recognises building fabric and installed building services systems that lead to lower operational energy consumption and reduce carbon emissions over the lifetime of the asset. Issues in this section assess the inherent energy efficiency of the building fabric, the energy efficiency of installed services systems and installed renewable energy generation capacity. This category also encourages the installation of energy monitoring and energy management capabilities to support efficient energy management and the avoidance of waste throughout the life of the asset.

Context

Climate change is the biggest environmental challenge that the world is currently facing. It is already resulting in higher global temperatures, greater risk flooding and more extreme weather events. It is mainly due to rising levels of carbon dioxide and other greenhouse gases, such as methane, in the atmosphere create a 'greenhouse effect', that is causing the Earth to warm. Greenhouse gas emissions have increased by about 45% since before the industrial revolution and this is almost entirely due to human activity.

The observed increase in greenhouse gas emissions is mainly caused by the burning of fossil fuels for energy, agriculture, deforestation and industrial processes. Worldwide, buildings and construction together account of 39% of energy related carbon emissions, the majority of which is due to energy consumption in use. The impact on people and communities from climate change and energy generation must be recognised. Poorer communities are disproportionately impacted by the negative effects of climate change and energy generation from fossil fuels, contributing to poor health, higher mortality rates and higher risks of severe damage from extreme weather events.

The Paris Agreement, ratified in 2016, reflects a desire to accelerate the global response to the threat of climate change by limiting global temperature rise this century to at least 2^{o}C, and preferably 1.5^{o}C, above pre-industrial levels. Subsequently, in October 2018 the urgency of the need to tackle climate change was highlighted by an IPCC Special Report which indicates that it will be necessary to limit this increase to 1.5^{o}C to avoid the most severe impacts of climate change. The report concludes that to limit the increase to 1.5^{o}C CO_2 emissions must reduce by around 45% from 2010 levels by 2030, and to reach net zero emissions by 2050. The United Nations included clean energy as one of their SDGs (Goal 7) and target 'doubling the rate of improvement in energy efficiency' and 'increasing substantially the share of renewable energy in the global energy mix' by 2030. This scale of reduction will require rapid and far-reaching transitions for all energy systems, including buildings.

It is therefore vital to substantially reduce the total operational energy use in buildings and to increase use of renewable energy sources where possible, if the worse effects of climate change are to be avoided. Addressing climate change and shifting the way in which we produce and use energy can help address inequities such as fuel poverty that are currently present in our communities and provide a healthy environment for all demographic and economic groups, especially those that are part of less advantaged or underserved communities.

Issues

Ene 01-09	Asset energy calculator	40 credits

Aim:

To minimise operational energy consumption and the associated carbon emissions by increasing the intrinsic energy efficiency of the building fabric and of installed buildings services.

Value:

Identifies assets that are performing poorly compared to their peers and to prompt improvement actions where appropriate.

Identifies areas where there is the most scope for improving energy performance and encourage action where appropriate.

Encourages the specification of more energy efficient fabric and building servicing system components.

Increases energy efficiency and reduce costs relating to operational energy use.

Reduces carbon emissions from operational energy consumption.

Ene 10	Demand side management (DSM) capabilities for electricity	4 Exemplary credits

Aim:

To reduce carbon emissions associated with grid supply electricity by enabling electricity demand profiles to better match the availability of renewable electricity generation sources.

Value:

Facilitates lower carbon emissions for grid supply electricity.

Reduces electricity costs (marginal cost of renewable generation lower than that for fossil fuelled generation).

Ene 11	Installed controls	4 credits

Aim:

To reduce operational energy consumption and associated carbon emissions by installing appropriate controls to reduce unnecessary energy consumption (waste).

Value:

Avoids wasting energy.

Increases the operational energy efficiency of the asset.

Reduces energy costs.

Reduces carbon emissions from operational energy consumption.

Ene 12	Local energy performance asset rating	3 credits

Aim:

To recognise operational energy efficiency and carbon benefits associated with benchmarking against local energy standards.

Value:

Identifies assets that are performing poorly compared to their peers and to prompt improvement actions where appropriate.

Recognises the scope and nature of the asset energy performance standard.

Recognises assets that perform better than their peers.

Ene 13	Solar photovoltaic (PV) panels	4 credits

Aim:

To minimise carbon emissions through on-site renewable energy generation from photovoltaics (PV).

Value:

Helps identify assets that have the potential to install PV energy generation on-site.

Recognises the carbon reduction benefits associated with on-site renewable energy generation technologies.

Reduces reliance on grid supplied electricity.

Reduces operational energy costs.

Ene 14	Solar thermal panels	1 credit

Aim:

To minimise carbon emissions through on-site renewable energy generation from solar thermal.

Value:

Helps identify assets that have the potential to install solar thermal energy generation on-site.

Recognises the carbon reduction benefits associated with on-site renewable energy generation technologies.

Reduces reliance on grid supplied electricity.

Reduces operational energy costs.

Ene 15	Monitoring energy uses	4 credits

Aim:

To reduce operational energy consumption through the effective management and monitoring of energy consumption for different building services and building services systems.

Value:

Increases awareness of operational energy use in the asset.

Identifies and monitors significant energy uses and changed consumption levels to inform energy management and maintenance procedures.

Encourages the identification and avoidance of unnecessary energy consumption.

Provides more granular information to support the setting of realistic energy consumption improvement targets.

Ene 16	Monitoring tenanted areas	4 credits

Aim:

To reduce operational energy consumption through the effective management and monitoring of energy consumption in separately tenanted areas.

Value:

Increases awareness of operational energy use in separately tenanted areas.

Identifies and monitors significant energy uses and changed consumption levels to inform energy management procedures in tenanted areas.

Encourages the identification and avoidance of unnecessary energy consumption in separately tenanted areas.

Provides more granular information to support the setting of realistic energy consumption improvement targets.

Ene 17	External lighting	4 credits

Aim:

To minimise operational energy consumption and the associated carbon emissions from energy efficiency of external lighting.

Value:

Identifies whether existing external lighting is energy efficient and encourages improvement actions to be taken where appropriate.

Increases energy efficiency and reduces costs relating to operational energy use for external lighting.

Reduces carbon emissions from operational energy consumption for external lighting.

Ene 18	Energy efficient transport systems	2 credits

Aim:

To minimise operational energy consumption and the associated carbon emissions from energy efficient transport systems.

Value:

Identifies whether existing transport system is energy efficient and encourages improvement actions to be taken where appropriate.

Increases energy efficiency and reduces cost relating to operational energy use for transport systems.

Reduces carbon emissions from operational energy consumption for transport systems.

Asset energy calculator guidance

Introduction

This section provides further information on the workings of the asset energy calculator. It describes the scope of the asset calculator and how answers to the questions that feed into the asset calculator influence the asset energy performance score.

The asset calculator measures the energy performance that the building is capable of, given its envelope and installed services.

The building services that are considered in the asset calculator are heating, cooling, heating distribution, cooling distribution, lighting, ventilation and hot water. Energy use by other installed building services, e.g. lifts, external lighting and building management systems, is not included in the asset calculator.

The asset energy performance score does not currently take account of the orientation of the building or the local environment around the building, e.g. overshadowing, but does take account of the building geometry.

The asset energy performance score reflects how the asset would be expected to perform compared to another asset with a similar function, e.g.an office, if it were typically operated and had a typical occupancy pattern. For these reasons, the assessed energy performance of the asset is likely to be very different from that calculated for the asset energy performance. If a building service is not present in the assessed asset, the energy consumption for the relevant end use will be zero, but the energy use for the relevant end use will not be removed from the standard version of the asset. This means that the energy performance benefits of naturally ventilated buildings will be recognised.

The asset calculator is valuable for indicating areas where improvements to specific system and fabric components are likely to lead to a significant increase in the assessed energy performance. More detailed consideration of the expected energy benefits associated with specific measures should be undertaken before making improvements to the asset.

Modelling approach

The energy consumption and hence the annual $kgCO_2eq$ emissions per m^2 for the asset are calculated using a simplified energy modelling approach.

Instead of carrying out a detailed “bottom up” energy modelling calculation, the BREEAM In-Use asset energy performance score is calculated relative to that expected for a standard asset to determine the end use energy consumption.

This approach avoids the need to explicitly determine the energy service requirements (e.g. internal temperatures and lighting levels), occupancy patterns and climate as these are already included in the BREEAM In-Use benchmarks.

Because the methodology calculates the energy consumption relative to the BREEAM In-Use benchmarks which are based on measured energy consumption data, the asset energy performance scores implicitly take into account typical energy management and building operational practices and will therefore more closely relate to the assessed energy consumption than would be the case for bottom up modelling. The asset energy calculator uses a simplified energy modelling approach. This takes account of the expected energy demands and efficiencies associated with each end use and uses a heat balance approach to take account of factors that affect the demand for heating and cooling. For example, more energy efficient lighting will reduce the internal heat gains within the asset leading to a decreased demand for cooling energy in the summer but increased heating energy use in the winter.

The component and sub component elements that contribute to determining the energy consumption for each of the end uses considered in the asset energy calculator are shown in Table 17.

Table 17: The components and subcomponents used to determine end use energy consumption

End use	Component	Subcomponent
Heating	Fabric	Heat transfer through fabric
		Air leakage through fabric
	Internal heat gains	Solar gains through glazing
		Equipment gains
		People
	Heat generator (Distribution losses)	
Cooling	Internal gains	Solar gains through glazing
		Equipment gains
		People
	Free cooling (when the external temperature is lower than the required internal temperature)	
	Cooling generator (and distribution losses)	
Heating distribution/ Cooling distribution/ Ventilation	Pumps efficiencies	
	Fans efficiencies	
	Ducts leakage rate	
	Leakage from Air Handling Units (AHUs)	
Hot Water	Heat generator efficiency (and distribution losses)	
Lighting	Efficiency Installed Lamps	
	Installed lighting control systems	

Details of how the energy consumption for each end use is calculated for the asset energy performance scores are provided later in this section.

The methodology works by comparing the calculated performance of the assessed asset to that of a standard version of the same asset type. The standard version of the asset represents a typical building specification for an asset constructed in the 1980s and corresponds to the BREEAM In-Use energy benchmark values broken down by end use.

A simplified energy modelling approach is used to calculate how much better (or worse) the assessed asset is expected to perform compared to the standard asset (BREEAM In-Use benchmark). This is achieved by applying improvement factors to each end use which reflect the calculated difference in the energy performance between the assessed and standard asset for each end use. For example, for space heating the efficiency of the heat generator and the rate of heat loss through the building fabric are two factors that contribute to energy consumption.

The end use improvement factors are then applied to benchmark energy consumption to generate the expected energy consumption for the assessed asset as shown in Figure 4.

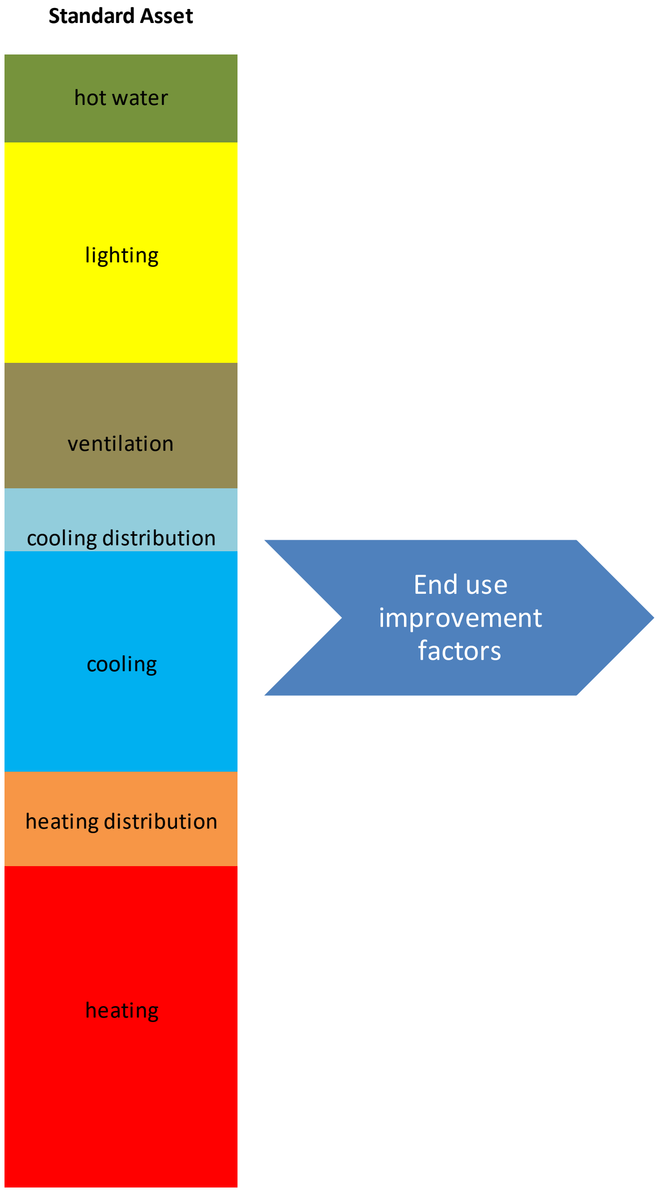

Figure 4: The relationship between the standard asset (BIU benchmark) and the assessed asset

Standard building specification

The standard version of the asset has the same main asset sub type, the same floor area and is in the same location as the asset that is being assessed, but with fixed geometry and fabric, and building services specification that is representative of a typical building.

An example of the standard specification is shown in Table 18 below.

Table 18: Standard asset specification

Type	Parameter	Value
Basic	Percentage of floor area mechanically ventilated	0.5
Fabric	Average U-value of the external walls	0.625
	Average U-value of the roof	0.5
	Average U-value of the glazing	2.32
	Ratio external wall area: floor area	0.385
	Ratio roof area: floor area	0.321
	Ratio glazing area: floor area	0.257
	Ratio internal volume: floor area	0.321
	g value of the glazing	0.5
	External solar shading to reduce excess solar gains during the cooling season	No
	Air pressure test result ($m^3/h.m^2$@50Pa)	20
Space heating	Generation type for space heating	Boiler
	Heat generation efficiency	0.7
	Heat generation fuel	Natural Gas
	Heat supply = district/centralised/local	Centralised
	Heat distributed around the building via air	Yes
Cooling	Main generation type for cooling	Chiller
	Energy efficiency ratio (EER) of the cooling generator	2.5
	Cooling supply = district/centralised/local	Centralised
	Cooling distributed around the building via air	Yes
	Fans fitted with VSDs	No
	Pumps fitted with VSDs	No
Ventilation	Specific fan power for air handling systems?	3
	Ductwork tested for leakage and appropriate remedial action taken	No

Type	Parameter	Value
Hot water	Type of water heating	Local
	Energy source used to heat water	Electricity
	Hot water generation efficiency or COP	1
Lighting	Proportion of fluorescent lamps with high frequency ballasts	0%
	Percentage of Compact Fluorescent lamps	0%
	Percentage of Tungsten Halogen lamps	0%
	Percentage Incandescent lamps	0%
	Percentage of T12 lamps	0%
	Percentage of T8 lamps	100%
	Percentage of T5 lamps	0%
	Percentage of LED lighting (with special design lighting control system)	0%
	Percentage of LED lighting (with typical lighting control system)	0%
	Percentage of metal halide lamps	0%
	Percentage of the building floor area (not accessible to clients/customers) with access to daylight which has fully functioning daylight sensors for lighting	0%
	Percentage of the building floor area (not accessible to client/customers) which has fully functioning occupancy sensors for lighting	0%

Data requirements

The questions in the asset energy category issues Ene 01 to Ene 09 are designed to collect the information needed to carry out the asset energy calculation. As of these values can be difficult to determine for many existing buildings, the calculator uses default values where values are not entered by the user. The default values are based on year of installation where this has been provided, otherwise, year of construction. The default values are country specific and relate to the minimum standards that were prevalent at the time.

The minimum level of user data inputs required to generate an asset energy performance score is the building type, the age of the building and the installed building services. However, entering more information into the calculator will result in a more accurate assessment of the asset energy performance which will almost always be better than that generated using default values. The parameter input values for each subcomponent and the source of the information is shown in Table 19 below.

Table 19: Subcomponents, parameters and sources for modelling asset energy performance

Subcomponent	Parameter	Source	Applicability
Heat transfer through fabric	Average U value of external building envelope	user entry or asset age default value	All assets
Air leakage through fabric	Air permeability of external building envelope	user entry or asset age default value	All assets
	% heat recovery	user entry or asset age default value	Assets with mechanical ventilation or a heating system with air distribution
Solar gains	g value and window area	user entry or window age default value	All assets
Equipment gains	Annual energy consumption lighting and equipment	Embedded within model	
People gains	Standard occupancy for building type	Embedded within model	
Efficiency of heat generator	Efficiency or COP	user entry or system age default value	Assets with heating systems
Efficiency of cooling generator	Efficiency or SEER	user entry or system age default value	Assets with cooling systems
VSD pumps	Are they present?	user entry or system age default value	Assets with heating or cooling systems with liquid distribution
VSD fans	Are they present?	user entry or system age default value	Assets with mechanical ventilation or heating, cooling systems with air distribution
Duct leakage rate	Have they been tested?	user entry or system age default value	Assets with mechanical ventilation or a heating system

Subcomponent	Parameter	Source	Applicability
			with air distribution
AHU leakage rate	Have they been tested?	user entry or system age default value	Assets with mechanical ventilation or a heating system with air distribution
Efficiency of hot water generation	Efficiency or COP	user entry or system age default value	Assets with hot water systems
Efficiency of hot water distribution	Hot water type	user entry or system age default value	Assets with hot water systems
Efficiency Installed Lamps	% lamp types	user entry or default value	All assets
Installed control systems	% floor area with controls	user entry or default value	All assets

Asset energy performance score

The asset energy performance score, and hence the number of credits awarded, is calculated by comparing the calculated $kgCO_2eq$ emissions per m^2 for the assessed asset compared to that of the BREEAM In-Use benchmark value.

The performance scale is designed so that the median value for BREEAM In-Use assets will achieve 50% of the credits.

As well as generating an asset energy performance score, a report is generated which shows the calculated value for carbon emissions broken down by end use, along with indicators which identify the energy performance improvement potential associated with each end use and end use component compared to that of a best practice version of the asset .See Best practice asset specification Table 20.

Table 20: Best practice asset specification

Type	Parameter	Value
Basic	Percentage of floor area mechanically ventilated	75%
Fabric	Average U-value of the external walls	0.2
	Average U-value of the roof	0.2
	Average U-value of the glazing	0.7
	Ratio external wall area: floor area	0.385

Type	Parameter	Value
	Ratio roof area: floor area	0.321
	Ratio glazing area: floor area	0.257
	Ratio internal volume: floor area	0.321
	g value of the glazing	0.5
	External solar shading to reduce excess solar gains during the cooling season	No
	Air pressure test result ($m^3/h.m^2$@50Pa)	20
Space heating	Generation type for space heating	Boiler
	Heat generation efficiency	0.7
	Heat generation fuel	Natural Gas
	Heat supply = district/centralised/local	Centralised
	Heat distributed around the building via air	Yes
Cooling	Main generation type for cooling	Chiller
	Energy efficiency ratio (EER) of the cooling generator	2.5
	Cooling supply = district/centralised/local	Centralised
	Cooling distributed around the building via air	Yes
	Fans fitted with VSDs	No
	Pumps fitted with VSDs	No
Ventilation	Specific fan power for air handling systems	3
	Ductwork tested for leakage and appropriate remedial action taken	No
Hot water	Type of water heating	Point of use
	Energy source used to heat water	Electricity
	Hot water generation efficiency or COP	1
Lighting	Proportion of fluorescent lamps with high frequency ballasts	0%
	Percentage of Compact Fluorescent lamps	0%
	Percentage of Tungsten Halogen lamps	0%

Type	Parameter	Value
	Percentage Incandescent lamps	0%
	Percentage of T12 lamps	0%
	Percentage of T8 lamps	100%
	Percentage of T5 lamps	0%
	Percentage of LED lighting (with special design lighting control system)	0%
	Percentage of LED lighting (with typical lighting control system)	0%
	Percentage of metal halide lamps	0%
	Percentage of the building floor area (not accessible to clients/customers) with access to daylight which has fully functioning daylight sensors for lighting	0%
	Percentage of the building floor area (not accessible to client/customers) which has fully functioning occupancy sensors for lighting	0%

Calculating improvement end use energy consumption

This section describes how the end use improvement factors are calculated for each end use.

Space heating

The simplified energy modelling approach for space heating is shown below in Figure 5.

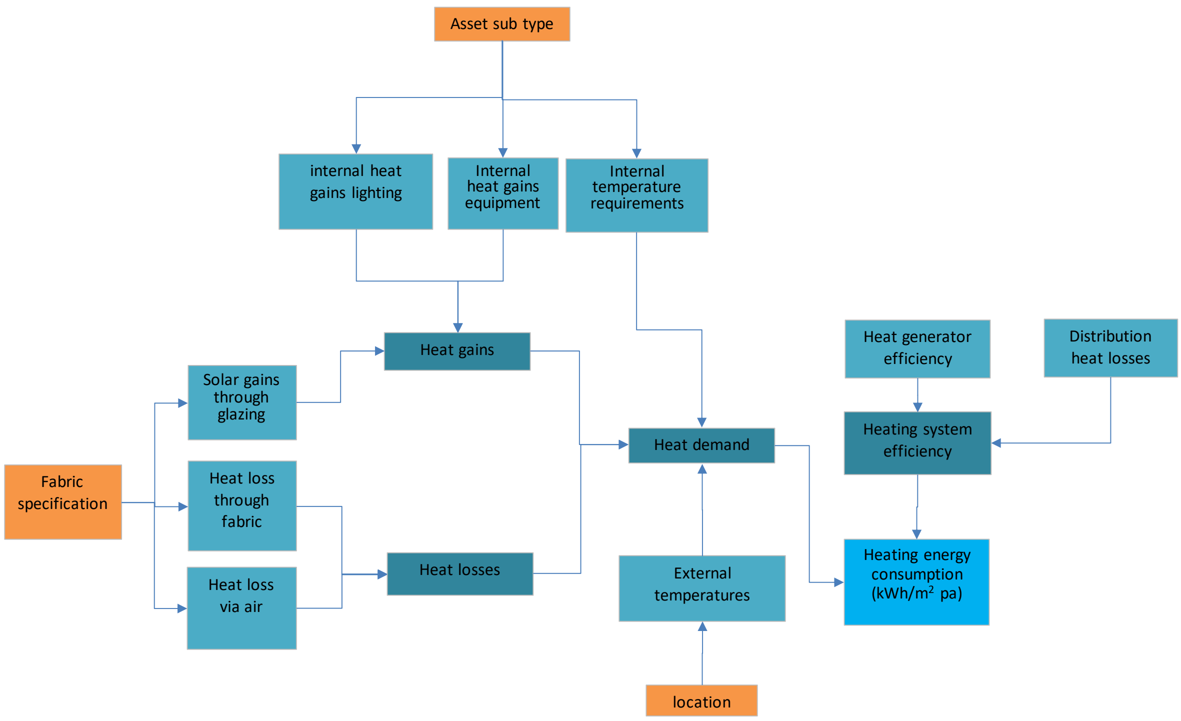

Figure 5: Schematic of the simplified energy modelling approach for space heating

Heat demand

The demand for space heating is determined by the difference between the internal and external temperature over the heating season. As this will be the same for both the standard and the assessed asset this is not explicitly calculated within the asset calculator.

Heat generator efficiency

The efficiency of the heat generator affects the amount of energy needed to meet the heat demand, where a heat generator with a higher efficiency will result in a lower energy consumption. The heat generator efficiency improvement factor is therefore determined by:

$$\textit{Heat generator improvement factor} = (1/\textit{efficiency}_{asset})/(1/\textit{efficiency}_{std})$$

Heating system efficiency

The efficiency of the space heating system includes the heat generator efficiency and any distribution losses. The asset calculator assumes that there will be no heat losses associated with local generation systems, and applies a 10% heat loss for centralised systems and a 20% heat loss for district heating systems.

$$\textit{Heating system efficiency improvement factor} = \textit{Heat generation improvement factor} \times (1+\textit{losses}_{asset})/(1+\textit{losses}_{std})$$

Heat loss through fabric

Heat loss through fabric is determined as the surface area weighted average U-value for the external fabric and is calculated as follows:

$$\textit{Surface area weighted U-value} = \textit{U-value}_{wall} \times \textit{Area}_{wall}/\textit{Area}_{total} + \textit{U-value}_{roof} \times \textit{Area}_{roof}/\textit{Area}_{total} + \textit{U-value}_{glazing} \times \textit{Area}_{glazing}/\textit{Area}_{total}$$

The improvement factor for heat loss through the fabric is determined by the ratio of the surface area weighted average of the U-values across all fabric elements (external walls, roofs and windows) for the assessed and the standard asset.

$$\text{Fabric heat loss improvement factor} = \text{Surface area weighted U-value}_{asset} / \text{Surface area weighted Uvalue}_{std}$$

Heat losses via air

This comprises air infiltration through the building envelope and the ventilation requirements of the building occupants.

Air infiltration through the building envelope is determined by the air permeability of the building fabric, and the ratio of surface area to volume for the building envelope as air changes per hour.

Infiltration heat loss = air changes per hour x internal volume x (1-%heat recovery)

Air changes per hour = (air permeability of the external envelope x surface area/volume)/20

Ventilation requirements for an asset are the number of air changes per hour required by the expected occupant density which is determined by the asset sub type. Therefore, this will be the same for both the asset and the standard version of the asset. However, where there is mechanical ventilation the % heat recovery from exhaust air needs to be taken into account as follows:

Air heat loss = infiltration changes per hour + ventilation air changes per hour x (1-% heat recovery)

$$\text{Air heat loss improvement factor} = \text{heat loss via air}_{asset} / \text{heat loss via air}_{std}$$

Internal heat gains

Internal heat gains arise from equipment, lighting, building occupants and from solar gains through glazing. As the asset energy calculator only considers the efficiency of the fabric and installed building services, the heat gains from equipment in the assessed asset are assumed to be the same as for the standard building. The asset calculation therefore only explicitly considers the differences in lighting energy efficiency and solar gains. However, the overall internal gains improvement factors take into account the relative contribution each type of internal gains makes to the total for the standard version of the asset.

The lighting efficiency for both the asset and the standard version of the asset are calculated based on the average efficiency of lamp types installed with additional % energy saving applied where lighting controls are fitted. Solar gains through glazing will depend on the glazed area, the orientation of the windows, the amount of sunlight incident on the windows and the g value of the glazing (which relates to the proportion of heat transferred). The asset energy performance calculator currently only takes account of the ratio of glazed area and the g value of the glazing.

Total heat gains = equipment gains + people gains + lighting gains + solar gains

Where

- Equipment gains = equipment energy use
- People gains = occupants per m^2 x 10 kW per person x annual occupancy hours
- Lighting gains = lighting energy use
- Solar gains ∝ window area x g value glazing x shading factor

The assumed equipment and people gains are determined by the benchmark energy consumption values and typical occupation densities for the relevant asset subtype. Therefore, they will be the same for the asset and the standard version of the asset, so only the improvements in lighting efficiency and solar gains need to be explicitly considered. These values are determined as follows:

$$\text{Lighting improvement factor} = (1/\text{lighting efficiency}_{asset})/(1/\text{lighting efficiency}_{std})$$

Solar gains improvement factor = solar gainsasset/solar gainsstd

Total heat gains improvement factors = % solar gains x solar gains improvement factor + % lighting gains x lighting efficiency improvement + % equipment gains + % people gains

Heating distribution losses

A distribution improvement factor is applied which reflect the typical or (actual where provided for district heating) losses associated local, centralised and district heating systems

Distribution improvement factor = distribution loss for standard building system type/distribution loss for actual building system type x distribution loss improvement factor

Overall heating improvement

The overall heating improvement factor is then calculated by multiplying the component heating improvement factors identified above.

Overall heating improvement factor = heat generation improvement factor x (fabric heat loss improvement factor + air heat loss improvement factor) x total heat gains improvement factor x distribution loss improvement factor

Energy and carbon emissions from space heating

Energy consumption for space heating is then calculated based on the heating improvement factor as follows:

Asset heating energy use (kWh/m^2 per year) = Heating improvement factor x benchmark heating energy use (kWh/m^2 per year)

Asset heating carbon emissions (kgCO_2eq/m^2) = Asset heating energy use x fuel CO_2 emission factor = Asset heating carbon emissions (kgCO_2eq/m^2)

Cooling

The simplified energy modelling approach for cooling is shown below in Figure 6.

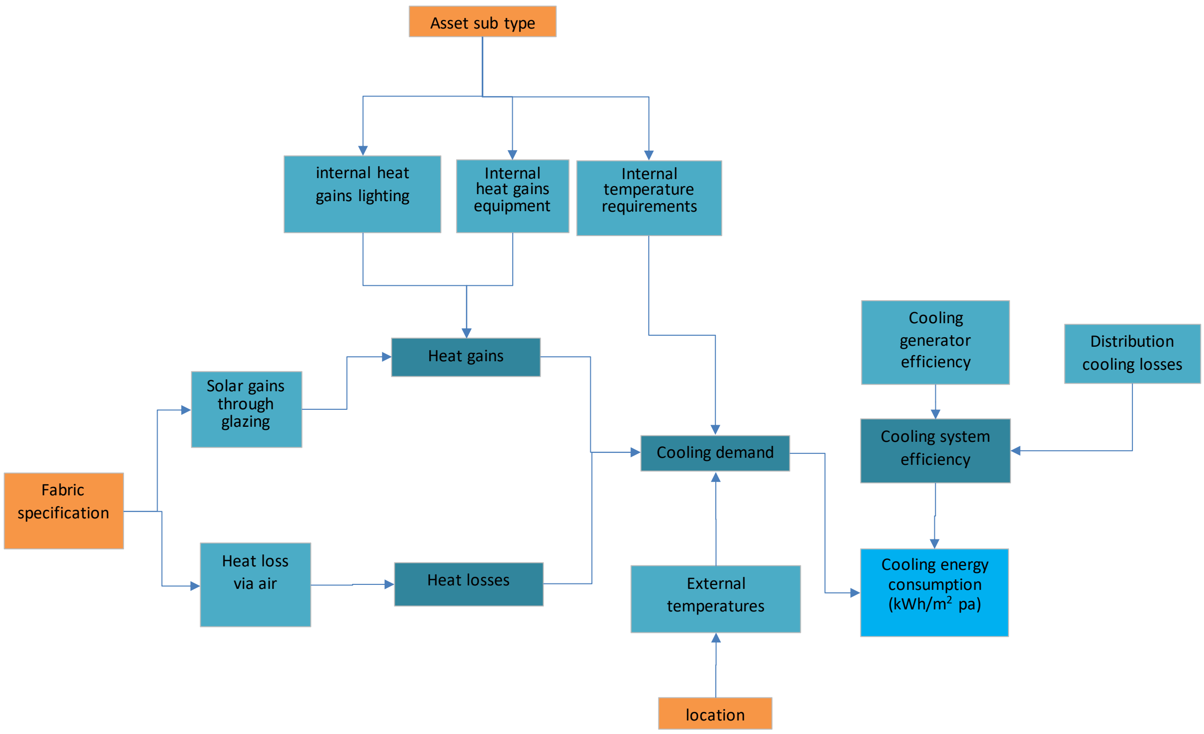

Figure 6: Schematic of the simplified energy modelling approach for space cooling

Cooling demand

The demand for cooling is determined by the difference between the internal and external temperature over the cooling season and the annual number of cooling hours. As this will be the same for both the standard and the assessed asset this is not explicitly calculated.

Cooling generator efficiency

The efficiency of the cooling generator affects the amount energy needed to meet the cooling demand, where a cooling generator with a higher efficiency will result in a lower energy consumption. The cooling generator efficiency improvement factor is therefore determined by:

$$\textit{Cooling generator improvement factor} = 1/\textit{efficiency}_{asset} / 1/\textit{efficiency}_{std}$$

Internal heat gains

Internal heat gains are calculated as described for space heating, except for solar gains where the improvement factor also includes a shading factor:

Solar gains ∝ window area x g value glazing x shading factor

Overall reduction in heat gains improvement factor = % solar gains x solar gains improvement factor + % lighting gains x lighting efficiency improvement + % equipment gains + % people gains

Cooling distribution losses

Calculated as for heating distribution losses

Overall cooling improvement

The overall cooling improvement factor is then calculated by multiplying the component cooling improvement factors identified above.

Overall cooling improvement factor = cooling generation improvement factor x overall reduction in heat loss improvement factor x cooling distribution loss improvement factor

Energy and carbon emissions from cooling

Energy consumption for cooling is then calculated based on the cooling improvement factor as follows:

Asset cooling energy use (kWh/m^2 per year) = Overall cooling improvement factor x benchmark cooling energy use (kWh/m^2 per year)

Asset cooling carbon emissions (kgCO_2eq/m^2 per year) = Asset cooling energy use x fuel CO_2 emission factor

Mechanical ventilation

The demand for ventilation in the building is implicitly included in the BREEAM In-Use energy benchmark so the improvement for mechanical ventilation is determined by the relative system efficiencies and the percentage of asset floor area that is treated compared to the standard building.

Mechanical ventilation system efficiency

The mechanical ventilation system efficiency is determined by the fan efficiency and the ductwork losses and the improvement factor is determined as follows:

Mechanical ventilation system improvement factor = Fan efficiency improvement factor x ductwork improvement factor

Where:

Fan efficiency improvement factor = *((% fans with VSDs x 0.75)+(1-% fans without VSDs)) x SFP actual/ SFP standard building*

Ductwork improvement factor = (1- asset ductwork factor)/ (1-standard building ductwork factor)

Adjustment for floor area

Mechanically ventilated floor area adjustment = % asset with mechanical ventilation/% standard building with mechanical ventilation

Overall mechanical ventilation efficiency

Overall mechanical ventilation improvement factor = mechanical ventilation system improvement factor x floor area adjustment factor

Energy and carbon emissions from mechanical ventilation

Asset mechanical ventilation energy use (kWh/m^2 per year) = Overall mechanical improvement factor x benchmark cooling energy use (kWh/m^2 per year)

*Asset mechanical ventilation carbon emissions (kgCO_2eq/m^2 per year) = Asset mechanical ventilation energy use * fuel CO_2 emission factor*

Distribution of heating and cooling by air

The improvement factor for air distribution of heating and cooling systems is calculated using the same formulae as the mechanical ventilation system improvement factor.

For heating and cooling systems with liquid distribution systems the improvement factor is determined based on the proportion of pumps with VSDs as follows:

Pump efficiency improvement factor = ((% pump with VSDs x 0.75) + (1-% pumps without VSDs))

Energy and carbon emissions from heating and cooling distribution

Asset distribution of heating and cooling energy use (kWh/m^2 per year) = fan or pump efficiency improvement factors x benchmark distribution of heating and cooling energy use (kWh/m^2 per year)

*Asset distribution of heating and cooling carbon emissions (kgCO_2eq/m^2 per year) = Asset mechanical ventilation energy use * fuel CO_2 emission factor*

Lighting

The lighting end use is determined by the average lighting level in the building, which is implicitly included in the BREEAM In-Use benchmark. The improvement factor for lighting is therefore determined by the average efficacy of the installed lamps in the assessed asset and the standard asset and the expected reduction in energy use from installed lighting controls.

Lighting efficacy

The lighting efficacy improvement factor is calculated based on a floor area weighted average value for the efficacy of the installed lamp types, which takes into account whether the lamps are fitted with diffusers or shades and, for LED and fluorescent lamps, whether they are fitted with constant illuminance controls.

Floor area weighted lamp efficacy = $Efficacy_{lamp1}$ x Floor $area_{lamp1}$/Floor $area_{total}$ + $Efficacy_{lamp2}$ x Floor $area_{lamp2}$/Floor $area_{total}$ +…… $Efficacy_{lampn}$ x Floor $area_{lampn}$/Floor $area_{total}$

Lighting system efficiency

The efficiency of the lighting system includes the lighting efficacy and the expected reduction in energy use from installed lighting controls. The asset calculator considers four types of lighting controls; dimmable photoelectric controls, photoelectric switching controls, auto off presence detection and auto on presence detection and a typical % saving is associated with each type of control. The average lighting control saving is calculated as a floor area weighted average value.

$$\textit{Floor area weighted lighting control savings} = Saving_{control1} \times \textit{Floor area}_{contorl1}/\textit{Floor area}_{total} + Saving_{control2} \times \textit{Floor area}_{contorl2}/\textit{Floor area}_{total} + \ldots\ldots Saving_{controln} \times \textit{Floor area}_{contorln}/\textit{Floor area}_{total}$$

$$\textit{Lighting efficiency improvement factor} = 1-((\textit{Floor area weighted lamp efficacy}_{asset} \times (1+ \textit{Floor area weighted lighting control savings}_{asset})/((\textit{Floor area weighted lamp efficacy}_{std} \times (1+ \textit{Floor area weighted lighting control savings}_{std})$$

Hot water

The demand for hot water is implicitly included in the BREEAM In-Use energy benchmark so the improvement factor for hot water only needs to consider the hot water generator efficiency and distribution losses.

Hot water generator efficiency

The efficiency of the hot water generator affects the amount of energy needed to meet the hot water demand, where a hot water generator with a higher efficiency will result in a lower energy consumption. The hot water generator efficiency improvement factor is therefore determined by:

$$\textit{Hot water generator improvement factor} = (1/efficiency_{asset})/(1/efficiency_{std})$$

Hot water system efficiency

The efficiency of the hot water system includes the hot water generator efficiency and any distribution losses. The asset calculator assumes that there will be no heat losses associated with local generation systems, and applies a 10% heat loss for centralised systems and a 20% heat loss for district heating systems.

$$\textit{Hot water system efficiency improvement factor} = \textit{Hot water generation improvement factor} \times (1+losses_{asset})/(1+losses_{std})$$

Energy and carbon emissions from hot water

Energy consumption for hot water is then calculated based on the hot water improvement factor as follows:

Asset hot water energy use (kWh/m^2 per year) = overall hot water improvement factor x benchmark hot water energy use (kWh/m^2 per year)

*Asset hot water carbon emissions (kgCO_2eq/m^2 per year) = Asset hot water energy use * fuel CO_2 emission factor*

Carbon emissions from on-site renewable electricity generation.

The energy performance calculation takes account of the carbon benefits associated with renewable electricity generated on-site by assigning a zero-emission factor on-site renewable electricity generation.

Overall asset energy performance and credits

The overall asset energy performance score is then calculated by summing the calculated carbon savings for all end uses and comparing this to benchmark carbon emissions.

Improvement potential

In addition to calculating the energy performance, the asset calculator also generates outputs which indicate areas where scope for improving energy performance may exist. An example of the output generated is provided below in Figure 7.

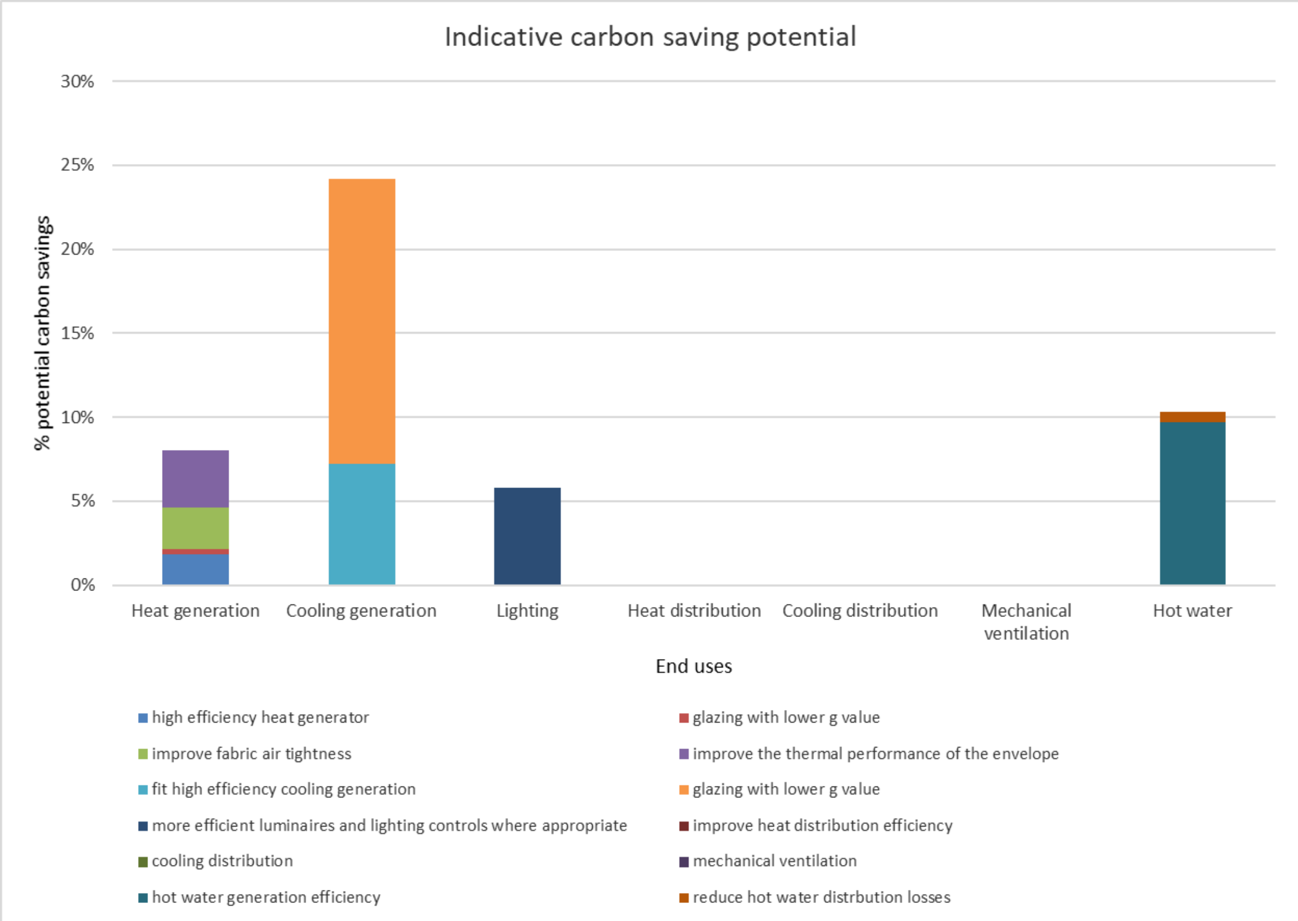

Figure 7: Example of output - Indicative carbon saving potential

Because of the simplified modelling approach adopted, the actual savings potential is likely to vary and may not be technically or economically feasible. Where the asset rating is based on default rather than actual values the carbon saving potential will be even less accurate. Therefore, this information should be used to identify areas that warrant more detailed investigation and not be used directly to inform investment decisions.

The calculation methodology for the carbon savings potential is the same as that described for the energy performance calculation but, rather than calculating how the assessed asset compares to a standard version of the asset, the assessed asset is compared to the best practice version of the asset.

Asset Performance:

Ene 01 Building services

Contributes to 40 credits available for asset energy rating

No Minimum Standard

Aim

To minimise operational energy consumption and the associated carbon emissions by increasing the intrinsic energy efficiency of the building fabric and the installed buildings services.

Question

What building services are present?

Credits	Answer	Select all that apply
-	A.	Question not answered
-	B.	Heating only
-	C.	Heating and cooling
-	D.	Cooling only
-	E.	None (lighting only)
-	F.	Hot water only
-	G.	Heating and hot water
-	H.	Heating and cooling and hot water
-	I.	Cooling and hot water

Methodology

Heating/cooling systems

Heating/cooling systems can be excluded from the calculation where the heated or cooled area equates to less than 10% of overall floor area.

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
All	One of the following can be used to demonstrate compliance: 1. Visual inspection and verification through photographic evidence of listed system(s). 2. Extract of Operational & Maintenance (O&M) manuals listing all building services that are present in the building 3. Visual inspection and verification and installation diagrams.

Additional information

Other information

This question must be answered in order to generate the asset energy rating.

Asset Performance:

Ene 02 Percentage of mechanical ventilation

Contributes to 40 credits available for asset energy rating

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No Minimum Standard

Aim

To minimise operational energy consumption and the associated carbon emissions by increasing the intrinsic energy efficiency of the building fabric and the installed buildings services.

Question

What percentage of the floor area is mechanically ventilated?

Credits	Percentage of floor area that is mechanically ventilated
-	%

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
All	The following can be used to demonstrate compliance: • Visual inspection and verification through photographic evidence of the ventilation system OR • Building plans showing the floor area that is mechanically ventilated and how the percentage of the floor area was calculated

Definitions

Mechanically ventilated area:

For the purposes of this BREEAM In-Use issue, a mechanically ventilated area is an area with centralised mechanical ventilation system.

Typically, a mechanically ventilated area will provide both supply and extract. Areas that are fitted with local mechanical extraction should not be included.

Additional information

Asset energy calculator

In order to obtain the maximum possible number of credits for the asset energy performance as much information as possible should be entered. Where no value is entered, the asset energy rating calculator will assume a pessimistic default value.

Asset Performance:

Ene 03 Fabric performance

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Contributes to 40 credits available for asset energy rating

No Minimum Standard

Aim

To minimise operational energy consumption and the associated carbon emissions by increasing the intrinsic energy efficiency of the building fabric and the installed buildings services.

Question

Fabric performance questions:

Credits	Question	Enter value or select a single answer option	Units
-	Average U-value of the external walls		W/m²K
-	Average U-value of the roof		W/m²K
-	Average U-value of the windows		W/m²K
-	External wall area (excluding windows)		m^2
-	Roof area		m^2
-	Window area		m^2
-	Volume of building		m^3
-	Average g-value of the glazing		
-	Is external solar shading to reduce excess solar gains during the cooling season fitted?	Yes/ No	
-	In what year were the windows last replaced?		
-	Does the asset use any renewable electricity generated on-site	Yes/ No	
-	What percent of annual electricity use is from renewable electricity generated on-site		

Methodology

Asset energy calculator guidance

See Asset energy calculator guidance for the heat loss through fabric and the internal heat gains.

Average U-value and g-value calculation

An area weighted average across all different constructions for the relevant element.

External solar shading

Solar shading should be provided where solar heat gains will be significant during the cooling season. The significance of the solar heat gains is determined by the amount of sunlight entering the room. The Assessor should consider the following characteristics;

- Orientation of the windows to direct sunlight in the cooling season
- Overall size of the windows
- Relative size of the windows compared to the space.

For example, in the northern hemisphere high levels of south facing glazing could result in significant solar heat gains in the summer.

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
All	Evidence demonstrating the U or g values may include: • Energy Performance Certificate • Photographic evidence of building element construction • Building design plans • Written details of the National Building Regulations stating the minimum U-value at the time the asset was constructed • Expert report by a building surveyor or equivalent estimating the U-value • Manufacturer's literature specifying the U-values.
All	Plans and façade drawings to demonstrate calculation of volume of building
All	External solar shading can be demonstrated via photographic evidence or the Assessor's Site Inspection report.
All	Evidence must be provided to support the calculation of percent of annual electricity use from renewable electricity generated on-site that has been entered. This can be metering data for renewable electricity generated on-site, and metering or billing data for grid supply electricity consumption.

Definitions

U-value:

A measure of heat loss in a building element such as a wall, floor or roof that measures the effectiveness of a material as an insulator. A lower U-value indicates a higher level of thermal efficiency.

g-value:

A measure of the proportion of heat that is transmitted through a window where a g-value of 1 indicates 100% heat transmission.

Additional information

Asset energy calculator

In order to obtain the maximum possible number of credits for the asset energy performance as much information as possible should be entered. Where no value is entered, the asset energy rating calculator will assume a pessimistic default value.

Asset Performance:

Ene 04 Air permeability of the fabric

Contributes to 40 credits available for asset energy rating

No Minimum Standard

Aim

To minimise operational energy consumption and the associated carbon emissions by increasing the intrinsic energy efficiency of the building fabric and the installed buildings services

Question

Enter the result of the building pressure/air leakage test if known ($m^3/h.m^2$@50Pa)

Credits	Enter pressure/air leakage test result
-	$m^3/h.m^2$@50Pa

If a pressure/air leakage test has not been conducted, has a thermographic survey been undertaken?

Credits	Answer	Select a single answer option
-	A.	Yes
-	B.	No

Assessment criteria

Criterion	Assessment criteria
1.	Testing must be conducted by a relevant competent person.

Methodology

Air leakage testing standard

The appropriate standard for air leakage testing is: ISO 9972:2015 Thermal performance of buildings - Determination of air permeability of buildings - Fan pressurisation method

Air leakage testing

Air leakage testing results must be from testing that has, as a minimum, been carried out after construction of the building or when structural changes have been made to the building.

Testing must be conducted by a competent person.

Thermographic survey standard

The appropriate standard for a Thermographic survey is ISO 6781:1983 Thermal insulation -- Qualitative detection of thermal irregularities in building envelopes -- Infrared method

Thermographic survey

The thermographic survey should cover 100% of the treated spaces, unless it is a large complex building 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.

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 should be followed regarding the extent of the survey and testing.

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
All	Copy of results from building pressure and/or air leakage test.
All	Copy of thermographic survey results.
All	Confirmation of competence levels for persons performing testing.

Definitions

Air leakage test:

A test which quantifies the air permeability rate of the building envelope. The more airtight the building fabric is the lower the air permeability result will be. To maximise energy efficiency, it is advised that the air permeability result is as low as reasonably practicable.

Relevant competent person:

For air leakage testing:

An individual achieving all of the following can be considered to be a relevant competent person:

a) Holds a recognised qualification in airtightness testing and measurement.

b) Has relevant experience in air pressure testing and has carried out testing on at least ten large non-residential buildings within the last five years. They should also have a recognised qualification in airtightness testing and measurement.

Their expertise should be broad enough to cover all required technical aspects guaranteeing that the data collected during the test is appropriate and the results reflect the assessed airtightness performance of the building. It can be someone operating as sole trader or employed by public or private enterprise bodies.

For thermographic surveys:

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

Additional information

Asset energy calculator

In order to obtain the maximum possible number of credits for the asset energy performance as much information as possible should be entered. Where no value is entered, the asset energy rating calculator will assume a pessimistic default value.

Asset Performance:

Ene 05 Cooling

Contributes to 40 credits available for asset energy rating

No Minimum Standard

Aim

To minimise operational energy consumption and the associated carbon emissions by increasing the intrinsic energy efficiency of the building fabric and the installed buildings services

Question

1. Is space cooling generated on-site?
2. What is the main system type for on-site cooling?
3. Please enter Energy Efficiency Ratio (EER) of the main on-site cooling generator, if known
4. Is the on-site cooling system central or local?
5. Is cooling distributed around the building via air?
6. In what year was the main chiller/cooling system replaced (if known)?
7. For district cooling only:
    a. Do you know what types of cooling generation are used for the network cooling supply?
    b. What are the main cooling generation sources?
    c. What is the percentage distribution losses for the cooling network (if known)?

Credits	Question	For questions 1, 2, 4, 5, 7a-b select a single answer option. For questions 3, 6, 7c enter value
-	1.	Yes / No
-	2.	a. Question not answered b. Asset is not cooled c. Localised (room) air conditioning unit d. Chiller e. On-site cogeneration f. Renewable cooling source g. Other (user defined)
-	3.	Enter EER of the cooling generator

Credits	Question	For questions 1, 2, 4, 5, 7a-b select a single answer option. For questions 3, 6, 7c enter value
-	4.	Central / Local
-	5.	Yes / No
-	6.	Enter year
-	7. a	Yes / No Note: This should be entered under Ene 9a in the BREEAM In-Use Online Platform
-	7.b	Cooling source 1 Cooling source 2 Cooling source 3 Cooling source n Note: This should be entered under Ene 9a in the BREEAM In-Use Online Platform
-	7.c	Enter % Note: This should be entered under Ene 9a in the BREEAM In-Use Online Platform

Methodology

Energy Efficiency Ratio (EER): CCHP/absorption chillers

To assess CCHP/absorption chillers using BREEAM In-Use, select the ‘main system type for cooling’ as ‘Chiller’. The energy efficiency ratio (EER) for the cooling generator should then be calculated as follows:

EER = rated absorption chiller COP x 2

As an example, if the absorption chiller COP was 0.7, then the calculated energy efficiency ratio to be entered into the tool would be:

0.7 x 2 = 1.4

Where the calculated EER is below the minimum value that can be entered into the tool, please enter the minimum value. This correction is made to cancel out the primary energy factor normally applied for electrical chillers that would not be applicable in this instance. The COP value can be interchanged with the EER value.

Main cooling system type

Where there is more than one cooling system type in the asset, the Assessor must verify that the selected generation type is the main cooling source for the asset. This should be based upon respective system cooling output capacities.

Multiple cooling generation units for the main cooling system

If there is more than one cooling generation unit, the Assessor should calculate the average energy efficiency of the units based on their respective cooling generation capacities.

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
1, 3, 4, 5	Visual inspection and verification through photographic evidence of the installed system(s).
All	Extract of relevant O&M manuals or a copy of manufacturer information.
6	Copy of documentation outlining when the cooling system was installed or replaced, such as, a) Extract of O&M manuals or a copy of manufacturer information for cooling generator/cooling system b) Service records c) Installation records d) Maintenance records
7	Copy of documentation provided by the district cooling operator.

Additional information

Asset energy calculator

In order to obtain the maximum possible number of credits for the asset energy performance as much information as possible should be entered. Where no value is entered, the asset energy rating calculator will assume a pessimistic default value.

Asset Performance:
Ene 06 Heating

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Contributes to 40 credits available for asset energy rating

No Minimum Standard

Aim

To minimise operational energy consumption and the associated carbon emissions by increasing the intrinsic energy efficiency of the building fabric and the installed buildings services.

Question

1. Is space heating generated on-site?
2. What is the main generation type for on-site space heating?
3. Please enter the efficiency or COP of the main on-site heat generator.
4. What is the main fuel used for on-site heat generation?
5. Is the on-site main space heating system centralised or local?
6. Is heat distributed around the building via air?
7. In what year was the main heat generator/heating system last replaced (if known)?
8. For district heating only:
    a. Do you know what types of heat generation are used for the network heat supply?
    b. What are the main heat generation sources?
    c. What is the percentage distribution losses for the heat network (if known)?

Credits	Question	For questions 1 - 6, 8 a - b select a single answer. For questions 7 and 8c enter value
-	1.	Yes / No
-	2.	Question not answered Boiler Heat pump/reversible chiller Direct electricity consumption Other on-site heat generation e.g., CHP/Solar thermal Other (user entry)
-	3.	Enter efficiency

Credits	Question	For questions 1 - 6, 8 a - b select a single answer. For questions 7 and 8c enter value
-	4.	Question not answered Electricity Natural gas Burning oil/ Kerosene Gas oil Fuel oil Diesel Petrol LPG Other petroleum gas Coal Biodiesel Landfill gas Other biogas Wood Renewable heat source Renewable cooling
-	5.	Centralised / Local
-	6.	Yes / No
-	7.	Enter year
-	8.a	Yes / No Note: This should be entered under Ene 9b in the BREEAM In-Use Online Platform
-	8.b	Heat source 1 Heat source 2 Heat source 3 Heat source n Note: This should be entered under Ene 9b in the BREEAM In-Use Online Platform
-	8.c	Enter % Note: This should be entered under Ene 9b in the BREEAM In-Use Online Platform

Methodology

Main generation type for space heating

1. Where there is more than one heat generation type in the asset, the Assessor must verify that the selected generation type is the main heat source for the asset.
2. This should be based upon respective system heat output capacities.

Multiple heat generation units for the main heating system type

If there is more than one heat generation unit the Assessor should calculate the average energy efficiency, or COP for heat pumps of the units based on their respective heat generation capacities.

COP of heat pumps

The coefficient of performance (COP) of a heat pump is calculated as the ratio of heating or cooling provided to electrical energy consumed. COP entered must not be higher than 7.

Efficiency of CHP unit

The efficiency of a CHP unit should be calculated as follows:

Overall efficiency = thermal efficiency+(2 x electrical efficiency)

As an example, if the thermal efficiency was 50% and the electrical efficiency 35% the calculated efficiency would be:

50% + (2 x 35%) = 120%

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the ‘BREEAM evidential requirements’ section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
All	Visual inspection and verification through photographic evidence of listed space heating system, indicating the distribution method.
All	Extract of O&M manuals or a copy of manufacturer information for heating systems that are present in the asset.
All	Evidence demonstrating the main heating system is local/ centralised.
All	Installation diagrams of the space heating system.
6	Copy of documentation outlining when the heating system was installed or replaced, such as: a) Extract of O&M manuals or a copy of manufacturer information for heating generator/heating system b) Service records c) Installation records d) Maintenance records
All	Evidence demonstrating when the main heat generator/heating system last replaced
8	Copy of documentation provided by the district heating operator.

Definitions

COP:

The coefficient of performance (COP) of a heat pump is the ratio of heating or cooling provided to electrical energy consumed.

Additional information

Asset energy calculator

In order to obtain the maximum possible number of credits for the asset energy performance as much information as possible should be entered. Where no value is entered, the asset energy rating calculator will assume a pessimistic default value.

Asset Performance:

Ene 07 Internal lighting

Contributes to 40 credits available for asset energy rating

No Minimum Standard

Aim

To minimise operational energy consumption and the associated carbon emissions by increasing the intrinsic energy efficiency of the building fabric and the installed buildings services.

Question

1. What percentage of lit asset floor area is fitted with LED lamps?
    a. What percentage of LED lighting is fitted with constant illuminance controls?
2. What percentage of lit asset floor area is fitted with Compact Fluorescent lamps?
    a. What percentage of Compact Fluorescent lamps have diffusers or shades fitted?
3. What percentage of lit asset floor area is fitted with Tungsten Halogen lamps?
    a. What percentage of Tungsten Halogen lamps have diffusers or shades fitted?
4. What percentage of lit asset floor area is fitted with Incandescent lamps?
    a. What percentage of Incandescent lamps have diffusers or shades fitted?
5. What percentage of lit asset floor area is fitted with T12 fluorescent tubes?
    a. What percentage of T12 fluorescent tubes have diffusers or shades fitted?
6. What percentage of lit asset floor area is fitted with T8 fluorescent tubes?
    a. What percentage of T8 fluorescent tubes have diffusers or shades fitted?
7. What percentage of lit asset floor area is fitted with T5 fluorescent tubes?
    a. What percentage of T5 fluorescent tubes have diffusers or shades fitted?
8. What percentage fluorescent tubes are fitted with constant illuminance controls?
9. What percentage of fluorescent tubes are fitted with high frequency ballasts?
10. What percentage of lit asset floor area is fitted with metal halide lamps?
    a. What percentage of metal halide lamps have diffusers or shades fitted?
11. What percentage of lit asset floor area has access to daylight?
    a. What percentage of day lit space is fitted with dimmable photoelectric control?
    b. What percentage of day lit space is fitted with photoelectric switching controls?
12. What percentage of the lit asset floor area is occasionally occupied?

a. What percentage of occasionally occupied space is fitted with auto off (manual on) presence detection?

b. What percentage of occasionally occupied space is fitted with auto on and off presence detection?

Credits	Question No.	Question	Answer	a. Answer	b. Answer
-	1.	LED lighting	%	%	n/a
-	2.	Compact Fluorescent lamps	%	%	n/a
-	3.	Tungsten Halogen lamps	%	%	n/a
-	4.	Incandescent lamps	%	%	n/a
-	5.	T12 fluorescent tubes	%	%	n/a
-	6.	T8 fluorescent tubes	%	%	n/a
-	7.	T5 fluorescent tubes	%	%	n/a
-	8.	Fluorescent tubes with constant illuminance controls	%	n/a	n/a
-	9.	Fluorescent tubes with high frequency ballasts	%	n/a	n/a
-	10.	Metal halide lamps	%	%	n/a
-	11.	What is the percentage of the lit asset floor area with access to daylight?	%	%	%
-	12.	What percentage of the lit asset floor area is occasionally occupied?	%	%	%

Methodology

Percentage of asset floor area lit by lamp type

The sum of the percentage of lit asset floor area for all lamp types must equal 100%.

Floor area calculations

The total floor area for all the fitted lamp types must equal 100%. Questions 1 - 7 and 10.

The total floor area of day lit space fitted controls must not exceed 100% of the daylit space. Questions 11a and 11b.

The total floor area of occasionally occupied space must not exceed 100% of occasionally occupied space. Questions 12a and 12b.

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
All	Photographic evidence of visual inspection of lighting types identified.
All	Copy of the building plans highlighting areas which use the mentioned lighting types, daylight and occupancy sensors for lighting.
All	Evidence to demonstrate how the percentage was calculated.

Definitions

Diffuser or shade:

A diffuser or a shade is a transparent or translucent optical element that scatters in all directions the light emitted by the light source(s) contained with a luminaire.

For dimmable lighting with constant illuminance control:

By implication constant illuminance control is intended to mean a lighting control scheme that provides constant illuminance on the task by dimming the light sources early in their life cycle when they have a higher output. The savings achievable through constant illuminance control are more significant for LED or fluorescent lighting compared to other lamp types because the percentage light output drops more significantly over the lifetime of the light source. Examples of constant illuminance controls include, but are not limited to, dimming ballasts or integral LED drivers used in conjunction with photodetectors to meet task illuminance requirements by controlling the light output of the lighting system.

Occasionally occupied space:

Examples of occasionally occupied space includes toilets, kitchenette for an office, and storage areas. Occupied spaces can vary depending on the asset type.

Additional information

Asset energy calculator

In order to obtain the maximum possible number of credits for the asset energy performance as much information as possible should be entered. Where no value is entered, the asset energy rating calculator will assume a pessimistic default value.

Asset Performance: Ene 08 Ventilation

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Contributes to 40 credits available for asset energy rating

No Minimum Standard

Aim

To minimise operational energy consumption and the associated carbon emissions by increasing the intrinsic energy efficiency of the building fabric and the installed buildings services

Question

1. What percentage of fans are fitted with variable speed drives (VSD)?
2. Are the pumps fitted with VSDs?
3. What is the specific fan power for air handling systems?
4. Has the ductwork been tested for leakage and appropriate remedial action taken?
5. In what year was the main ventilation system replaced (if known)?
6. What is the heat recovery rate of the ventilation system (if known)?

Credits	Question	For questions 1,3,5,6 enter value. For question 2 and 4 select either Yes or No	Units
-	1.	Enter value	%
-	2.	Yes/No	
-	3.	Enter value	W/l/s
-	4.	Yes/No	
-	5.	Enter year	
-	6.	Enter value	%

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.

Criteria	Evidence requirement
All	Extract of relevant O&M manuals or a copy of manufacturer information for the ventilation system.
All	Service/maintenance records for the ventilation system.
All	Visual inspection of the equipment date (photographic evidence if possible).
All	Copy of duct and air handling leakage test results.
5	Copy of documentation outlining when the ventilation system was installed or replaced, such as, a) Extract of O&M manuals or copy of manufacturer information for the ventilation system b) Service records c) Installation records d) Maintenance records.

Definitions

Air handling systems:

For the purposes of this issue, air handling systems are systems (usually centralised) which distribute air (usually for cooling) around the building.

Variable speed drive:

These are devices that can be attached to electrical motors to adjust the speed of a motor e.g., in a fan or a pump, when the service demand varies. These are also referred to as VFD (Variable frequency drive) and AFD (Adjustable frequency drive).

Additional information

Asset energy calculator

In order to obtain the maximum possible number of credits for the asset energy performance as much information as possible should be entered. Where no value is entered, the asset energy rating calculator will assume a pessimistic default value.

Asset Performance:

Ene 09 Hot water

Contributes to 40 credits available for asset energy rating

No Minimum Standard

Aim

To recognise the contribution that hot water systems make to the overall energy performance of the asset.

Question

1. Is hot water generated on-site?
2. Is the main on-site hot water system local or centralised?
3. What is the main generation type for on-site hot water?
4. What energy source is used to generate on-site hot water?
5. Please enter the hot water generation efficiency or COP, (if known)
6. In what year was the main hot water generator/hot water system last replaced (if known)?
7. For hot water provided by district heating only;
    a. Do you know what types of heat generation are used for the network heat supply?
    b. What are the main heat generation sources?
    c. What is the percentage distribution losses for the heat network (if known)?

Credits	Question	For questions 1 - 4, 7a - b select a single answer option. For question 5,6 and 7c enter value
-	1.	Yes / No
-	2.	Centralised / local
-	3.	Boiler Heat pump/ reversible chiller Direct electricity Other on-site system e.g. CHP/solar thermal Other (user entry)

Credits	Question	For questions 1 - 4, 7a - b select a single answer option. For question 5,6 and 7c enter value	
-	4.	Question not answered Electricity Natural gas Burning oil/ Kerosene Gas oil Fuel oil Diesel Petrol LPG	Other petroleum gas Coal Biodiesel Landfill gas Other biogas Wood Renewable heat source Renewable cooling
-	5.	Enter value	
-	6.	Enter year	
-	7.a	Yes/No Note: This should be entered under Ene 9b in the BREEAM In-Use Online Platform	
-	7.b	Heat source 1 Heat source 2 Heat source 3 Heat source n Note: This should be entered under Ene 9b in the BREEAM In-Use Online Platform	
-	7.c	Enter % Note: This should be entered under Ene 9b in the BREEAM In-Use Online Platform	

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
All	Visual inspection and verification through photographic evidence of water heating systems.
All	Extract of relevant O&M manuals or a copy of manufacturer information (confirming generation efficiency or COP).

Criteria	Evidence requirement
All	Installation diagrams.
All	Copy of documentation outlining when the hot water system was installed or replaced, such as: a) Extract of O&M manuals or a copy of manufacturer information for heat generator/heating system b) Service records c) Installation records d) Maintenance records.
7	Copy of the documentation provided by the district heating operator.

Additional information

Asset energy calculator

In order to obtain the maximum possible number of credits for the asset energy performance as much information as possible should be entered. Where no value is entered, the asset energy rating calculator will assume a pessimistic default value.

Asset Performance:

Ene 10 Demand side management (DSM) capabilities for electricity

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Credits

No Minimum Standard

Aim

To reduce carbon emissions associated with grid supply electricity by enabling electricity demand profiles to better match the availability of renewable electricity generation sources.

Question

1. Does the asset have any electric storage capacity?
2. Is cogeneration optimised to coordinate with local renewable energy generation and local energy demand profiles?
3. Are electric smart appliances or electric domestic hot water (DHW) subject to DSM control?
4. Is electric heating subject to DSM control?
5. Is electric cooling subject to DSM control?
6. Does the electric vehicle charging, or other charging loads, include any grid balancing?
7. Does the HVAC system have run time management?

Credits	Question	Select a single answer option	Points awarded	Points available
*	1	Yes	1	1
		No	0	1
*	2	No cogeneration	Filtered	0
		Yes	1	1
		No	0	1
*	3	Yes	1	1
		No	0	1
*	4	No electric heating	Filtered	0
		Yes	1	1
		No	0	1

Credits	Question	Select a single answer option	Points awarded	Points available
*	5	No electric cooling	Filtered	0
		Yes	1	1
		No	0	1
*	6	No electric vehicle or other charging loads	Filtered	0
		No	0	2
		On-way grid balancing controlled charging	1	2
		Two-way grid balancing controlled charging and electric vehicle to grid	2	2
*	7	No HVAC system	Filtered	0
		Yes	1	1
		No	0	1

* Refer to Methodology

Methodology

Credit allocation

Credits are based on the percentage of points achieved against the number of points available as follows;

Table 21: Allocation of credits

Percentage of available points achieved	Credits
≥ 25%	1
≥ 50%	2
≥ 75%	3
100%	4

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.

Criteria	Evidence requirement
All	Extract of relevant O&M manuals OR a copy of manufacturer information with link to the project assessed.
All	Visual inspection and verification.

Definitions

Charging loads:

Building related charging loads, such as charging rooms, represent a significant way of making electricity demand and grid supply match.

Demand side management (DSM):

Demand-side management refers to adopting measures to improve consumption efficiency on the demand side by responding to electricity generation. Changing consumption patterns reduces overall electricity consumption and therefore demand, but meets the same consumption function. This could include but not limited to;

- A reduction in electrical consumption of traditional appliances
- Increase in time-of-use appliances and electronic devices
- Plug-in electric vehicles grid balancing
- Local renewable electricity generation
- Control devices and platforms
- Electricity storage technologies.

Grid balancing:

Using this capability to ensure that electricity input to the grid matches the electricity demand. This results in a reduction in carbon emissions compared to conventional grid balancing which involves ramping up existing fossil fuelled power plants.

Run time management:

This is a type of control that limits the hours that a piece of equipment is able to run. This would involve individual setting following a predefined time schedule including fixed preconditioning phases.

Asset Performance: Ene 11 Installed controls

4 Credits

No Minimum Standard

Aim

To reduce operational energy consumption and associated carbon emissions by installing appropriate controls to reduce unnecessary energy consumption (waste).

Question

1. Are there internal temperature controllers in individual rooms or zones?
2. Can the output from the heat generator and the cooling generator be modulated?
3. Does the system have an interlock control?
4. Can the air flow be controlled at room level?
5. Is the supply air temperature controlled?
6. Is the air humidity controlled?

Credits	Question	Select a single answer option	Points awarded	Points available
*	1	Asset does not have both heating and cooling	Filtered	0
		Yes, with communication between controllers	3	3
		Yes, by thermostatic values or an electronic controller	2	3
		No	0	3
*	2	Asset does not have both heating and cooling	Filtered	0
		Indoor temperature control	3	3
		Outside temperature compensation control	2	3
		No control	0	3
*	3	Asset does not have both heating and cooling	Filtered	0
		Total interlock	3	3

Credits	Question	Select a single answer option	Points awarded	Points available
		Partial interlock	2	3
		No interlock	0	3
*	4	No mechanical ventilation or heating or cooling distributed by air	Filtered	0
		Demand or presence dependent air flow control at room level	3	3
		Time dependent air flow control at room level	2	3
		No air flow control at room level	0	3
*	5	No heating or cooling distributed by air	Filtered	0
		Variable set point with load compensation of supply air temperature	3	3
		Variable set point with outdoor temperature compensation of supply air temperature	2	3
		Constant set point for supply air temperature	1	3
		No control of air supply temperature	0	3
*	6	No humidification provided in the asset	Filtered	0
		Room or exhaust or supply air humidity control	3	3
		Supply air humidity limitation	2	3
		No air humidity control	0	3

* Refer to Methodology

Methodology

Credit allocation

Credits are based on the percentage of points achieved against the number of points available as follows;

Table 22: Allocation of credits

Percentage of available points achieved	Credits
≥ 20%	1
≥ 40%	2
≥ 60%	3
≥ 80%	4

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
All	Visual inspection and verification through photographic evidence of controls.
All	Extract of relevant O&M manuals or a copy of manufacturer information.

Definitions

Interlock control:

This control prevents the heating system operating when the cooling system is operating and vice versa.

Asset Performance:

Ene 12 Local energy performance asset rating

3 Credits | 0 | No Minimum Standard

Aim

To recognise operational energy efficiency and carbon benefits associated with benchmarking against local energy standards.

Question

1. Has the asset been assessed against local energy performance standards for existing buildings?
2. Was the assessment of the asset a legal or regulatory requirement or undertaken voluntarily?
3. Has the assessment been verified against a recognised industry standard by a third party?
4. What energy uses does the rating take account of?
5. Is the rating based on calculated or measured energy consumption?
6. What metric is used to determine energy performance?
7. Enter the energy performance value metric for the asset, if available.
8. Enter the benchmark energy performance value for the asset type, if available.

Credits	Question	For questions 1 - 3, 5 - 6 select a single answer option. For question 4 select all that apply. For question 7 - 8 enter value
1	1.	Yes/No
-	2.	Legal or regulatory/voluntary
1	3.	Yes/No
-	4.	Heating Cooling Hot water Mechanical ventilation Lighting Transport systems Building control systems Communication systems Specialist energy uses e.g., swimming pools, server rooms

Credits	Question	For questions 1 - 3, 5 - 6 select a single answer option. For question 4 select all that apply. For question 7 - 8 enter value
		Other energy uses
-	5.	Calculated / Measured
-	6.	$kgCO_2/m^2$ kWh delivered energy/m^2 for each fuel kWh heating and cooling demand per m^2 kWh primary energy per m^2 Dimensionless metric Other (please state)
-	7.	Enter value here
1	8.	Enter value here

Assessment criteria

Criterion	Assessment criteria
1.	For assessments inside the European Union (EU), local energy performance standards must be derived from national policy frameworks which facilitate the EU 'Energy Performance of Buildings Directive' (EPBD)'.
2.	For assessments outside of the EU, energy performance standards must be derived from relevant national policy frameworks.
3.	Benchmarks must correspond to the typical or average energy performance value for the asset type. If the benchmark is given as an interval, the midpoint should be used.

Methodology

Asset energy performance

The third credit for the Asset energy performance will only be awarded if the asset energy performance is lower than the benchmark energy performance for the asset type.

Recognised industry standards

Examples of recognised industry standards include;

- https://ec.europa.eu/energy/en/eu-buildings-factsheets-topics-tree/voluntary-energy-performance-certification-schemes
- https://www.iea.org/beep/

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
All	Certificate or rating output document
All	Scheme name and version and scheme documentation

Asset Performance:

Ene 13 Solar photovoltaic (PV) panels

4 Credits

No Minimum Standard

Aim

To minimise carbon emissions through on-site renewable energy generation from photovoltaics (PV).

Question

1. Is there any accessible roof area where PV panels could be installed?
2. What is the total accessible roof area (m^2) where PV panels could be installed?
3. What is the total area of PV panels installed on the roofs?
4. Is there any significant over shading of PV panels on the roof?
5. Are there any accessible areas elsewhere on-site where PV panels could be installed?
6. What is the total area of accessible areas elsewhere on-site where PV panels could be installed?
7. What is the total area of PV panels installed elsewhere on-site?
8. Is there any significant over shading of PV panels elsewhere on-site?

Credits	Question	For questions 2,3,6 and 7 provide area in m^2. For questions 1,4,5 and 8 select Yes or No
Max. 4	1.	Yes/No
Max. 4	2.	m^2
Max. 4	3.	m^2
Max. 4	4.	Yes/No
Max. 4	5.	Yes/No
Max. 4	6.	m^2
Max 4	7.	m^2
Max. 4	8.	Yes/No

Assessment criteria

Criterion	Assessment criteria	Applicable Answer
1.	**Filtering** Where the asset does not have an accessible roof or suitable site areas, this issue can be filtered out of the assessment.	All

Methodology

Credits	Total PV panels installed (m^2) = (Q2+Q5)/total accessible area where PV panels could be installed (m^2) (Q1+Q4)	% of PV panels covered (significant over shading)
1	>10%	>30%
2	>30%	>70%
3	>50%	-
4	>70%	-

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
All	Extract of relevant O&M manuals or a copy of manufacturer information.
All	Visual inspection and verification through photographic evidence of the PV panels

Definitions

Accessible area elsewhere on-site:

This is the area defined by the perimeter of the asset. This excludes car parking areas, landscaping, and other nonbuilding facilities.

Accessible roof area:

This relates to the area of the roof where it would be feasible to install PV panels.

Significant over shading:

Over shading is significant where 60% or more of the sky is blocked from the panel by obstacles.

Asset Performance:

Ene 14 Solar thermal panels

1 Credits | 0 | No Minimum Standard

Aim

To minimise carbon emissions through on-site renewable energy generation from solar thermal panels.

Question

Does the asset have any on-site solar thermal panels?

Credits	Answer	Select a single answer option
0	A.	Question not answered
0	B.	No
1	C.	Yes

Assessment criteria

Criterion	Assessment criteria	Applicable Answer
1.	**Filtering** Where the asset does not have an accessible roof, this issue can be filtered out of the assessment. Where the asset does not have any significant hot water usage or this is supplied by district heating, this issue can be filtered out of the assessment.	All

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
All	Extract of relevant O&M manuals or a copy of manufacturer information.
All	Photographic evidence of solar thermal panels

Asset Performance:

Ene 15 Monitoring energy end uses

4 Credits

No Minimum Standard

Aim

To reduce operational energy consumption through the effective management and monitoring of energy consumption for different building services and building services systems.

Question

What percentage of end uses with significant energy consumption are sub-metered?

Credits	Answer	Select a single answer option
0	A.	Question not answered
-	B.	There are no end uses with significant energy use
4	C.	100% of end uses with significant energy consumption are sub-metered
3	D.	≥75% of end uses with significant energy consumption are sub-metered
2	E.	≥50% of end uses with significant energy consumption are sub-metered
1	F.	≥25% of end uses with significant energy consumption are sub-metered
0	G.	<25% of end uses with significant energy consumption are sub-metered

Assessment criteria

Criterion	Assessment criteria	Applicable Answer
1.	**Filtering** Where there are no end uses with significant energy consumption in the asset the associated credits can be filtered out of the assessment.	B
2.	Significant energy consumption is considered to be >8,500kWh per year for electricity and >67,000kWh per year for other energy sources	C - G
3.	Where there is more than one HVAC system type serving a particular end use the requirement applies to the main HVAC system.	C - G

Criterion	Assessment criteria	Applicable Answer
4.	Where more than one end use is provided by the same HVAC component it is acceptable to sub-meter the combined energy consumption.	C - G

Methodology

Determining significant energy consumption

1. Identify which of the following end uses are present in the asset;
    a. Space heating generation
    b. Space cooling generation
    c. Hot water generation
    d. Mechanical ventilation
    e. Fans for distributing space heating
    f. Fans for distributing space cooling
    g. Pumps for space heating
    h. Pumps for cooling
    i. Pumps for hot water
    j. Commercial scale refrigeration
    k. Internal lighting
    l. Controls and telecommunications
    m. IT equipment and small plug in loads
    n. Internal transport (lifts and escalators)
    o. External lighting
    p. Other (user defined)

2. For each fuel type used in the asset estimate the energy consumption to determine whether it is significant;
    a. End use energy consumption may be estimated based on installed capacity and anticipated full load run hours, based on measured energy consumption data for the assessed asset for a similar asset.
    b. Where estimates of energy consumption are not available the BREEAM In-Use Online platform will provide an indication of end uses that are significant based on default values.
    c. In instances where more than one end use is provided by a single building servicing system end use energy consumption may be estimated based on installed capacity and anticipated full load run hours, based on measured energy consumption data for the assessed asset or for a similar asset.
    d. The BREEAM In-Use default end use energy consumption values are calculated based on the floor area of the asset and pessimistic energy consumption values which are higher than the typical values for the end use.

Calculating energy use by subtraction

It is acceptable to calculate energy consumption for an end-use by subtracting sub-metered energy consumption for other end-uses from the relevant main utility meter reading.

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
All	Estimated energy consumption for building servicing systems indicating the end uses that they provide
All	Either copies of verified sub-meter data for the first and last date of the 12-month period specified. These may be outputs from energy monitoring and management systems or automatic or manual meter readings OR; Line diagram indicating sub-meters and the related energy uses or evidence to show that the end uses can be monitored separately.

Definitions

Small plug in loads:

Plug-in equipment/appliances connected through power points.

Energy monitoring and management system:

Examples include automatic meter reading systems and building energy management systems (BEMS). Automatic monitoring and targeting is an example of a management tool that includes automatic meter reading and data management.

Significant energy consumption:

An end use or building servicing system is considered to be significant where the typical energy cost savings achieved through sub-metering is expected to payback within 10 years through energy cost savings achieved through improved energy management. For the purpose of this issue, energy use is where the estimated energy consumption exceeds the threshold kWh/year values of 8,500 kWh/year for electricity and 67,000 kWh/year for other fuels are deemed to be significant.

Sub-metering:

Sub-meters are secondary to the main utility meters and are 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, functional areas. Outputs include pulsed outputs or other open protocol communication outputs.

Asset Performance:

Ene 16 Monitoring tenanted areas

4 Credits
0
No Minimum Standard

Aim

To reduce operational energy consumption through the effective management and monitoring of energy consumption in separately tenanted and functional areas.

Question

Is energy consumption for separately tenanted areas sub-metered?

Credits	Answer	Select all that apply
0	A.	Question not answered
1	B.	All separately tenanted areas with significant energy consumption are sub-metered.
1	C.	All end uses with significant energy consumption within each separately tenanted area are sub-metered.

Is the energy consumption for functional areas sub-metered?

Credits	Answer	Select all that apply
0	D.	Question not answered
1	E.	Functional areas with significant energy consumption are sub-metered.
1	F.	All end uses with significant energy consumption within each functional area are sub-metered.

Assessment criteria

Criterion	Assessment criteria	Applicable Answer
1.	**Filtering** Where the asset does not have any tenanted areas, or where the estimated energy consumption for the tenanted areas is not significant, this issue can be filtered out of the assessment. Where the asset does not have any functional areas with significantly different energy use patterns, or where the estimated energy consumption	A - C D - F

Criterion	Assessment criteria	Applicable Answer
	for the functional area is not significant this issue can be filtered out of the assessment.	
2.	Significant energy consumption is considered to be >8,500kWh per year for electricity and >67,000kWh per year for other energy sources.	A - F
3.	Functional areas must be separately sub-metered where the energy use patterns are expected to be significantly different from that of the main asset	D - F
4.	Where there is more than one HVAC system type serving a particular end use the requirement applies to the main HVAC system.	C , F
5.	Where more than one end use is provided by the same HVAC component it is acceptable to sub-meter the combined energy consumption.	C , F

Methodology

Sub-metering separately tenanted areas:

For each fuel type used estimate the energy consumption for each separately tenanted area to determine whether it is significant.

In the absence of more accurate information, energy consumption in tenanted areas may be estimated based on total energy consumption per m^2 for the asset and the floor area of the tenanted areas

Sub-metering functional areas with significantly different energy use patterns:

Identify functional areas within the asset which have a significantly different energy use pattern from that of the rest of the asset.

A functional area is considered to be significantly different where the occupancy hours or the density and use of installed services and equipment are likely to be significantly different from that of the main asset.

Examples of functional areas that are likely to have significantly different energy use patterns includes; commercial scale kitchens, sports and leisure facilities, conference suites, server rooms and cold storage areas.

Sub-metering end use within separately tenanted and functional areas with significantly different energy use patterns:

Follow the methodology in Ene 15 Monitoring energy uses.

Sub-metering by calculation:

It is acceptable to calculate the energy consumption for an end-use by subtracting sub-metered energy consumption for other end-uses from the relevant main utility meter reading.

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
All	Estimated energy consumption for tenanted areas, functional areas with different energy requirements and high energy intensity equipment and areas.
All	Either copies of verified sub-meter data for the first and last date of the 12-month period specified. These may be outputs from energy monitoring and management systems or automatic or manual meter readings OR; Line diagram indicating sub-meters and the related energy uses or evidence to show that the tenanted area can be monitored separately.

Definitions

Different functional areas:

A functional area is different where the occupancy hours or the internal environmental conditions (e.g. temperature, ventilation rate) differ significantly from those that apply to the rest of the asset.

Energy monitoring and management system:

Examples include automatic meter reading systems and building energy management systems (BEMS). Automatic monitoring and targeting is an example of a management tool that includes automatic meter reading and data management.

Small plug in loads:

Plug-in equipment/appliances connected through power points.

Significant energy consumption:

An end use or building servicing system is considered to be significant where the typical energy cost savings achieved through sub-metering is expected to payback within 10 years through energy cost savings achieved through improved energy management. For the purpose of this issue, energy use is where the estimated energy consumption exceeds the threshold kWh/year values of 8,500 kWh/year for electricity and 67,000 kWh/year for other fuels are deemed to be significant.

Sub-meters:

Sub-meters are secondary to the main utility meters and are 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, functional areas. Outputs include pulsed outputs or other open protocol communication outputs.

Asset Performance:

Ene 17 External lighting

4 Credits

0 No Minimum Standard

Aim

To minimise operational energy consumption and the associated carbon emissions from energy efficiency of external lighting.

Question

What types of external lighting and car park lighting are installed?

Credits	Answer	If B is not selected, please select either answer C or D and either answer E or F.
0	A.	Question not answered
0	B.	All car park lighting and external lighting is not energy efficient and is not fitted with automatic energy savings controls
1	C.	External lighting is present and energy efficient OR is fitted with automatic energy saving controls
2	D.	External lighting is present and energy efficient AND is fitted with automatic energy saving controls
1	E.	Car park lighting is present and energy efficient OR is fitted with automatic energy saving controls
2	F.	Car park lighting is present and energy efficient AND is fitted with automatic energy saving controls

Assessment criteria

Criterion	Assessment criteria	Applicable Answer
1.	**Filtering** Where external lighting or car park lighting are not necessary from a safety perspective, the associated credits can be filtered out of the assessment.	All
2.	This issue only applies to car parking areas associated with the asset being assessed.	B, E, F

Criterion	Assessment criteria	Applicable Answer
3.	External lighting and car park lighting are energy efficient where; The average initial luminous efficiency is not less than 70 luminaire lumens per circuit Watt. OR All lighting is provided by the following lamp types: • LED • Metal halide • Other lamp types with luminous efficiency is not less than 70 luminaire lumens per circuit Watt.	C – F
4.	Automatic energy saving lighting controls include automatic on and off control to prevent operation during daylight hours or presence detection in areas of intermittent pedestrian traffic. Presence detectors must be compatible with the lamp type used as very frequent switching can reduce the life of some lamp types. Other forms of presence-related control can be used, provided that they switch off the lighting when nobody is in the space. For external lighting not fitted with presence detectors, time switches must provide automatic switch off lighting after a specified curfew hour, except in cases where there is a specific requirement for lighting to be left on all night.	C – F
5.	Car park lighting control is classified as energy-efficient if it is equipped with a timer, motion sensor or dimming control (if applicable).	E, F

Methodology

Temporary lighting, decorative lighting and floodlighting:

Decorative lighting and floodlighting must be included in this issue, but temporary lighting such as theatrical stage or local display installations can be excluded.

Emergency lighting:

Emergency light fittings, including security lighting, that are also used for normal operation must be included in this issue, but lighting which only activates in an emergency can be excluded.

Car park lighting:

Car park lights on open terrain, open air, and covered car parks must be considered in this issue.

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).

LED lamps are typically integral to the luminaire (LED luminaires). As such, the manufacturers' literature will encompass both lamp and luminaire as a whole.

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
All	A list of the type of luminaires, the control scheme by the building manager (for example based on the long-term maintenance, operating and maintenance manual or instructions for use of the asset).
All	Visual inspection and verification through photographic evidence.

Definitions

Areas of intermittent pedestrian traffic:

An area can be considered to have intermittent pedestrian traffic where a pedestrian is in or approaching the space less than two-thirds of the time during the period when the lighting, without presence detection, would be switched on.

Automatic control:

An automatic external lighting control system 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).

Car park associated with the asset:

A car park is considered to be associated with the asset where it is under the same management as the asset and is intended for the use of asset occupants.

Daylight sensor:

A type of sensor that detects daylight and switches lighting on at dusk and off at dawn.

External lighting:

Building lighting and advertising lighting, lighting from the entrance, canopy lighting, lighting of paths, roads, parking lots, garages and other outdoor areas that belong to the plot of the building.

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 (Watts).

Presence detector:

A sensor that can turn lighting on when a presence is detected in the scanned area, and off after a pre-set time when no presence is detected. Examples could include absence detection, where the light is switched on using a push button or similar control but switching off is done automatically; and key control in secure areas, where a swipe card or key pad is used on entering a space, and the lighting then comes on and remains on until the space is not occupied.

Time switch:

A switch with an inbuilt clock which will allow lighting to be switched on and off at programmed times.

Asset Performance:
Ene 18 Energy efficient transport systems

2 Credits
0
No Minimum Standard

Aim

To minimise operational energy consumption and the associated carbon emissions from energy efficient transport systems.

Question

Are the lifts, escalators and moving walks that are installed in the building energy efficient?

Credits	Answer	Select all that apply
0	A.	Question not answered
1	B.	All lifts are energy efficient
1	C.	All escalators and moving walks are energy efficient

Assessment criteria

Criterion	Assessment criteria	Applicable Answer
1.	**Filtering** Where no lifts, escalators and moving walks are present, the associated credits can be filtered out of the assessment.	All
2.	A lift is energy efficient when: a. It has achieved energy efficiency class C or above when measured in accordance with ISO 25745-2 b. The measurement has been performed by an independent organisation within the last 5 years.	B
3.	Escalator and moving walks are energy efficient when: a. They have achieved energy efficiency class C or above when measured in accordance with ISO 25745-3. b. The measurement has been performed by an independent organisation within the last 5 years.	C

Criterion	Assessment criteria	Applicable Answer
	c. They have a stand-by system, so they shut down automatically when they aren't used for a certain time span. OR for frequently used systems d. They run at a slower speed.	
4.	If several lifts, escalators, or moving walks of the same type and year of manufacture are provided only a representative number needs to be measured. The approach should be accepted by the Assessor, but as a minimum the elevator with the shortest floor distance should be included in the measurement.	B, C
5.	With systems that are less than 5 years old, a calculation by the original supplier of the expected energy label can be considered as equivalent to measurement.	B, C

Methodology

Excluded system types

The following transport system types are excluded from consideration under this issue:

a. Cable installations, including funicular railways, for public or private transportation of people.
b. Lifts specially designed for military purposes
c. Mining lifts
d. Stage lifting devices
e. Vehicle lifts
f. Cogwheel tracks
g. Construction-site lifts
h. Wheelchair lifts
i. Historical lifts, including those installed pre-1970 which are predominantly in their original state.

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
All	Building plans with locations of the lifts, escalators and moving walks.
All	Documentation from the type of lifts, escalators and/or moving walks used.

Criteria	Evidence requirement
2	The measured power consumption from the lifts is calculated in accordance with ISO 25745-2 (if applicable).
3	The measured power consumption from the escalators/moving walks is calculated in accordance with ISO 25745-3 (if applicable).
3	Documentation from the supplier of the lift/escalators/moving walks which have a stand-by system. (when this is not apparent from inspection).
All	Visual inspection from the Assessor with photographic evidence.

Definitions

Lift:

A conveyor system that, by means of a cage moves along fixed, relative to the horizontal plane more than 15 degrees inclined leaders, and which is intended for transport of:

a. People;

b. People and goods

c. Goods only if the cage is reachable (that is to say that a person may enter it without difficulty) and fitted with controls that are located in the car or within the reach of the person contained;

d. Lifts following a fixed course and with a lifting speed greater than 0.15 m/s, if they do not move along guides which are rigid are also included (for example, scissor lifts).

Escalator:

A diagonal conveyor system, or transport system, consisting of stairs with moving steps.

Moving walk:

A conveyor system with a horizontal moving surface on which people can stand or walk.

Asset Performance: Transport

5%

Summary

This category encourages the provision of improved access to local amenities and sustainable modes of transport, for example, public transport and other alternative transport solutions for building users. This facilitates travel modes that support a reduction in car journeys, and consequently, congestion and CO_2 emissions over the life of the asset while encouraging physical activity to improve human health.

Context

Cities around the world are actively looking at ways of improving quality of life, air quality, congestion and the ease of movement of people through urban environments. Goal 11 of the United Nations' SDGs focuses on sustainable cities and communities, and recommends 'to bike, walk or use public transportations to keep our cities' air clean'. One of its targets is to 'provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport by 2030'.

Reduction in the use of private car trips is a key focus area and there are increasingly stronger controls on private car use to reduce dependency on them. Alternative transport options such as cycling offer a route to addressing transport-related greenhouse gas emissions as well as reducing congestion.

Clear links between the air quality and heart and brain health have been made in numerous scientific studies. It is estimated that outdoor air pollution causes 4.2 million premature deaths annually worldwide. Air pollution damages plants and animals, as well as impacting biodiversity and crop yields. By reducing air pollution levels, the burden of disease from stroke, heart disease, lung cancer and respiratory diseases can be lessened.

Issues

Tra 01 Alternative modes of transport 8 credits

Aim:

To maximise the potential for alternative local public, private and active transport modes through provision of sustainable transport measures appropriate to the site.

Value:

Encourages the use of active travel and reduce the dependency on private cars.

Promotes provision of electric car recharging stations and reduced reliance on petrol and diesel-fuelled cars.

Tra 02 Proximity to public transport 8 credits

Aim:

To ensure appropriate public transport provision is available to building users, thereby helping to reduce transport-related pollution and congestion.

Value:

Raises awareness, understanding and accessibility of alternative travel options.

Encourages more sustainable transport and movement of people.

Tra 03 Proximity to amenities 4 credits

Aim:

To ensure building users have appropriate access to amenities near to the asset, consequently reducing transport-related impacts.

Value:

Ensures provision of local amenities facilitating a reduction in short trips.

Reduces building users' carbon emissions and associated negative environmental impacts, improving local air quality and reducing local congestion.

Tra 04 Pedestrian and cyclist safety 2 credits

Aim:

To encourage the provision of safe access around the site and outdoor space that enhances the wellbeing of building users as they move around.

Value:

Ensures safe access to and safe movement around the site.

Facilitates the activities that can have physical, mental and social benefits for occupants supporting enhanced wellbeing, productivity and staff retention.

Adds to the desirability of the building, helping to increase its value and appeal to owners, occupants, tenants and neighbours.

Asset Performance:

Tra 01 Alternative modes of transport

8 Credits

No Minimum Standard

Aim

To maximise the potential for alternative local public, private and active transport modes through provision of sustainable transport measures appropriate to the site.

Question

What provisions are available for alternative modes of transport?

Credits	Answer	Select all answers from A - G that apply. Where B applies select either C or D
0	A.	Question not answered
2	B.	Minimum number of compliant cycle storage spaces
1	C.	Two compliant cycle facilities
2	D.	Three compliant cycle facilities
1	E.	Minimum number of compliant electric car recharging stations
1	F.	Additional electric car recharging stations
2	G.	Minimum number of compliant cars sharing priority spaces

Assessment criteria

Criterion	Assessment criteria	Applicable Answer
1.	**Filtering** Where no parking spaces are provided, these answer options can be filtered out of the assessment.	E, F, G
2.	Number of cycle storage spaces: The number of cycle storage spaces provided must be compliant with the calculation method outlined in the Methodology section.	B
3.	Compliant cycle facilities are listed below:	C, D

Criterion	Assessment criteria	Applicable Answer
	a) Gender specific changing facilities or gender-neutral individual cubicles (including lockers). b) Shower facilities. c) Ventilated drying area to hang wet clothes in a sheltered space.	
4.	Lockers: The number of lockers is at least equal to the number of cycle spaces provided, and these should be accessible by users regardless of gender.	C, D
5.	Shower requirements: a) One shower is provided for every 10 cycle storage spaces with a minimum provision of one shower for staff. b) Any building providing 8 showers, or more will comply regardless of the number of cycle storage spaces provided. c) Users are accommodated regardless of gender i.e. either separate. showers within shared gender-specific facilities (required provision split 50-50) or single shower cubicles and gender-neutral changing space. d) Available for others to use in addition to cyclists.	C, D
6.	Public bicycle sharing systems: Up to 50% of the BREEAM cycle space requirement may be provided by a public bicycle sharing system where it complies with the following: a) The program is implemented by the municipality or through a public-private partnership. b) The system must be open to casual users who wish to use them for one-way rides to work, education or shopping centres. c) Bicycles are available at unattended urban locations; and they operate in a manner that could be seen as 'bicycle transit'. d) Service terminals must be available throughout the city. e) The average distance between service terminals is a maximum of 500m in inner city areas. f) A service terminal is available within 500m of the main building entrance. g) The station terminals do not need to comply with the cycle rack requirements listed in the Methodology section. Where a public bicycle sharing system is being used to account for up to 50% of cycle spaces provided, the total number of cycle spaces, including those	B

Criterion	Assessment criteria	Applicable Answer
	provided by the bicycle sharing system, should be the basis on which the compliant cyclist facilities are provided.	
7.	Electric car provisions: The number of electric car recharging stations provided must be compliant with the calculation method outlined in the Methodology section. Electric recharging stations with a minimum of 7kW have been provided.	E, F
8.	Car sharing: A car sharing group or facility has been set up to facilitate and encourage building users to sign up to a car sharing scheme. The following should be implemented: a) Car sharing priority spaces for at least 5% of the total car parking capacity for the building. b) Priority spaces for car sharers are provided separately to those provided for electric car recharging. c) Priority spaces are located in the nearest available spaces in the nearest available parking area to the main building entrance on-site (this should not affect the location of allocated disabled or parent-and-child parking). d) Marketing material has been developed to help raise awareness of the system and has been communicated to the occupants.	G

Specific notes

Asset type specific	
1.	**Sites with multiple buildings** Where multiple buildings are on the same site, compliance with the cycle provisions in 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 and cycle facilities, and the interpretation and justification of the Assessor.
1a.	**Standalone approach** Cycle storage and associated facilities for the assessed building only: 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. Access arrangements, demarcation and positioning clearly associates the cycle storage provided with the assessed building only.

Asset type specific	
	Facilities should be located within the assessed building, or in an accessible adjacent building, for the sole use of the assessed building's users.
1b.	**Site-wide approach** Cycle storage and associated facilities accessible to users of the entire site, or where there is a distinct group of local buildings within a site that would share facilities: The number of cycle storage spaces is compliant based on the number of users on-site, or within a group of local buildings, who would be able to use these facilities. Cyclists' facilities may be located anywhere on-site. However, the total route that cyclists must take to access the nearest cycle storage, cyclists' facilities and building entrances, must be no greater than 500m via a safe and convenient route, as measured from the first to the last point on the route. Where possible, different types of cyclists' facilities should be grouped together in designated areas for ease of access and use.
1c.	**Combination of the two approaches** A mix 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, where the opposite is being proposed (i.e. storage spaces are provided only for the assessed building and facilities are provided on a site-wide basis); the number of compliant cyclists' facilities must be based on the number of users on-site and the facilities must be located in an accessible location in close proximity to the storage spaces.
2.	**Building users** For cases where the majority of building users are not staff, e.g. a retail centres, then the requirements for numbers of compliant cycle spaces and facilities, as well as spaces for car sharing schemes, should be based on staff numbers only. In addition, for visitors there should be additional cycle storage spaces which equate to 5% of the total number of customer car parking spaces (excluding disabled spaces and parent-and-child spaces where provided). This is subject to providing a minimum of 10 cycle spaces. Any asset that provides at least 50 customer cycle storage spaces will comply regardless of the number of parking spaces. The staff spaces must be provided in addition to customer spaces and whilst they do not need to be separate from customer spaces, this is encouraged. Public bicycle spaces can also count towards the number of customer cycle spaces required (i.e. whereas the total number of cycle spaces may be reduced by 50%, the number of compliant facilities may not be reduced).
3.	**Rural locations** **For sites in rural locations:** a. Where the distance to the nearest urban location is greater than 10 miles, the number of compliant cycle spaces can be reduced by 50% b. Where the distance to the nearest urban location is greater than 20 miles, the number of compliant cycle spaces can be reduced by 70%

Asset type specific	
	c. Where the distance to the nearest urban location is greater than 30 miles, the number of compliant cycle spaces can be reduced by 90% The reduction in this case cannot be applied in addition to the 50% reduction due to the building's proximity to public transport, as described in the Methodology section.

Methodology

Number of compliant cycle storage spaces

Compliant cycle storage spaces must be provided for a percentage of staff in accordance with the following figures:

a) 10% of staff numbers for the first 500 staff **PLUS**

b) 7% of staff numbers for the next 500 staff **PLUS**

c) 5% of the remaining staff numbers for organisations with over 1000 staff

If the number of cycling spaces that should be supplied is not a whole number, it must be rounded up to the nearest whole number. For example, where the number of cycling spaces that should be provided is calculated to be 10.2, the assessed number of spaces that must be provided is 11. Where more than the minimum number of compliant cycle spaces required for BREEAM compliance is provided, it is not necessary to also provide more than the minimum number of showers, lockers or changing facilities.

For sites where at least 50% of the available credits for BREEAM In-Use issue Tra 02 Proximity to public transport have been awarded (rounded to the nearest whole credit), the number of compliant cycle spaces and facilities can be reduced by 50%. Where this is the case and a public bicycle sharing system is also being considered, the number of compliant spaces must still be provided for 50% of the original requirements, i.e. capped at 50%, not 50% of 50%.

Example of calculation:

For a building with 1,200 staff members:

500 x 10% = 50

500 x 7% = 35

200 x 5% = 10

Number of required cycle storage spaces = 50 + 35 + 10 = 95 spaces

Number of compliant electric car recharging stations

A minimum number of compliant electric car recharging stations must be provided for a percentage of car parking spaces in accordance with the following figures:

a) 3% of car parking spaces for the first 200 spaces **PLUS**

b) 2% of car parking spaces for the next 200 spaces **PLUS**

c) 1% of the remaining car parking spaces for car parks with over 400 spaces

If the number of electric car recharging stations that should be supplied is not a whole number, it must be rounded up to the nearest whole number. For example, where the number of electric car recharging stations that should be provided is calculated to be 10.2, the assessed number of electric car recharging stations that must be provided is 11. Additional electric car recharging stations are constituted as 2x the minimum number of electric car recharging stations required. Any asset that provides at least 50 electric car recharging stations will comply regardless of the number of parking spaces.

Example of calculation for minimum number of electric car recharging stations required:

For a building with 1200 car parking spaces:

200 x 3% = 6

200 x 2% = 4

800 x 1% = 8

Number of electric car recharging stations = 6 + 4 + 8 = 18 spaces

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
All	Photographic evidence of (where applicable): a) cycle racks b) showers c) lockers d) changing facilities e) drying space f) electric car recharging stations g) car sharing priority spaces.
1 - 6	Calculations showing the numbers of cycle storage and cycle facilities required.
1 - 6	Site/building plan showing location and numbers of cycle storage and cycle facilities.
7	Calculations showing the percentage of electric car charging stations.
7	Site plan showing the location and number of electric car charging stations.
8	Calculations showing the percentage of car sharing spaces.
8	Site plan showing the location and number of car sharing spaces.
8	Internal marketing material showing how the car sharing scheme and space locations have been communicated to occupants.

Definitions

Compliant cycle storage:

a) 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.

b) 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.

c) 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.

d) The cycle storage facility has adequate lighting.

e) The provision of cycle storage that is only suitable for folding bicycles or scooters is not compliant.

f) The majority of racks are within 100m of the main building entrance.

Drying space:

This should be a specially designed and designated space (a plant room does not comply) and heating/ventilation should be adequate.

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).

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 amongst 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.

Rural 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.

Asset Performance:

Tra 02 Proximity to public transport

8 Credits

0

☆☆☆☆☆☆
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☆

No Minimum Standard

Aim

To ensure appropriate public transport provision is available to building users, thereby helping to reduce transport-related pollution and congestion.

Question

Is the asset within walking distance of public transport nodes which operate a frequent service?

Credits	Answer	Select a single answer option
0	A.	Question not answered
1	B.	Public transport node over 1km away from the building via a safe pedestrian route, with a 30 minute service frequency at peak times
2	C.	Public transport node over 1km away from the building via a safe pedestrian route, with a 15 minute service frequency at peak times
3	D.	Public transport node within 1km of the building via a safe pedestrian route, with a 30 minute service frequency at peak times
4	E.	A dedicated bus service is provided.
4	F.	Public transport node within 500m of the building via a safe pedestrian route, with a 30 minute service frequency at peak times
6	G.	Public transport node within 1km of the building via a safe pedestrian route, with a 15 minute service frequency at peak times
8	H.	Public transport node within 500m of the building via a safe pedestrian route, with a 15 minute service frequency at peak times
0	I.	No public transport node in place that meets the above criteria

Assessment criteria

Criterion	Assessment criteria	Applicable Answer
1.	The distance must be measured via safe pedestrian routes and not be measured in a straight line.	B – H
2.	Services that operate from more than one stop within proximity of the building, i.e. two separate bus stops served by the same bus, must be considered only once; at the stop in closest proximity to the building. Different services at the same stop can be considered as separate.	B – H
3.	The dedicated bus service is provided at the beginning and end of the working day. The bus must provide transfer to the local population centre, public transport interchange or be a door-to-door service.	E

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
1	Annotated map demonstrating the route and distance to public transport nodes.
1	Photographic evidence of public transport networks and safe pedestrian route(s).
2	Copies of public transport network timetables.
3	Letter confirming the provision and the details for the dedicated bus services

Definitions

Compliant transport node:

A compliant node includes any bus service, tram or railway station. 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.

Dedicated service:

The option of a dedicated bus service is available for any asset type with a fixed shift pattern. Examples could include schools, offices, retail, factories, prisons etc.

Peak times:

This is where shift patterns see the majority of building users (over 80%) arriving or leaving during a certain period. For example, for an office building where the majority of office workers arrive between 08.00-10.00 and leave between 16.00-18.00, those periods would be used.

Safe pedestrian routes:

These include, but are not limited to, pavements and safe crossing points or, where provided, dedicated pedestrian crossing points. An element of Assessor judgement is required and if in doubt, their justification of safe crossing points should be provided.

Asset Performance:

Tra 03 Proximity to amenities

4	Credits
No Minimum Standard	

Aim

To ensure building users have appropriate access to amenities near to the asset, consequently reducing transport-related impacts.

Question

Is the asset within walking distance of amenities?

Credits	Answer	Select a single answer option
0	A.	Question not answered
1	B.	2 amenities are within 1km of the asset via a safe pedestrian route
2	C.	2 amenities are within 500m of the asset via a safe pedestrian route
2	D.	4 amenities are within 1km of the asset via a safe pedestrian route
4	E.	4 amenities are within 500m of the asset via a safe pedestrian route
0	F.	None of the above

Assessment criteria

Criterion	Assessment criteria	Applicable Answer
1.	All amenities listed must be open during employee working hours.	B – E
2.	The distance must be measured via safe pedestrian routes and not be measured in a straight line.	B – E
3.	Amenities include: a) Access to an outdoor open space (public or private suitably sized and accessible to building users) b) Access to a recreation or leisure facility for fitness or sport c) Access to cash d) Appropriate food outlet	B – E

Criterion	Assessment criteria	Applicable Answer
	e) Childcare facility/school f) Community facility g) Over the counter services associated with a pharmacy h) Publicly available postal facility Note: each amenity type can only be counted once.	

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
All	Where amenities listed are external to the asset: a) Annotated map demonstrating the route and distance to amenities listed by the client. b) Photographic evidence of listed amenities and safe pedestrian route(s).
All	Where amenities listed are contained within the asset: a) Asset floor plans with location of amenities indicated. b) Photographic evidence of listed amenities and safe pedestrian route(s).

Definitions

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.

Access to cash:

Access to cash should be available to the building users at all relevant times of the day. This should not require a prior purchase of goods and should provide access to other services, such as checking account balances. An ATM inside a building would be acceptable provided that its opening hours are similar to those of the assessed building, regardless of whether there is a nominal charge for the service. Cash-back from the till in a retail outlet is not compliant.

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 or a residential institution would benefit from having a restaurant in the local area.

Childcare 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, or a residential institution this could be a community hall or for an office building it could be a public house.

Employee working hours:

Where shift patterns see the majority of building users (over 80%) working within the asset. For example, for an office building where the majority of office workers arrive between 08.00-10.00 and leave between 16.00-18.00, the amenities should be open between 08:00-18:00.

Safe pedestrian routes:

These include, but are not limited to, pavements and safe crossing points or, where provided, dedicated pedestrian crossing points. An element of Assessor judgement is required and if in doubt, their justification of safe crossing points should be provided.

Asset Performance:

Tra 04 Pedestrian and cyclist safety

2 Credits

No Minimum Standard

Aim

To encourage the provision of safe access around the site and outdoor space that enhances the wellbeing of building users as they move around.

Question

Are service delivery access points, routes, and manoeuvring areas on-site independent from parking areas, pedestrian, and cyclist access points and routes?

Credits	Answer	Select a single answer option
0	A.	Question not answered
0	B.	No
1	C.	Service delivery routes and manoeuvring areas are independent from parking areas, pedestrian and cyclist routes, but access points are not independent
2	D.	Yes

Assessment criteria

Criterion	Assessment criteria	Applicable Answer
1.	If the building does not have any external areas and internal access is directly from the public highway/footpath, then the building assessed is compliant.	D
2.	Small scale deliveries: Where the asset only accepts deliveries on-site from small delivery vehicles (including cars or small vans up to 6 metres in length), and does not require deliveries from larger delivery vehicles, then the credits can still be awarded if the following points have been met: a) Although the delivery vehicle can use the same access point and routes, there should be a dedicated parking position for the delivery vehicle, and this should be separate from the regular parking spaces. b) Deliveries made to this asset should be infrequent, on average this should be less than three deliveries a day.	D

Criterion	Assessment criteria	Applicable Answer
	c) The access, parking and turning areas for delivery vehicles are designed for simple manoeuvring according to the type of delivery vehicle likely to access the site, thus avoiding the need for repeated shunting.	
3.	Car access points and routes do not need to be independent from cyclist and pedestrian access points and routes.	D

Specific notes

Asset type specific	
1.	**Internal manoeuvring areas** Where internal manoeuvring areas are present and are also used for pedestrian and cycle access, then these must also have independent routes.

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
All	Copy of site map indicating location of service delivery areas in relation to other areas to indicate that these are separate.
All	Photographic evidence of the service delivery areas and safe pedestrian route(s).

Definitions

Safe pedestrian routes:

Include, but are not limited to, pavements and safe crossing points or, where provided, dedicated pedestrian crossing points. An element of Assessor judgement is required and if in doubt, their justification of safe crossing points should be provided.

Asset Performance: Water

11%

Summary

This category encourages sustainable water use throughout the operation of the asset and associated site. This ensures that the asset is set up to reduce the use of potable water (both internally and externally) over the lifetime of the building. This includes minimising losses through leakage.

Context

Water efficiency has been one of the areas highlighted within the UN Sustainable Development Goals. Goal 6 (Clean Water and Sanitation) states that by 2030 we need to "substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity."

Due to increasing population densities and high levels of water consumption, globally there are water shortages which are only likely to get worse over time as water demand is projected to increase by 55% between 2000 and 2050[2]. Additionally, the energy required for the extraction, purification, delivery, heating/cooling treatment and disposal of water (and wastewater) contributes to climate change and air quality issues. Reducing water consumption by increasing efficient use is, therefore, crucial to try and guarantee enough supply to meet the future demand and address climate change.

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[2] OECD (2012a), OECD Environmental Outlook to 2050: The Consequence of Inaction, OECD Publishing, Paris

Issues

Wat 01	Water monitoring	6 credits +1 Exemplary

Aim:

To reduce the consumption of water in buildings through the effective management and monitoring of water consumption.

Value:

Increases awareness of water usage within the building.

Identifies and monitors large water uses and changed consumption levels to improve management and maintenance as well as to encourage reductions in unnecessary consumption.

Wat 02	Water efficient equipment: toilets	4 credits

Aim:

To reduce water consumption by encouraging the specification of water efficient toilets.

Value:

Improves water efficiency and reducing the cost related to water consumption in use.

Reduces water use, thereby helping to conserve stretched water reserves at times of shortage.

Promotes innovation and the manufacture of more water efficient equipment.

Wat 03	Water efficient equipment: urinals	4 credits

Aim:

To reduce water consumption by encouraging the specification of water efficient urinals.

Value:

See Wat 02 Value section.

Wat 04	Water efficient equipment: hand washing basins	4 credits

Aim:

To reduce water consumption by encouraging specification of water efficient hand washing basin taps.

Value:

See Wat 02 Value section.

Wat 05 Water efficient equipment: showers 4 credits

Aim:

To reduce water consumption by encouraging the specification of water efficient showers.

Value:

See Wat 02 Value section.

Wat 06 Water efficient equipment: white goods 4 credits

Aim:

To reduce water consumption by encouraging the specification of water efficient white goods.

Value:

See Wat 02 Value section.

Wat 07 Leak detection system 4 credits

Aim:

To reduce the overall consumption of water in buildings through minimising wastage due to water leaks.

Value:

Reduces potable water wastage associated with leaks.

Minimises damage, costs and disruption arising from water leaks.

Reduces costs related to water consumption.

Wat 08 Leak prevention 2 credits

Aim:

To minimise undetected wastage and leaks from sanitary fittings and supply pipework.

Value:

See Wat 07 Value Section.

Wat 09 Isolation valves 4 credits

Aim:

To minimise unnecessary water consumption due to defects and to minimise disruption during maintenance.

Value:

See Wat 07 Value Section.

Wat 10 Reducing utility-supplied water consumption 2 credits

Aim:

To minimise unnecessary water consumption by reducing the demand for utility-supplied water within the asset.

Value:

Reduces water industry greenhouse gas emissions, pollution impacts and associated costs at the level of water infrastructure provision.

Reduces water use, thereby helping to conserve stretched water reserves at times of shortage.

Asset Performance:

Wat 01 Water monitoring

6 Credits

Minimum Standard

Aim

To reduce the consumption of water in buildings through the effective management and monitoring of water consumption.

Question

To what level is water consumption metered?

Credits	Answer	Select a single answer option
0	A.	Question not answered
0	B.	Not metered
2	C.	Site – where water consumption is metered for the whole site
4	D.	Building – where water consumption is metered at the whole building level
6	E.	All water-consuming plant or building areas that consume 10% or more of the building's total water demand are either fitted with sub-meters or have water monitoring equipment integral to the plant or area AND Where the building is multi tenanted: water consumption is metered per tenanted area
Exemplary	F.	All the requirements for answer option E are met, but sub-meters also have a pulsed output connected to a Building Management System (BMS)

Assessment criteria

Criterion	Assessment criteria	Applicable Answer
1.	A water meter on the utility-supplied water to the site or building (whichever is applicable) including where water is supplied via a borehole or other private source.	C, D
2.	Evidence provided demonstrates that a water meter is installed on relevant water supplies to the specific response given in the credit criteria.	C – E

Criterion	Assessment criteria	Applicable Answer
3.	Each water meter has the ability to have instantaneous reading (e.g. has a pulsed output) and enables connection to a Building Management System (BMS) for the monitoring of water consumption. Note: water meters do not necessarily have to be connected to a BMS, as long as they have the ability to be connected to a BMS at a later time.	C – E
4.	Where water is metered and monitored at site level, the water meters must measure all water that is utilised on-site, including, but not limited to: a) Utility supply b) Rainwater harvesting c) Greywater harvesting	C
5.	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: a) Where a building has only one or two small sources of water demand (e.g. an office with sanitary fittings and a small kitchen) b) 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.	E

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
All	Copies of site/building/asset plans, indicating where water meters are located.
All	Photographic evidence of installed water meters.
All	Copy of most current water meter readings to confirm that all meters are working.
3	Product manufacture details of the meter(s) installed or BMS screen shots confirming how the meters enables connection to a Building Management System.

Definitions

Greywater:

Water that has been discharged from kitchens, baths or showers, laundry rooms and similar within the asset.

Utility-supplied water:

Water that has been provided by an organisation that supplies a public service under regulation by the Government (e.g. mains water)

Asset Performance: Wat 02 Water efficient equipment: toilets

4 Credits

No Minimum Standard

Aim

To reduce water consumption by encouraging the specification of water efficient toilets.

Question

What percentage of toilets have been fitted with low flush technologies?

Credits	Answer	Select a single answer option
0	A.	Question not answered
0	B.	Asset contains toilets which are >6 litres per flush
1	C.	All toilets ≤6 litres per flush
2	D.	≥75% of toilets ≤4.5 litres per flush (all remaining toilets ≤6 litres per flush)
3	E.	All toilets ≤4.5 litres per flush
4	F.	≥50% of toilets ≤3 litres per flush (all remaining toilets ≤4.5 litres per flush)

Assessment criteria

Criterion	Assessment criteria	Applicable Answer
1.	For dual flush toilets the effective flush volume will need to be calculated. An explanation and worked example is available in the Methodology section.	C – F

Specific notes

Asset type specific	
1.	**No facilities** Where the asset under assessment contains no water using equipment and therefore there is no water supply to the building, identify and assess the facilities most likely to be used by the occupants and visitors to the asset under assessment.

Asset type specific	
	This rule also applies where the assessment consists solely of an extension to an existing building, i.e. where the extended building contains no new water using equipment because there are facilities present within the existing building.

Methodology

Effective Flush Volume of a Dual Flush Toilet

The effective flush volume of a **dual flush toilet** 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.

The effective flush volume would therefore be calculated as follows, using a 6/4 litre dual flush volume toilet as an example:

$$\frac{(6L\times1)+(4L\times3)}{4} = 4.5L\ EFV$$

Assessor checks

An adequate proportion of toilets within the asset need to be checked. It is not necessary to check all toilets. At least 10% of toilets within the building should be observed.

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
All	Manufacturer/supplier literature of installed toilets (if available).
All	Photographic evidence of low flush toilets; a representative sample is sufficient.
All	Copies of asset floor plans and/or an inventory of sanitary elements indicating the location and quantity of toilets.
All	If manufacturer information is unavailable: a) Photographic evidence of information on the cistern to identify flow rate b) Copy of liaisons with manufacturer confirming the toilet is low flush c) Assessor comment to justify the reason why the toilet is deemed to be low flush d) EFV calculation.

Definitions

Effective flush volume (EFV):

Effective flush volume is the volume of water needed to clear the toilet and transport any contents far enough to avoid blocking the drain. The effective flush volume of a single flush toilet is the volume of water used for one flush.

Asset Performance:

Wat 03 Water efficient equipment: urinals

4 Credits

0

No Minimum Standard

Aim

To reduce water consumption by encouraging the specification of water efficient urinals.

Question

Does the asset contain low water use or waterless urinals?

Credits	Answer	Select a single answer option
0	A.	Question not answered
0	B.	No
1	C.	All urinals ≤3 litres per flush
2	D.	All urinals ≤1.2 litres per flush
4	E.	Waterless urinals

Assessment criteria

Criterion	Assessment criteria	Applicable Answer
1.	**Filtering** Where no urinals are present in the asset and no urinals from nearby facilities (e.g. adjacent building) will be used by the occupants and visitors, this issue can be filtered out. Also see Specific Note below.	All
2.	Where multiple fittings are specified with various flow rates, the flow rates for each type of fitting will need to be calculated and the average flow rate determined by the Assessor.	C – E
3.	Water consumption figures will need to be derived from the manufacturer's product information to determine the consumption of the urinals as follows: a) Urinals: Flush volume in litres/use for single use flush urinals. b) Cistern fed systems: The flushing frequency/hour and cistern capacity in litres.	C, D

Criterion	Assessment criteria	Applicable Answer
4.	If manufacturer information is unavailable it should be possible to tell whether urinals are waterless. However, if this is the case, the Assessor should provide the manufacturer name and model number with photographic evidence in the Assessor comments section of the assessment.	E
5.	Where urinal troughs have been installed, their compliance with this issue can be assessed through the calculation outlined in the Methodology section.	C – E

Specific notes

Asset type specific	
1.	Where the asset under assessment contains no water using equipment (therefore there is no water supply), but water using equipment in the nearby facility will be used by the occupants and visitors, then these should be assessed. This rule also applies where the assessment consists solely of an extension to an existing building, i.e. where the extended building contains no new water using equipment because there are facilities present within the existing building.

Methodology

Urinal troughs

Each 600mm length should be counted as 1 urinal for the purposes of calculating the correct flush volume, i.e. the total flush volume for the whole trough should be considered per 600mm length to provide comparable figures to establish whether the installed fixture is compliant with this issue.

For example, a trough which is 1800mm in length and has a flush of 9 litres could be calculated:

$$\frac{600mm}{1800mm} x\ 9\ litres = 3\ litres\ per\ 600mm$$

Therefore, in this example the urinal trough would be classed as compliant and answer option C should be selected.

Assessor checks

An adequate proportion of urinals within the asset need to be checked to determine whether they are low flush / waterless, although it is not necessary to check them all. At least 10% of urinals within the building must be observed.

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the ‘BREEAM evidential requirements’ section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.

Criteria	Evidence requirement
All	Copies of asset floor plans and/or an inventory of sanitary elements indicating the location and quantity of urinals highlighting which urinals are waterless.
2-5	Photographic evidence of installed urinals; a representative sample is sufficient.
2-5	Manufacturer/supplier literature of installed urinals (if available) or on-site measures.
5	Where urinal troughs are present calculations as outlined in the Methodology section should be provided.

Asset Performance:

Wat 04 Water efficient equipment: hand washing basin taps

4 Credits

0 No Minimum Standard

Aim

To reduce water consumption by encouraging specification of water efficient hand washing basin taps.

Question

What percentage of the hand washing basin taps are designed for low water use?

Credits	Answer	Select a single answer option
0	A.	Question not answered
0	B.	The asset contains wash basin taps which are ≥6 litres/min
1	C.	100% have ≤6 litres/min
2	D.	50% have ≤4 litres/min and the remaining have ≤6 litres/min
3	E.	100% have ≤4 litres/min
4	F.	100% have ≤4 litres/min and have automatic control

Assessment criteria

Criterion	Assessment criteria	Applicable Answer
1.	Hand washing basin taps must have automatic control equipped with a proximity sensor (e.g. Active Infrared Taps). Hand washing taps which run for pre-set periods of time (e.g. push button with an auto shutoff) are not compliant with this issue.	F
2.	Exceptions: Only taps that are specifically used in hand washing basins are applicable. This requirement does not apply to: a) 'Scrub' facilities in clinical areas of healthcare buildings b) Taps provided to cleaners c) Kitchen and external taps	B – F

Criterion	Assessment criteria	Applicable Answer
	d) Other instances where such fittings would be inappropriate for medical/health-related reasons (such instances must be justified by the design specification/the building management).	

Specific notes

Asset type specific	
1.	**No facilities** Where the asset under assessment contains no water using equipment and therefore there is no water supply to the building, identify and assess the facilities most likely to be used by the occupants and visitors to the asset under assessment. This rule also applies where the assessment consists solely of an extension to an existing building, i.e. where the extended building contains no new water using equipment because there are facilities present within the existing building.

Methodology

Assessor checks

An adequate proportion of hand washing basins within the asset need to be checked to determine whether they are low water use, although it is not necessary to check them all. At least 10% of hand washing basins within the asset must be observed.

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
All	Photographic evidence of installed hand washing basins; a representative sample is sufficient.
All	Manufacturer/supplier literature of water efficient specifications installed (including flow regulators).
All	Copies of asset floor plans and/or an inventory of sanitary elements identifying the location and quantity of hand wash basins.
All	Where manufacturer information is not available, evidence must be provided that confirms that the taps meet the stated criteria. This could include measured flow rates or confirmation from the manufacturer that the installed taps meet the criteria.

Additional information

Examples of low water taps

Types of low water use hand washing basin taps include, but are not limited to:

a) Spray taps
b) Aerated taps.

Asset Performance:

Wat 05 Water efficient equipment: showers

4 Credits

No Minimum Standard

Aim

To reduce water consumption by encouraging the specification of water efficient showers.

Question

What percentage of the showers are low water use?

Credits	Answer	Select a single answer option
0	A.	Question not answered
0	B.	0%
1	C.	≥1 to <50%
2	D.	≥50 to <75%
3	E.	≥75 to <100%
4	F.	100%

Assessment criteria

Criterion	Assessment criteria	Applicable Answer
1.	**Filtering** Where no showers are present in the asset and no showers from nearby facilities (e.g. adjacent building) will be used by the occupants and visitors, this issue can be filtered out. Also see Specific Note below.	All
2.	In order to be awarded the relevant credits showers must have a maximum flow rate less than or equal to 6 litres per minute.	B – F
3.	If showers have been included as a Compliant Cyclist Facility in Tra 01 Alternative modes of transport, the showers referenced must be considered within this issue even if they are not located within the asset.	B – F

Criterion	Assessment criteria	Applicable Answer
4.	This issue does not apply to instances where such fittings would be inappropriate for medical/health-related reasons (such instances must be justified by the design specification/the building management).	B – F

Specific notes

Asset type specific	
1.	Where the asset under assessment contains no water using equipment (therefore there is no water supply) but water using equipment in the nearby facility will be used by the occupants and visitors, then these should be assessed. This rule also applies where the assessment consists solely of an extension to an existing building, i.e. where the extended building contains no new water using equipment because there are facilities present within the existing building.

Methodology

Assessor checks

An adequate proportion of showers within the asset need to be checked to determine whether they are low water use, although it is not necessary to check them all. At least 10% of showers within the building must be observed.

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
2 - 3	Photographic evidence of installed showers; a representative sample is sufficient.
2 - 3	Manufacturer/supplier literature of water efficient specifications.
2 - 3	Copies of asset floor plans and/or an inventory of sanitary elements demonstrating location and number of showers.
2 - 3	Where manufacturer information is not available, evidence must be provided that confirms that the showers meet the stated criteria. This could include measured flow rates or confirmation from the manufacturer that the installed showers meet the criteria.

Asset Performance:

Wat 06 Water efficient equipment: white goods

4 Credits

0

No Minimum Standard

Aim

To reduce water consumption by encouraging the specification of water efficient white goods.

Question

What percentage of the water consuming white goods are low water use (dishwashers, washing machines)?

Credits	Answer	Select a single answer option
0	A.	Question not answered
0	B.	0%
1	C.	≥1 to <25%
2	D.	≥25 to <50%
3	E.	≥50 to <75%
4	F.	≥75%

Assessment criteria

Criterion	Assessment criteria	Applicable Answer
1.	**Filtering** Where no white goods are present in the asset and no white goods from nearby facilities (e.g. adjacent building) will be used by the occupants and visitors, this issue can be filtered out. Also see Specific Note below.	All
2.	In order to be awarded the relevant credits, baseline water usage of installed equipment must be equal to or below the figures outlined in Table 23 below.	B – F
3.	Only water consuming white goods that are under the operational control of the building owner and/or are fitted by the building owner must be assessed.	B – F

Specific notes

Asset type specific	
1.	**No facilities** Where the asset under assessment contains no water using equipment (therefore there is no water supply) but water using equipment in the nearby facility will be used by the occupants and visitors, then these should be assessed. This rule also applies where the assessment consists solely of an extension to an existing building, i.e. where the extended building contains no new water using equipment because there are facilities present within the existing building.

Checklists and tables

Table 23: Baseline figures for white goods

Component	Baseline
Commercial sized dishwasher	5 litres per rack
Domestic sized dishwasher (if applicable)	12 litres per cycle
Commercial/industrial sized washing machine	7.5 litres per kg
Domestic sized washing machine (if applicable)	40 litres per load

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
2 - 3	Photographic evidence of listed white goods.
2 - 3	Manufacturer specifications of white goods installed in the asset.
2 - 3	Copies of asset floor plans and/or an inventory demonstrating the location and number of white goods installed.

Asset Performance:

Wat 07 Leak detection system

4 Credits 0

No Minimum Standard

Aim

To reduce the overall consumption of water in buildings through wastage due to water leaks.

Question

Is the water supply system fitted with an automated leak detection system?

Credits	Answer	Select a single answer option
0	A.	Question not answered
0	B.	No
4	C.	Yes

Assessment criteria

Criterion	Assessment criteria	Applicable Answer
1.	A leak detection system should have the ability to automatically detect the presence of a water leak throughout the water supply within a building. It does not necessarily require a system that directly detects water leakage along part or the whole length of the water supply system, e.g. a system that detects higher than normal flow rates at meters and/or sub-meters would be compliant. The system can be flow based or sensor based.	C
2.	The leak detection system should be: a) Able to easily identify any detected leaks b) Activated when a continuous flow of water passes through the water meter at a flow rate above a pre-set minimum for a pre-set period of time c) On all the pipework in a development that the owner/occupier has responsibility for.	C
3.	The system does not need to cut off the water supply when the alarm is triggered.	C

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Criterion	Assessment criteria	Applicable Answer
4.	Where there is a water supply company meter at the site/building boundary, it may be necessary to install a separate flow meter (or alternative measurement system) just after the water supply company meter to detect leaks. However, if the water supply company agrees to some form of leak detection being installed on their meter, this would also be acceptable.	C
5.	In order to be compliant, emergency systems such as fire hydrants and sprinklers need also to be covered by a leak detection system.	C

Specific notes

Asset type specific	
1.	**No facilities** Where the asset under assessment contains no water using equipment and therefore there is no water supply to the building, identify and assess the water supply to the facilities most likely to be used by the occupants and visitors to the asset under assessment. This rule also applies where the assessment consists solely of an extension to an existing building, i.e. where the extended building contains no new water using equipment because there are facilities present within the existing building.

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
All	Photographic evidence of the leak detection system.
All	Manufacturer specifications of the leak detection system.

Asset Performance:

Wat 08 Leak prevention

2 Credits

0

No Minimum Standard

Aim

To minimise undetected wastage and leaks from sanitary fittings and supply pipework.

Question

Are flow control devices that regulate the water supply according to demand fitted to each WC area or sanitary facility?

Credits	Answer	Select a single answer option
0	A.	Question not answered
0	B.	No
2	C.	Yes

Assessment criteria

Criterion	Assessment criteria	Applicable Answer
1.	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 pre-set 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.	C
2.	Flow control systems may control combined WC areas, such as toilets assigned to specific gender 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.	C

Criterion	Assessment criteria	Applicable Answer
3.	Programmable timed controllers linked to the shut-off device are an acceptable means of compliance for facilities where constant use is to be expected during operating hours.	C

Specific notes

Asset type specific	
1.	**No facilities** Where the asset under assessment contains no water using equipment and therefore there is no water supply to the building, identify and assess the water supply to the facilities most likely to be used by the occupants and visitors to the asset under assessment. This rule also applies where the assessment consists solely of an extension to an existing building, i.e. where the extended building contains no new water using equipment because there are facilities present within the existing building.

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
All	Photographic evidence of water shut off controls.
All	Manufacturer specifications of shut off controls
All	Systematic diagram showing the areas of isolation.

Asset Performance:

Wat 09 Isolation valves

4 Credits

0 No Minimum Standard

Aim

To minimise unnecessary water consumption due to defects and to minimise disruption during maintenance.

Question

What percentage of water fixtures and equipment have isolation valves fitted?

Credits	Answer	Select a single answer option
0	A.	Question not answered
0	B.	0%
1	C.	≥1 to <50%
2	D.	≥50 to <75%
3	E.	≥75 to <100%
4	F.	100%

Assessment criteria

Criterion	Assessment criteria	Applicable Answer
1.	Evidence illustrates that isolation valves are installed for relevant water using equipment within the asset. Relevant equipment includes (but is not limited to): a) Wash basin b) Shower c) Toilet d) Urinal e) Washing machine f) Dishwasher.	B – F

Criterion	Assessment criteria	Applicable Answer
2.	If isolation valves are fitted to areas in which water using equipment are installed, such as shower blocks and toilet areas, the aim of the credit would be met. The equipment in these areas can then be included in the overall percentage.	B – F
3.	Isolation valves are classified as any valve in the pipe which prevents the flow of water to a specific piece of equipment or area.	B – F
4.	Isolation valves must be easily accessible.	B – F
5.	Isolation valves can be automatic or manual.	B – F

Specific notes

Asset type specific	
1.	**No facilities** Where the asset under assessment contains no water using equipment and therefore there is no water supply to the building identify and assess the facilities most likely to be used by the occupants and visitors to the asset under assessment. This rule also applies where the assessment consists solely of an extension to an existing building, i.e. where the extended building contains no new water using equipment because there are facilities present within the existing building.

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
All	Photographic evidence of water isolation controls.

Asset Performance:

Wat 10 Reducing utility-supplied water consumption

2 Credits
0
No Minimum Standard

Aim

To minimise unnecessary water consumption by reducing the demand for utility-supplied water within the asset.

Question

Does the asset harvest and reuse greywater, blackwater or rainwater?

Credits	Answer	Select a single answer option
0	A.	Question not answered
0	B.	No
2	C.	Yes

Assessment criteria

Criterion	Assessment criteria	Applicable Answer
1.	**Filtering** Where legislative requirements prevent use of non-utility supplied water within the asset, this issue can be filtered out	All
2.	Greywater, blackwater or rainwater should produce a reasonable reduction in the consumption of utility-supplied water.	C

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
All	Photographic evidence of non-utility supplied water source.
All	Manufacturer information.

Criteria	Evidence requirement
All	Where legislative requirements prevent the use of non-utility supplied water, a copy of the relevant legislation.

Definitions

Blackwater:

Wastewater that has been discharged from kitchen and utility sinks, urinals and toilets within the asset..

Greywater:

Water that has been discharged from all sources other than kitchen and sewage within the asset.

Utility-supplied water:

Water that has been provided by an organisation that supplies a public service under regulation by the Government (e.g. mains water)

Additional information

Uses of non-utility supplied water

Usage of rainwater and greywater include (but are not limited to):

a) Irrigation for landscaping

b) Toilet flushing

c) Car washing

d) Washing clothes

e) Business process/production.

Asset Performance: Resources

13%

Summary

This category encourages the responsible and circular use of physical resources in the asset to increase value and sustainability performance in operation and at the end of life. This is achieved by encouraging the asset operator to better understand the condition and value of the asset, and to maintain or improve its value and the construction products it contains within it. In addition, a more circular use of waste resources generated during the operation of the asset is encouraged by rewarding appropriate sorting and storing facilities.

Context

The operational phase of an asset life cycle is a very significant consumer of resources and sources of waste at the end of useful life. Many key resources are non-renewable and are becoming more scarce, costlier and riskier to extract. Furthermore, the supply-chain extraction and processing activity required to create products, particularly from raw materials, frequently leads to social and environmental degradation. The United Nations' SDGs include 'responsible consumption and production' (Goal 12), with a target to 'achieve the sustainable management and efficient use of natural resources' and to 'substantially reduce waste generation through prevention, reduction, recycling and reuse' by 2030. Therefore, it is essential that the real estate sector does all it can to address these challenges by using existing assets for as long as possible; maintaining or increasing the value of the resources they contain; enabling the reuse or recycling of resources in existing assets; facilitating occupants to maximise the reuse and recycling of their waste; minimising resource use overall; choosing reused or recycled resources instead of virgin materials; and using resources that cause less harm to society and the environment.

Issues

Rsc 01	Condition Survey	7 credits

Aim:

To encourage asset owners to understand the physical condition of their property, to plan scheduled maintenance, repair or refurbishment activities and avoid higher impact and costlier works later. To achieve or exceed the expected life of the asset.

Value:

Improves the health and safety performance of the asset to reduce risks to occupants.

Identifies current and future repair, refurbishment or renovation requirements.

Reduces life cycle costs by tackling repair, refurbishment or renovation requirements before they become more significant and costlier to resolve.

Reduces the chance of early obsolescence due to neglect and/or increase the life of the asset, capturing more value from the resources already invested.

Rsc 02	Reuse and recycling facilities	8 credits +2 Exemplary

Aim:

To facilitate the reuse, repurposing and recycling of waste from the asset.

Value:

Helps to meet corporate and statutory waste recycling targets.

Reduces environmental impacts and costs arising from the disposal of waste.

Ensures that asset users have the facilities to enable them to sort waste at source rather than paying for this to be carried out off-site.

Provides convenient and well-integrated material storage areas in suitable locations.

Enables and supports the realisation of circular economy principles.

Avoids unnecessary and costly replacement of entire material and product installations by providing storage space for like-for-like replacement products.

Rsc 03	Resources inventory	4 credits

Aim:

To enable asset owners to recognise, maintain and benefit from the value of resources in the asset. To increase the reuse and recycling of resources and reduce the use of virgin materials.

Value:

Reduces waste and cost associated with future refurbishment or fit-out works and ultimately in demolition.

Increases the lifetime value of materials and products.

Enables and supports the realisation of circular economy principles.

Identifies the materials and products the asset is constructed from so that the value of the asset as a 'materials bank' is known.

Rsc 04	Future adaptation	4 credits +1 Exemplary

Aim:

To recognise and encourage buildings which have been built to allow a degree of flexibility for future usage.

Value:

Reduces waste and cost associated with future refurbishment or fit-out works and ultimately in demolition.

Improves the ability to cost-effectively reuse and recycle materials.

Increases the lifetime value of materials and products.

Encourages consideration of circular economy principles during the life of the asset.

Reduces costs and disruption associated with the need for future adaptation, demolition and strip-out, thereby reducing the associated waste and costs.

Asset Performance:
Rsc 01 Condition survey

7 Credits

0

No Minimum Standard

Aim

To encourage asset owners to understand the physical condition of their property, to plan scheduled maintenance, repair or refurbishment activities and avoid higher impact and costlier works later. To achieve or exceed the expected life of the asset.

Question

Has a condition survey been completed within the last 5 years?

Credits	Answer	Select a single answer option
0	A.	Question not answered
0	B.	No condition survey has been carried out
1	C.	A condition survey has been carried out by the organisation managing the asset
2	D.	A condition survey has been carried out by the organisation managing the asset following a third-party procedure
3	E.	A condition survey has been carried out by an independent third party

Has work been conducted to rectify any defects identified?

Credits	Answer	Select a single answer option (if C, D or E has been selected above)
0	F.	No works have been carried out to rectify defects identified and there is no action plan
1	G.	No works have been carried out to rectify defects identified, but there is an action plan in place which establishes when defects will be rectified
2	H.	All major defects have been rectified
3	I.	All major defects have been rectified and an action plan confirms when the remaining minor defects will be rectified
4	J.	All identified major and minor defects have been rectified

Assessment criteria

Criterion	Assessment criteria	Applicable Answer
1.	**Filtering** If the asset is less than 5 years old and no condition survey has been undertaken, this issue can be filtered out of the assessment.	All
2.	A condition survey shall assess the condition of the asset, in terms of the main building elements, components and construction products; both external/internal fabric and building services, including as a minimum (but not limited to): a) Structural condition b) Condition of mechanical components c) Condition of electrical components d) Condition of plumbing e) Fire protection f) Communications and life safety systems g) Health and Safety conditions and environmental conditions, including (but not limited to): i. Damp ii. Cold iii. Draughts iv. Acoustic and noise penetration v. Ventilation vi. Daylight vii. Pests.	C – E
3.	Criteria for repairing or renewing defective elements should be established to ensure work prioritisation, including major or minor categorisation.	G, I
4.	The condition survey provides recommendations for future ongoing maintenance, repair, replacement and refurbishment for the remaining life of the asset.	G – J
5.	Condition survey must be carried out by a competent person	C - J

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
1	Assets that are less than 5 years old will require appropriate documentation to demonstrate the age of the asset. In the UK, this could include public records of property registration.
2 – 5	The current condition survey documentation.
5	The name and organisation (and third party certification where available) of the party that carried out the condition survey. Information regarding the relevant qualifications and experience of the person who has undertaken the condition survey.

Definitions

Competent person:

A person that is trained and qualified to conduct condition surveys in accordance with legislative requirements (if any) and has led or made a significant contribution to at least two condition surveys of assets of a comparable function type, size and age in the last 5 years. The following examples may be considered competent persons:

a) Facilities management/asset management professionals

b) Civil engineers or other relevant engineering disciplines

c) Architects

d) Building surveyors

e) Members of institutions whom have undergone appropriate due diligence or training to conduct condition surveys

Major defects:

Defects that need to be addressed in order for the asset to operate and function correctly.

Minor defects:

Defects that do not currently adversely affect the function of the building but may do in the future if left unrectified or are of only a cosmetic nature with no functional requirement.

Third party:

"A person or body that is recognised as being independent of the parties involved, as concerns the issue in question" (BS EN 15804:2012+A1:2013)

The 'issue in question' are those that are being certified/verified (rather than something unconnected).

For this BREEAM issue, a third party would be independent of the organisation(s) who manage, own, or occupy the asset.

Asset Performance:

Rsc 02 Reuse and recycling facilities

8 Credits

2

Minimum Standard

Aim

To facilitate the reuse, repurposing and recycling of waste from the asset.

Question

Are suitable facilities available for segregating, storing and collecting waste from the asset to enable optimal reuse or recycling?

Credits	Answer	Select all answers that apply
0	A.	Question not answered
0	B.	No
3	C.	A suitable operational waste management facility is available for the optimal sorting, storing and collecting of operational waste generated by the organisation managing the asset
5	D.	A suitable operational waste management facility is available for the optimal sorting, storing and collecting of operational waste generated by the occupant(s)
Exemplary	E.	A suitable construction waste management space is available for the optimal sorting, storing and collecting of construction waste generated during occupant fit-out works
Exemplary	F.	A reusable construction product storage space is available on-site or locally for storing reusable construction products

Assessment criteria

Criterion	Assessment criteria	Applicable Answer
1.	The waste segregation containers shall: a) meet the requirements of 'Operational waste – Waste stream segregation' (see Methodology). b) be grouped together in the operational waste management facility.	C, D

Criterion	Assessment criteria	Applicable Answer
	c) be of a design appropriate for the waste stream they hold and as a minimum be closable, non-absorbent, leak-proof and durable to prevent contaminated run-off or waste escaping. d) be clearly labelled to show what waste shall be deposited in each container to assist users.	
2.	The operational waste management facility shall: a) be central and dedicated to the purpose. b) be clearly labelled to assist users. c) be accessible to occupants or facilities operators for the deposit of waste, and appropriate for preparing the containers for collection by waste management contractors. Consideration should be given to access by those with disabilities. d) have adequate lighting, ventilation and sound insulation to allow for safe use with minimal disturbance to the asset occupants and surrounding residents during operating hours. e) have vehicular gate heights and widths, manoeuvring and loading spaces sized to ensure ease of access for vehicle collections, where situated and accessed for collection internally f) have an adjacent water outlet for cleaning and hygiene purposes, where organic waste is stored for collection or on-site composting g) be a single space for waste generated by the organisation managing the asset and for waste generated by the occupant(s), or instead two separate spaces may be provided.	C, D
3.	The size of the operational waste management facility shall meet the requirements of 'Operational waste – Space requirement' (see Methodology).	C, D
4.	The construction waste management space shall: a) be as criteria 2d and 2e above. b) be accessible for the deposit of waste by constructors and collections by waste management contractors (that may be different from the operational waste collections). c) be separate from the operational waste management facility. d) have a range of containers available for segregating waste streams appropriate for likely waste classifications and quantities. e) be of a size that can contain reasonable estimates of the likely waste classifications and quantities. If available, the data recorded (see issue Rsc 06 Optimising resource use, reuse and recycling), shall be used to inform estimates.	E

Criterion	Assessment criteria	Applicable Answer
	f) be a permanent space, or a space normally used for another function that will be readily converted to fulfil this function during construction works (e.g. car parking spaces where a temporary enclosure can be erected).	
5.	The reusable construction product storage space shall be: a) separate from the operational waste management facility and the construction waste management space. b) dry, enclosed and secure. c) of a size that can contain reasonable estimates of the likely waste classifications and quantities. If available, the data recorded (see issue Rsc 06 Optimising resource use, reuse and recycling), shall be used to inform estimates.	F
6.	Exemplary level credits: Answer options E and F can only be selected if options C and D have been selected.	E, F

Methodology

Operational waste – Space requirement

The facility size shall be determined as follows:

a) If the asset has been occupied during the previous 3 years and data has been recorded (see issue Rsc 06 Optimising resource use, reuse and recycling), the quantity of storage space provided shall be demonstrated as sufficient by reference to the data recorded on waste generated.

b) If no data is available, use the following guide:

   i. At least $2m^2$ per $1000m^2$ of net floor area for assets < $5000m^2$

   ii. A minimum of $10m^2$ for assets ≥ $5000m^2$

   iii. An additional $2m^2$ per $1000m^2$ of net floor area where catering is provided (with an additional minimum of $10m^2$ for assets ≥ $5000m^2$)

   The net floor area should be rounded up to the nearest $1000m^2$.

c) The space for recyclable waste must be in addition to areas and facilities provided for dealing with non-recyclable waste and other waste management facilities, e.g. compactors, balers and composters.

d) For consistent and large amounts of operational waste generated, static waste compactors or balers shall be provided and situated in a service area or dedicated waste management facility

e) Where the facility for waste generated by the organisation managing the asset is separate from the facility for waste generated by the occupant(s), the above steps must be carried out for each facility separately.

Operational waste – Waste stream segregation

The waste streams to segregate, and the range, size and number of containers shall be based on:

a) The waste likely to be generated, determined by

    i. If the asset has been occupied during the previous 3 years and data has been recorded (see issue Rsc 06 Optimising resource use, reuse and recycling), the data recorded on waste generated.

    ii. If no data is available, estimates according to the type of asset and operations occurring. Estimates on occupant waste shall be agreed with the occupant(s).

b) Availability and utilisation of waste collection services available in the local area for the collection and proper recycling of the waste likely to be generated.

c) If different waste streams are stored or collected in the same container (commingled), the waste collector shall demonstrate that they separate commingled waste into the identified waste streams.

d) A minimum of three waste streams are segregated.

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
1	If waste is commingled, records from the waste collector that commingled waste is separated into the waste streams as identified.

Definitions

Accessible space:

Accessible space is typically within 20m of an entrance to the asset. Depending on the size of the asset, site restrictions or tenancy arrangements, it may not be possible for the facilities to be within 20m of an entrance to an asset. In such circumstances, judgement on whether the space is 'accessible' to the occupants and vehicle collection must be made.

Commingled recycling:

Commingled recycling allows for waste that can be recycled to be disposed of in one receptacle. Recyclable materials including glass, plastics, cardboard, paper, metals and aluminium cans and containers are examples of materials that are often co-mingled.

Reusable construction products:

Leftover, spare or removed construction products from the asset that are likely to be reused during future maintenance, churn, repair, fit-out or refurbishment works to the asset. Construction products that are likely to become difficult to procure in the future shall be considered as a minimum, for example, those that have a specific design or are part of a specific system that may be discontinued (e.g. carpet tiles, accessible raised floor tiles, ceiling tiles, luminaires, HVAC components).

Waste compactor or baler:

A machine that is designed to compress waste streams in order to improve storage and transport efficiency.

Asset Performance:

Rsc 03 Resources inventory

4 Credits

0 No Minimum Standard

Aim

To enable asset owners to recognise, maintain and benefit from the value of resources in the asset. To increase the reuse and recycling of resources and reduce the use of virgin materials.

Question

Has a resources inventory been completed in the last 5 years?

Credits	Answer	Select a single answer option
0	A.	Question not answered
0	B.	No
2	C.	Yes, simple resources inventory
4	D.	Yes, extended resources inventory

Assessment criteria

Criterion	Assessment criteria	Applicable Answer
1.	Answer option D or E has been selected in Rsc 01 Condition survey and all relevant Assessment Criteria have been met. (Or the asset is less than 5 years old and Rsc 01 Condition survey has been filtered out of the assessment.)	C, D
2.	The resources inventory shall be produced by a competent person who: a) meets the competent person criteria in Rsc 01 Condition survey b) has appropriate knowledge of circular economy principles in relation to maintaining and realising the value of resources	C, D
3.	If Rsc 01 Condition survey has been answered D or E, the resources inventory shall be fully coordinated with the condition survey.	C, D
4.	The resources inventory is either an electronic schedule (e.g. a spreadsheet) or held within a building information model (BIM) of the asset (that is useable by the organisation managing the asset).	C, D

Criterion	Assessment criteria	Applicable Answer
	Simple resources inventory A simple resources inventory shall include the following information for each significant resource in the asset: a) functional classification (e.g. carpet, window) according to a nationally recognised classification system (e.g. Uniclass in the UK) b) the constituent materials (e.g. mild steel, mineral wool) according to a nationally recognised classification system (e.g. Uniclass in the UK) c) the location in the asset d) estimated quantity in the asset in a suitable unit (e.g. m^3, kg, number of). **Extended resources inventory** In addition to the items listed above for a simple resources inventory, an extended resources inventory shall include the following information for each significant resource in the asset: e) guidance on current financial value f) guidance on maintaining value through planned maintenance, repair, replacement (of constituent components), and refurbishment works g) guidance on maintaining value during disassembly and demolition works during, or at the end of, the asset's life (depending on the estimated remaining service life of the resource and the estimated remaining life of the asset) h) guidance on maximising financial income, or avoiding costs, through reuse or recycling opportunities, following disassembly and demolition works, including how these may develop in the future.	

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
3, 4	A copy of the resources inventory, with the relevant sections identified according to each question answer and criterion.

Definitions

Circular economy principles:

Principles relevant to construction that have been derived from circular economy theory. The following resources include examples of principles that may be applied:

- British Standards Institution (2017) BS 8001:2017 *Framework for implementing the principles of the circular economy in organisations - Guide*
- Ellen MacArthur Foundation (2017) *Introduction to the circular ecology – Circular economy booklet*. Available from: https://www.ellenmacarthurfoundation.org/assets/downloads/sme/19_CE100-SME-booklet_print.pdf
- Ellen MacArthur Foundation [online] *What is a circular economy?* Available from: https://www.ellenmacarthurfoundation.org/circular-economy/concept
- SPP Regions (2017) *Circular Procurement – Best Practice Report*. Available from: http://www.sppregions.eu/resources/publications/
- UKGBC (2019) *Circular economy guidance for construction clients: How to practically apply circular economy principles at the project brief stage*. Available from: https://www.ukgbc.org/ukgbc-work/circular-economy-guidance-for-construction-clients-how-to-practically-apply-circular-economy-principles-at-the-project-brief-stage/

Resource in the asset:

A construction product, fitting or item of furniture. Minor fixings (brackets, nails, screws etc.), adhesives, and seals may be excluded.

Asset Performance:

Rsc 04 Future adaptation

4

1

Credits

No Minimum Standard

Aim

To recognise and encourage buildings which have been built to allow a degree of flexibility for future usage.

Question

Does the design of the asset allow future adaptation to meet changing demands such as variations in use and functionality?

Credits	Answer	Select all answers that apply
0	A.	Question not answered
0	B.	No
4	C.	Yes
Exemplary	D.	A building-specific functional adaptation strategy study has been undertaken

Assessment criteria

Criterion	Assessment criteria	Applicable Answer
1.	The building has been designed with a degree of flexibility to ensure that future changes in use are possible. This flexibility shall consist of at least two of the following: a) Partition walls which can be easily re-positioned. b) A flexible internal vertical loadbearing structure design with a regular column layout and few or no loadbearing walls. c) Building services which can be easily removed/adapted when areas are unoccupied or when there is increased usage required; for example, HVAC grille and luminaire removal or addition etc. d) Floor plan shapes, primary circulation routes and floor-to-floor heights that are suitable for a number of potential future uses. e) Other design features deemed suitable by the Assessor.	C
2.	The functional adaptation strategy study should consider:	D

Criterion	Assessment criteria	Applicable Answer
	a) Feasibility: The likelihood of containing multiple or alternative building uses, area functions and different tenancies over the expected life cycle, e.g. related to the structural design of the building. b) Accessibility: Design aspects that facilitate the replacement of all major plant within the life of the building, e.g. panels in floors and walls that can be removed without affecting the structure, providing lifting beams and hoists. Accessibility also involves access to local services, such as local power, data infrastructure etc. c) Versatility: The degree of adaptability of the internal environment to accommodate changes in working practices. d) Adaptability: The potential of the building ventilation strategy to adapt to future building occupant needs and climatic scenarios. e) Convertibility: The degree of adaptability of the internal physical space and external shell to accommodate changes in-use. f) Expandability: The potential for the building to be extended, horizontally or vertically. g) Refurbishment potential: The potential for major refurbishment, including replacing the façade.	
3.	Exemplary level credit: Answer option D can only be selected if option C has been selected.	D

Checklists and Tables

Table 24: Information on future adaptation design measures

	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	Inclusion of facilities management requirements and construction design management feedback		Provision of capacity in infrastructure to enable future expansion and adaptation

	Accessibility	Spatial adaptability	Expandability
• Fire	for future operational needs		
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

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
1	Photographic evidence of (internal) design features that allow for flexibility as stated or deemed relevant by the Assessor.
All	Plans, studies, reports or other documentation that reflect that functional adaptability was taken into consideration during the design process.
2	A copy of the Functional adaptation strategy study.

Asset Performance: Resilience

13%

Summary

This category considers an asset's exposure to physical risks (including those related to climate change), climate-related transitional and social risks and opportunities, local watercourse pollution, excess material damage, and physical security. This encourages the pro-active management of these risks to minimise their impact and to identify opportunities to enhance resilience of the asset and the community in which it sits to ensure rapid recovery. While this category focuses on hazard preparedness and response, aspects beyond this focus that contribute to and support the broader resilience of the asset and communities it impacts can be found in each of the categories in this standard.

Context

Flood risk

Goal 11 of the United Nations' SDGs focuses on 'sustainable cities and communities', targeting to 'significantly reduce the number of deaths and the number of people affected and substantially decrease the direct economic losses relative to global gross domestic product caused by disasters, including water-related disasters' by 2030. Many offices, factories and other non-domestic assets are at a significant risk of flooding, i.e. they have a greater than 1 in 75 chance each year of being flooded. Apart from the initial effects of being flooded, once flood water has been drained, significant resources (time and cost) are required to clean, refit and re-open buildings for operation.This has major impacts on business continuity that can be costly and time-consuming to manage. Understanding the risk of flooding that an asset is exposed to is the first step to managing this risk.

Reducing surface water run-off

Stormwater and other surface water run off can have serious impacts on water quality, public health and local economies. Managing this run off over the long term can create opportunities for assets and communities to utilize rainwater as a resource, invest in resilient infrastructure, revitalize urban waterways and introduce green space that makes communities more liveable and equitable.

Natural hazard risk assessment

Natural hazards other than floods also can have major impacts on business continuity that can be costly and time- consuming to manage. Understanding the risks from these acute events facilitates the development and adoption of hazard preparation and adaptation strategies to protect human life and asset value.

Durability

Exposed elements of a building or landscaping are at risk of damage through impact, general dilapidation and wear and tear. This can result in significant and unnecessary materials use and waste generation across the life of a building. This can be minimised by risk areas being identified and designed out, and suitable protection measures being provided.

Security

Feelings of safety and security are essential to healthy and productive asset occupants. Freedom from crime and the fear of crime has a major impact on quality of life, and therefore affects the wellbeing of building occupants. At a basic level, providing incident alarms gives comfort and some resilience to these occurrences for building users.

Issues

Rsl 01	Flood risk assessment	4 credits + 1 Exemplary

Aim:

To encourage the identification of flood risk and implement mitigation measures where required.

Value:

Encourages understanding of the flood risk of the asset.

Allows appropriate mitigation measures to be implemented, protecting both the physical asset, occupants and associated revenue.

Rsl 02	Surface water run-off impact mitigation	2 credits

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-site and off-site.

Value:

Reduces risk of flooding downstream and prevents issues with standing water on-site.

Rsl 03	Natural hazard risk assessment	4 credits

Aim:

To recognise and encourage policies that are in place to reduce risk of damage from natural hazards and build capacity to recover quickly following a damaging event.

Value:

Encourages understanding of the risk to the asset from natural hazards.

Allows appropriate mitigation measures to be implemented, protecting both the physical asset, occupants and associated revenue.

Rsl 04	Durable and resilient features	4 credits

Aim:

To minimise the frequency of building component replacement, maximising materials optimisation.

Value:

Avoids damage to building elements reduces the time and cost of building maintenance.

Maintains and enhances asset value whilst protecting occupants.

Rsl 05 Alarm systems 4 credits

Aim:

To ensure the asset is equipped with appropriate alarm systems to prevent damage to the asset or property within the asset.

Value:

Protects owners and building users from sustaining losses.

Asset Performance:
Rsl 01 Flood risk assessment

Credits: 4 (1) Minimum Standard: ★★★★★★ ★★★★★ ★★★★ ☆☆☆ ☆☆ ☆

Aim

To encourage the identification of flood risk and implement mitigation measures where required.

Question

If a flood risk assessment (FRA) has been carried out, what was its scope and which flood risk level was assigned to the asset?

Credits	Answer	Select a single answer from B, C, E & F, if answer B or C has been selected, answer D is also available. Answer G is in addition to all other answers
0	A.	Question not answered
1	B.	FRA scope included Fluvial (rivers) and Tidal (sea) sources and flood risk from these sources is Medium or High
2	C.	FRA scope included all sources and flood risk is Medium or High
+2	D.	Flood mitigation measures were required and have been implemented
3	E.	FRA scope included Fluvial (rivers) and Tidal (sea) sources flood risk from these sources is zero or low
4	F.	FRA scope included all sources and flood risk is zero or low
Exemplary	G.	The Flood Risk Assessment contains an allowance for climate change

Assessment criteria

Criterion	Assessment criteria	Applicable Answer
1.	Flooding from the following sources must be taken into account: a) Fluvial (rivers) b) Tidal (sea) c) Surface water: sheet run-off from adjacent land (urban or rural)	C, F, G

Criterion	Assessment criteria	Applicable Answer
	d) Groundwater: most common in low-lying areas underlain by permeable rock (aquifers) e) Sewers: combined, foul or surface water sewers f) Reservoirs, canals and other artificial sources g) A nearby functional flood plain.	
2.	Flood risk maps produced by a Local or National Authority can form the basis of a Flood Risk Assessment but will not be sufficient on its own to demonstrate compliance. Assessors should verify which sources of flooding flood risk maps cover when awarding credits.	B, C, E - G
3.	Flood Risk Assessments need to be undertaken by a relevant organisation/authority or a competent individual: a) They should state which sources of flooding the report covers b) The report should have been written or reviewed in the last 5 years c) The level of detail required will depend on the size of the site and the arrangement of buildings on that site. For a small site (<2,000m^2) with a relatively simple arrangement of buildings this might consist of a brief report. For larger sites (>10,000m^2) with a higher density of buildings a more detailed assessment would be appropriate d) They should include flood mitigation measure if required.	B, C, E - G
4.	It must be demonstrated that recommendations have been implemented.	D
5.	Exemplary level credit: Answer option G can be select independently of which other answer option has been selected. An allowance for climate change should be based on a Medium or High Emissions Scenario from a robust Climate Model. This should cover a reasonable time period for the building, such as the 2050s or beyond.	G

Checklists and Tables

No National definitions of Flood Risk

In countries that do not have a definition of flood risk the following definitions can be used.

Table 25: Flood risk zones

	Fluvial (rivers)	Tidal (sea)
Low annual probability of flooding	Less than 1 in 1000 chance of flooding (< 0.1%)	Less than 1 in 1000 chance of flooding (< 0.1%)

	Fluvial (rivers)	Tidal (sea)
Medium annual probability of flooding	Between 1 in 100 and 1 in 1000 chance of flooding (1%–0.1%)	Between 1 in 200 and 1 in 1000 chance of sea flooding (0.5%–0.1%)
High annual probability of flooding	1 in 100 or greater chance of river flooding (>1%)	1 in 200 or greater chance of flooding from the sea (>0.5%)

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
1, 2	Flood risk maps showing the following: a) Location of the building b) Flood risk levels c) Sources of flooding covered
3	FRA from relevant body or competent individual, including evidence of their competence
4	Photographic or documentary evidence that the mitigation measures have been implemented
5	Highlighted sections of the FRA showing the Emissions Scenario, Climate Model used and timeframe for the allowance for climate change

Definitions

Competent individual:

An individual (or individuals) with qualifications and experience relevant to assessing flood risk, designing flood prevention measures and calculations. Where complex flooding calculations and prevention measures are required, this must be a specialist hydrological engineer.

Functional flood plain:

A zone that comprises land where water has to flow or be stored in times of flood.

Asset Performance:

Rsl 02 Surface water run-off impact mitigation

2 Credits

0 No Minimum Standard

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-site and off-site.

Question

Are there measures in place to minimise the rate of surface water runoff from the site?

Credits	Answer	Select a single answer option
0	A.	Question not answered
0	B.	No
2	C.	Yes

Assessment criteria

Criterion	Assessment criteria	Applicable Answer
1.	Examples of appropriate measures to minimise surface water runoff include (but are not limited to): a) Sustainable Drainage Systems (SuDS) b) Permeable surfaces c) Infiltration trenches d) Green or Blue roofs e) Rainwater tanks	C
2.	Measures should, either individually or in combination, produce a reasonable reduction in the rate of surface water runoff.	C

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Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
1,2	Annotated photographic evidence of on-site measures.

Additional information

Blue roof

A roof construction that is designed to store water. This can include open water surfaces, storage within or beneath a porous media or modular surface or below a raised decking surface or cover.

Asset Performance:

RsI 03 Natural hazard risk assessment

4 Credits

No Minimum Standard

Aim

To encourage the identification of the risks from natural hazards and build capacity to recover quickly following a damaging event.

Question

Has a risk assessment been carried out to understand an asset's exposure to current Natural Hazards?

Credits	Answer	Select a single answer option
0	A.	Question not answered
0	B.	No
2	C.	Yes, and emergency plans have been developed for all relevant Natural Hazards
4	D.	The asset is in an area where no risks exist

Assessment criteria

Criterion	Assessment criteria	Applicable Answer
1.	A natural hazard risk assessment needs to be undertaken by a relevant organisation / authority or a competent individual.	C
2.	The emergency plan includes a coherent emergency strategy for all relevant natural hazards for the time period specified.	C
3.	Responsibility for emergency plans have been delegated to relevant individuals within the organisation at the asset and communicated appropriately to building users.	C
4.	If there is no perceived threat from natural hazards this should be outlined in appropriate documentation from a relevant authority or expert.	D

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
1,2,3,	A copy of the natural hazard risk policy/strategy including: a. evidence of the competence of the relevant organisation or individual b. the name the individuals that responsibility has been delegated to. c. evidence that it has been communicated appropriately to building users.
4	For assets that list no natural hazard risk exists: Documented confirmation from relevant agency/experts that the asset is in an area of no risk.

Definitions

Competent individual:

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

a) Determine the potential for natural hazards in the region of the development

b) Determine the likely impacts on the site, building and locality

c) Subsequently identify appropriate mitigation measures This (or these) individual(s) should practice to and abide by a professional code of conduct or similar.

Natural hazards:

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 to identify these fully:

a) Floods

b) Natural disasters of geological origin such as volcanic eruptions, earthquakes, landslides, tsunamis and tidal waves

c) Natural disasters of climatic or meteorological origin such as droughts, avalanches, wave surges, and windstorms including cyclones, hurricanes, tornadoes, tropical storms, and typhoons

d) Wildfires

Asset Performance:

Rsl 04 Durable and resilient features

4 Credits

No Minimum Standard

Aim

To minimise the frequency of building component replacement, maximising materials optimisation

Question

Does the asset contain features that protect exposed elements of the building and landscaping from damage from pedestrian traffic, internal vehicular/trolley movement, and external vehicular collision?

Credits	Answer	Select all answers that apply
0	A.	Question not answered
0	B.	No
1	C.	Protection from the effects of high pedestrian traffic in all main entrances, public areas and thoroughfares (corridors, lifts, stairs, doors etc.).
1	D.	Protection against any internal vehicular or trolley movement within 1m of the internal building fabric in all storage, delivery, corridor and kitchen areas.
1	E.	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.
1	F.	Pathways which are easily accessible and dissuade building users from walking across delicate landscaped areas.

Assessment criteria

Criterion	Assessment criteria	Applicable Answer
1.	Examples of suitable durability and protection measures to public or common areas can include: a) Hard-wearing and easily washable floor finishes in heavily used circulation areas (i.e. main entrance, corridors, public areas etc.) b) Consideration of materials specification (especially public waiting areas and toilet areas) to provide protection against potential malicious or physical abuse.	C

Criterion	Assessment criteria	Applicable Answer
2.	Examples of suitable durability and protection measures for internal vehicular or trolley movement can include: a) Protection rails to walls of corridors b) Kick plates or impact protection (from trolleys etc.) on doors c) Hard-wearing and easily washable floor finishes in heavily used circulation areas (i.e. main entrance, corridors, public areas etc.) d) Designing out the risk without the need for additional materials specification to protect vulnerable areas	D
3.	Examples of suitable durability and protection measures from vehicular parking and manoeuvring areas can include: a) Bollards or barriers, or raised kerbs to delivery and vehicle drop-off areas b) Robust external wall construction, up to 2m high	E

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
All	Photographic evidence or Assessor's site inspection report of asset protection infrastructure listed by the client.

Asset Performance:

Rsl 05 Alarm systems

4 Credits

0

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☆

No Minimum Standard

Aim

To ensure the asset is equipped with appropriate alarm systems to prevent damage to the asset or property within the asset

Question

Has the asset been fitted with fire and intruder alarm systems that are certified to a National or International standard?

Credits	Answer	Select all answers that apply
0	A.	Question not answered
0	B.	No
1	C.	Fire alarm systems
1	D.	The fire alarm system is connected to a monitoring facility that is operational 24 hours a day
1	E.	Intruder alarm systems
1	F.	The intruder alarm system connected to a monitoring facility that is operational 24 hours a day

Assessment criteria

Criterion	Assessment criteria	Applicable Answer
1.	The monitoring facility (Alarm receiving centres) should be staffed at all times	D, F
2.	Emergency response procedures should be in place with contractors and emergency services to enable the ARC monitoring function to be maintained whilst the emergency incident is investigated.	D, F

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Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
1	Assets that have intruder alarms will require: a) Documentation demonstrating intruder alarm system is approved to an appropriate National or International standard. b) Photographic evidence, or confirmation in the Assessor's site inspection report, of the installed alarm systems.

Definitions

Alarm:

For both fire and intruder alarms, there must be an audible alarm when activated. This is to ensure that occupiers and guests are alerted

Additional information

Security grading

A security grading is given to an alarm system by a certification body, such as UL or LPCB. A particular alarm grading might be needed in order to qualify for insurance coverage on a business premises. This will be dependent on the nature of the risk which is being protected.

Asset Performance:

Land Use and Ecology

4%

Summary

This category encourages a greater awareness of how the potential ecological value of an asset or site can be enhanced, and the impact that the operation of the asset can have on this ecological value. This enables long-term strategies to be established that will facilitate improvement in this regard.

Context

The United Nations have an SDG related to ‘life in land’ (Goal 15), with the target to ‘integrate ecosystem and biodiversity values into national and local planning and development processes’. The landscape and environmental features inside an asset boundary can have a significant impact on the broader environment and, if implemented and managed in an appropriate way, can have a positive impact on the ecological value of the site. It is therefore important to understand the existing value and conditions of a site and to maximise the ecological value of existing features and the surrounding area of a site.

Issues

Lue 01	Planted area	4 credits

Aim:

To measure and encourage planted areas within the asset footprint that support site's ecology and the health and wellbeing of occupants through access to green space.

Value:

Identifies the existing planted area that can potentially support biodiversity if it is managed or enhanced appropriately.

Supports improvement to the health, wellbeing and potential productivity of occupants through the provision and increased proximity to elements of the natural environment.

Lue 02	Ecological features of planted area	2 credits + 1 Exemplary

Aim:

To measure and recognise ecological features that have been installed in the planted areas of the asset footprint in order to improve the ecological value of the site.

Value:

Raises awareness of ecological features on a site and increase the overall biodiversity on the site.

Provides habitat corridors for local native species.

Contributes to the restoration and continued growth of biodiversity in the area.

Asset Performance:

Lue 01 Planted area

4 Credits

0

☆☆☆☆☆☆
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☆

No Minimum Standard

Aim

To measure and encourage planted areas within the asset footprint that support site's ecology and the health and wellbeing of occupants through access to green space.

Question

What percentage of the asset's footprint has been planted?

Credits	Answer	Select a single answer option
0	A.	Question not answered
0	B.	<5%
1	C.	≥5% to ≤20%
2	D.	>20% to ≤40%
3	E.	>40% to ≤70%
4	F.	>70% or more

Assessment criteria

Criterion	Assessment criteria	Applicable Answer
1.	Planted area can contain or be a mix of horizontal and vertical planting.	B – F
2.	Vertical habitats or green walls can be: a) Free standing or part of the building, as long as these are located within the asset's footprint. b) Partially or completely covered with vegetation and, in some cases, soil or an inorganic growing medium. c) Green walls can only be considered if they meet the definition (see below) and are 'plug planted'. Green walls consisting of climbing plants where the wall is simply acting as a support for the plants cannot be considered	B – F

Methodology

Calculating the percentage of planted area (%) on the site

For buildings only:

The asset is a building on its own without any associated site attached (for example, an office tower in the city centre). In this case, the asset footprint can be considered to be the area of the asset/ building only (typically the ground floor area).

For buildings located on a site:

The asset footprint can be taken as the site on which the building is situated. The boundary of the site must be drawn when either:

a) Responsibility of management or ownership of the site changes; **OR**

b) If a site includes multiple assets and there is a clear demarcation of the area associated with each asset, then this must be considered to be the site boundary for the asset footprint.

Calculating the percentage of planted area (%) on the site:

$$\frac{\boldsymbol{Total\ external\ planted\ area}\ (\boldsymbol{m^2})\ \times \mathbf{100}}{\boldsymbol{Asset\ footprint}\ (\boldsymbol{m^2})}$$

Calculating the percentage of planted area (%) if a vertical wall has been installed:

$$\frac{\boldsymbol{Total\ external\ planted\ area}\ (\boldsymbol{m^2}) + \boldsymbol{Total\ planted\ vertical\ area}\ (\boldsymbol{m^2})\ \times \mathbf{100}}{\boldsymbol{Asset\ footprint}\ (\boldsymbol{m^2})}$$

Please note: This value can equate to more than 100% if the sum of the area of the vertical faces are more than the total asset footprint.

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
1, 2	Visual inspection of ecological features.
1, 2	Photographic evidence of installed ecological features.
1, 2	Written evidence that the calculation has been carried out.

Definitions

Green Roof:

A green roof is a roof that is partially or completely covered with vegetation and soil or another growing medium, situated on top of a waterproof membrane. These systems can be either intensive or extensive.

a) Intensive Green roof systems have a deep growing medium, which allow the establishment of trees and shrubs. The depth of the growing medium requires extra loading requirements within the holding structure and requires a complex irrigation system for maintenance.

b) Extensive green roof systems have a thin growing medium and require minimal maintenance, and in general do not require irrigation.

Green Walls:

An external wall which is fully or partially covered with vegetation. These systems usually consist of a growing medium (soil, water or an inorganic substrate), with an integrated water delivery system where necessary given the climate and local weather. The structure should be plug planted and attached to the external wall/walls of an asset. They are also known as living walls, green facades or vertical gardens.

Asset Performance:

Lue 02 Ecological features of planted area

2 Credits

No Minimum Standard

Aim

To measure and recognise ecological features that have been installed in the planted areas of the asset footprint in order to improve the ecological value of the site.

Question

What ecological features have been planted or installed in the planted areas of the asset's footprint?

Credits	Answer	Select one applicable answer A - D, also select answer E if applicable
0	A.	Question not answered
0	B.	No
1	C.	2 or more ecological features are present
2	D.	All the ecological features are present
Exemplary	E.	Habitat that significantly supports local native species

Assessment criteria

Criterion	Assessment criteria	Applicable Answer
1.	Ecological features are listed below: • Planters (containing living plants) outside • Traditional planted areas, such as planting in car parks and planting around the asset • Other planted areas, such as green roofs and green walls • Features to assist local fauna	C – D
2.	Native floral species or those with a known attraction or benefit to local wildlife can be considered for the purpose of enhancing the ecological value	C – E
3.	Features to assist local fauna include (but are not limited to): a) Bird boxes	C – D

Criterion	Assessment criteria	Applicable Answer
	b) Bat boxes c) Insect boxes d) Wildlife bricks (e.g. bees or bats) Assessors must verify features are installed and maintained correctly, a reasonable number of features have been installed, and local or regional guidance has been followed. The features must be installed in line with the manufacturers guidance and ecological advice from a suitably qualified ecologist (SQE) or from a relevant organisation/ authority for the feature (e.g. local, national or international wildlife charities).	
4.	Planted areas must be of a viable size to support the flora and fauna within them and cannot be bare soil.	C – D
5.	Exemplary level credit: Answer option E can be select independently of which other answer option has been selected. Habitat which significantly supports local species must be maintained and installed in line with local guidance and advice from a relevant organisation/authority for the feature (e.g. local, national or international wildlife charities). The Habitat will aim to enhance the ecology of the site in more ways than one, examples of this include wildlife pond, wildflower meadow or hedgerow.	E

Specific notes

Asset type specific	
1.	**Off-site enhancement** Where all available ecological enhancements have been exhausted the asset can choose to offset the ecological value of their site.

Methodology

Off-site enhancement

For assets with no outdoor space to influence, credits are still achievable if they have supplied ecological features or habitat creation within 2km, using the same guidance described in the criteria. For this to be applicable, all opportunities on-site must be exhausted before off-site enhancement can be recognised.

For example, where an asset has no outdoor space to influence and they have achieved the credit for 2 ecological features (e.g. appropriate bird boxes and a green roof), they can still target credits for creating habitat if they do so in the local area (e.g. a local park). To use another example, if only 1 ecological feature is appropriate for the asset, they can also implement the additional one in a wider area.

Where this is pursued, an SQE must be used to ensure the features are significant for contributing to biodiversity and are appropriate, in line with their expert opinion.

Please note that ecological features need to have been installed specifically associated with the assessed asset, to avoid double counting. Assets cannot claim credits for features implemented on other assets the asset owner owns.

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
All	Visual inspection of ecological features

Definitions

Suitably qualified ecologist:

An individual achieving all the following items can be considered to be "suitably qualified" for the purposes of a BREEAM In-Use International assessment:

a) Holds a degree or equivalent qualification in ecology or in a related subject comprising a significant ecology component.

b) 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.

Additional information

Ecological features:

a) Where features are installed they must be maintained correctly, appropriate for the particular asset being assessed, in line with manufacturer's guidance and ecological advice from an SQE or relevant organisation/authority for the feature. For example, in the UK this may be available from RSPB, Bat Conservation Trust or Buglife, for the bird, bat or insect boxes, respectively. Guidance from equivalent organisations for different countries should be referred to. If this is not available for the particular country being assessed, organisations that covers a nearby country with similar context for wildlife.

b) Where available, local or regional guidance has been followed to ensure features and habitats are appropriate for local priorities for biodiversity. For example, where the local biodiversity action plan suggests that Swifts or a particular species of bat are present in the area and are a local priority, these should be considered before selecting anything not specifically mentioned in the local guidance.

c) A reasonable quantity of features have been installed for the asset being assessed to make the most of these features being installed in line with local guidance, SQE guidance or relevant organisation e.g. local wildlife trust) and using the Assessor's discretion. For example, one bird box for a huge development would not be acceptable if there was scope to install more elsewhere on the asset, which could add ecological value.

Asset Performance: Pollution

9%

Summary

This category addresses the prevention and control of pollution and surface water run-off associated with an asset location and use. This facilitates a reduction in impact on surrounding communities and environment, arising from flooding and emissions to air, land and water. Addressing pollution can help address the inequities that are currently present in our communities and provide a healthy environment for all demographic and economic groups, including those that are less advantaged or part of a vulnerable population.

Context

Local air quality

Poor air quality has a detrimental effect on people and other living things. Poorer communities are often disproportionately impacted by pollutants, which research has shown to have lifelong consequences on health and welfare. Gases such as nitrous oxides (NO_x) can react with other gases and environmental factors, including sunlight, to create substances that have a major impact on health and wellbeing. These substances can be highly detrimental to human health. They can be carcinogenic, have respiratory impacts (resulting in asthma and other bronchial complaints), have a sensitising effect for allergy suffers and increase instances of heart disease. The United Nations have made ‘good health and well-being’ one of its SDGs, with an aim to ‘substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination’ by 2030. Under this issue, BREEAM seeks to limit emissions from developments in operation that have an impact on local air quality.

Refrigerants

The typical refrigerants used in building cooling systems are major greenhouse gases that are many times more potent than carbon dioxide in their contribution to global warming and climate change. Although, released in much smaller quantities they are, nevertheless, a significant contributor to increasing global temperatures. As such, they are the focus of increasingly strict regulatory controls internationally. Worldwide agreements (such as the 1992 United Nations Framework Convention on Climate Change (UNFCCC)) and its extension, the Kyoto Protocol, commits signatories to reducing greenhouse gas emissions and banning the most damaging gases. The agreements seek to shift use to low impact refrigerants over time and so provide a timescale for the phasing out of more potent refrigerants. Because the use of the gases is so prolific actions taken to limit their use are vital.

The use of CFCs and HCFCs as refrigerants has been phased out under the Montreal Protocol, resulting in these substances no longer being used as refrigerants in all new build and most existing situations. The industry’s favoured replacements are currently HFCs which, while less damaging to the ozone layer, have 1,000 to 9,000 times greater capacity to warm the atmosphere than carbon dioxide. Through the Kigali amendment to the Montreal Protocol, the world will phase out HFCs starting with high-income countries in 2019, then some low-income countries in 2024 and other signatories in 2028. However, the use of HFCs will continue to grow significantly before this phase out is completed. With 90 percent of refrigerant emissions happening at the end of life, the effective disposal of the refrigerants in use is critical.

BREEAM supports this agenda and stimulates a more rapid change market transformation by creating market value for assets with reduced impact refrigerants by limiting the volume or weight of gases used, their potential impact, and for specifying systems which detect and control leakage of gas to the atmosphere.

Refrigerant leaks impact both the environment and financial performance of an asset, increasing the running time of the equipment and potentially damaging components of the system. Whilst many countries have regulatory systems in place that require leak testing and repair for systems of a certain size during regular maintenance, knowing as soon as possible when a leak has occurred is key to minimising the environmental impacts, managing operating costs and maximising the life cycle of the installed equipment.

Issues

Pol 01 Minimising watercourse pollution 4 credits

Aim:

To reduce the risk of polluting natural watercourses through contaminated surface run-off and/or grease from kitchen facilities entering drainage systems.

Value:

Reduces the risk of pollution to local watercourses and potential breaches of environmental law.

Grease separators reduce the risk of blocked drains both on-site and in the wider sewerage system.

Pol 02 Chemical storage 2 credits

Aim:

To reduce the impact of a chemical leak or spill by containing the substance and minimising impact on other areas of the building.

Value:

Prevents damage to local watercourses and potential breaches of environmental law in the event of a chemical spill.

Minimises the risk to people on-site.

Pol 03 Local air quality 4 credits

Aim:

To reduce asset contribution to local air pollution by using no or low emission heating and hot water systems in the asset.

Value:

Reduces an asset's impact on local/regional air quality and contribution to respiratory illnesses in people, the formation of acid rain, degradation of views and nutrient pollution in coastal waters.

Reduces the cost of regulatory compliance by encouraging on-going and proactive maintenance.

Pol 04 Global warming potential of refrigerants 4 credits

Aim:

To encourage the use of refrigerants with a low global warming potential (GWP) in refrigerant equipment.

Value:

Reduces the overall contribution to climate change.

Reduces the cost of regulatory compliance by encouraging on-going and proactive maintenance.

Pol 05 Refrigerant leak detection systems 4 credits

Aim:

To reduce the level of greenhouse gas emissions related to the leakage of refrigerants.

Value:

Ensures that systems are operating efficiently and delivering the cooling they were designed for.

Increases system resilience and market value by using low impact refrigerants.

Asset Performance:

Pol 01 Minimising watercourse pollution

4 Credits

No Minimum Standard

Aim

To reduce the risk of polluting natural watercourses through contaminated surface run-off and/or grease from kitchen facilities entering drainage systems.

Question

Are there light-liquid separators fitted within the drainage system to vehicular areas and/or grease separators/filters for commercial kitchen facilities?

Credits	Answer	Select all options that apply
0	A.	Question not answered
0	B.	No
2	C.	Yes, light-liquid interceptors are installed within the drainage system where potential sources of pollution exist
2	D.	Yes, grease separators/ filters are installed within commercial kitchen facilities

Assessment criteria

Criterion	Assessment criteria	Applicable Answer
1.	**Filtering** Where the asset does not require light-liquid separators or grease separators, the associated credits can be filtered out of the assessment.	All
2.	Areas that serve the asset need to be assessed. Those that presents a risk of watercourse pollution and require light-liquid/ oil separators include: a) vehicle manoeuvring areas b) car parks c) waste disposal facilities d) delivery and storage facilities e) plant areas	C

Criterion	Assessment criteria	Applicable Answer
3.	Where no light-liquid separators or grease separators are present, the Assessor will need to confirm that there are no areas at risk of pollution or commercial kitchens on-site.	C, D

Specific notes

Asset type specific	
1.	**Indoor parking** If the design team can demonstrate that there will be absolutely no run-off from the indoor parking, then the intent of the credit will be met. However, such proof would also have to demonstrate that no hydrocarbon spillage from vehicles found its way into the watercourse/sewer. It is likely that there would be water ingress from outside or that internal parking areas would have drains fitted and be cleaned regularly. In such conditions, the criteria are still applicable.

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
2	Photographic evidence of separator equipment installed on-site.
2	Site plans detailing location of separators.
1, 3	Site plans or the Assessor's site inspection report confirming that the site has no areas with potential sources of pollution at risk or commercial kitchens.

Definitions

Commercial kitchens:

Commercial kitchens are found in restaurants, cafeterias, hotels, hospitals, educational and workplace facilities, army barracks, and similar establishments. These kitchens are generally larger and equipped with bigger and more heavy-duty equipment than a residential kitchen or office kitchenette.

Light-liquid/oil separators:

A vessel, part of a surface water drainage system, into which potentially contaminated wastewater will flow and where light free-floating liquids such as oil are separated from the wastewater by means of gravity and/or coalescence and retained.

Watercourses and sewers:

A term that includes rivers, streams, ditches, drains, culverts, dykes, sluices, sewers and passages through which water flows.

Asset Performance:

Pol 02 Chemical storage

2 Credits

0 No Minimum Standard

Aim

To reduce the impact of a chemical leak or spill by containing the substance and minimising impact on other areas of the building.

Question

Are all hazardous chemicals stored in areas with adequate containment to deal with ≥110% of the chemicals stored?

Credits	Answer	Select a single answer option
0	A.	Question not answered
0	B.	No
2	C.	Yes

Assessment criteria

Criterion	Assessment criteria	Applicable Answer
1.	**Filtering** Where there are no hazardous chemicals stored in the asset, this issue can be filtered out of the assessment.	All
2.	Containment for spillage can be in the form of one mitigation measure or a combination of several. Mitigation measures include, (but are not limited to): a) Double skin tanks b) Drip trays c) Non-permeable membranes in the room where tanks are located d) Bunding.	C

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the ‘BREEAM evidential requirements’ section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
2	Photographic evidence of chemical storage.
2	Confirmation that facilities are appropriate to the area they serve

Definitions

Hazardous chemicals:

Chemicals with properties that make them dangerous or capable of having a harmful effect on human health or the environment. An example of a list of materials/waste that is defined by law as being hazardous can be found in the Hazardous Waste List (HWL) of the European Waste Catalogue (EWC).

Asset Performance:

Pol 03 Local air quality

4 Credits

No Minimum Standard

Aim

To reduce asset contribution to local air pollution by using no or low emission heating and hot water systems in the asset.

Question

Do the asset's heating and hot water systems generate local emissions of nitrogen oxides, particulate matter or volatile organic compounds?

Credits	Answer	Select a single answer option
0	A.	Question not answered
0	B.	Yes, emissions from combustion appliance(s) exceed the limits in Table 26
1	C.	Yes, emissions from biomass or solid fuel combustion appliance(s) comply with the limits in Table 26
2	D.	Yes, emissions from oil combustion appliance(s) comply with the limits in Table 26
3	E.	Yes, emissions from gas combustion appliance(s) comply with the limits in Table 26
4	F.	No, all heating and hot water is supplied by non-combustion system(s), e.g. powered by electricity

Assessment criteria

Criterion	Assessment criteria	Applicable Answer
1.	**Filtering** Where the asset is connected to a district heating system that is outside the control of the building owner or manager, this issue can be filtered out of the assessment.	All
2.	Credits are awarded where emissions from the asset's combustion appliance(s) that provide space heating and domestic hot water to the asset	B – E

Criterion	Assessment criteria	Applicable Answer
	do not exceed the limits set in Table 26 in the Checklists and Tables section of this issue.	
3.	The emission limits in Table 26 use the following units of measurement: a) Nitrogen oxides (NO_x) measured in mg/kWh fuel input based on Gross Calorific Value (GCV) for gas or oil appliances. b) Particulate matter and volatile organic compounds (VOC) for all solid fuel or biomass boilers measured in mg/m³ 10% O_2 dry basis. c) Particulate matter and VOC for all solid fuel or biomass local heaters measured in mg/m³ 13% O_2 dry basis. To demonstrate compliance with the emission limits, emission measurement information must be provided by the manufacturer(s) of the appliance(s). Where emission information is not available in these units of measurement, the correct information must be obtained from the appliance manufacturer.	B – E
4.	Where multiple appliances are installed, credits are awarded based on the worst performing appliance.	B – F
5.	Back-up space or water heating appliances can be excluded from assessment. This is on the basis that these appliances will only be used in an emergency so their impact will be limited.	B – F
6.	No credits may be awarded if any combustion appliances are not covered in Table 26, e.g. open fronted or open flue heaters.	B – E
7.	Where a project is connected to a district heating system that is outside the control of the building owner or manager, the system does not need to be assessed. Where the building owner or manager does have control over the system, then it must be assessed.	B – F

Checklists and Tables

Table 26: Emission limit from combustion appliances

Appliance type	Fuel	Nitrogen oxides emissions	Particulate matter emissions	Volatile organic compound emissions
Boiler space heaters or combination heaters or water heaters	Gas	56 mg/kWh		
	Oil	120 mg/kWh		
	Biomass	200 mg/m³	40 mg/m³	20 mg/m³
	Solid fuel	350 mg/m³	40 mg/m³	20 mg/m³

Appliance type	Fuel	Nitrogen oxides emissions	Particulate matter emissions	Volatile organic compound emissions
Cogeneration space heaters using external combustion	Gas	70 mg/kWh		
	Oil	120 mg/kWh		
Cogeneration space heaters using internal combustion engine	Gas	240 mg/kWh		
	Oil	420 mg/kWh		
Heat pump space heaters or combination heaters or water heaters using external combustion	Gas	70 mg/kWh		
	Oil	120 mg/kWh		
Heat pump space heaters or combination heaters or water heaters using internal combustion engine	Gas	240 mg/kWh		
	Oil	420 mg/kWh		
Local space heaters	Gas	130 mg/kWh		
	Oil	130 mg/kWh		
Closed fronted local space heaters	Wood pellets	200 mg/m^3	20 mg/m^3	60 mg/m^3
	Biomass	200 mg/m^3	40 mg/m^3	120 mg/m^3
	Solid fuel	300 mg/m^3	40 mg/m^3	120 mg/m^3

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the ‘BREEAM evidential requirements’ section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
All	Copy of manufacturer’s details for installed appliance(s) and their emissions levels.
All	Photographic evidence of heating and hot water system(s).

Additional information

Emission limits

The emission limits and measurement units are based on the requirements of the European Union Ecodesign Directive (2009/125/EC) and its associated regulations for energy-related products. These set performance requirements for combustion-powered heating systems and requires manufacturers to publish the NO_x, particulate matter and VOC emission levels for their product.

Asset Performance:

Pol 04 Global warming potential of refrigerants

4 Credits

No Minimum Standard

Aim

To encourage the use of refrigerants with a low global warming potential (GWP) in refrigerant equipment.

Question

What refrigerants are used in the asset refrigeration equipment?

Credits	Answer	Select a single answer option
0	A.	Question not answered
0	B.	Some refrigerants have a global warming potential of >10 (e.g. majority HFCs, HCFC, CFCs)
1	C.	50%, by kW cooling or heating capacity, of refrigerants have a global warming potential of ≤10 (e.g. Propane, Butane)
2	D.	All refrigerants have a global warming potential of ≤10 (e.g. Propane, Butane)
4	E.	All refrigerants have a global warming potential of ≤1 (e.g. Ammonia, Water, Carbon dioxide)

Assessment criteria

Criterion	Assessment criteria	Applicable Answer
1.	**Filtering** Where no refrigerants are used or only small hermetic systems (refrigerant charge in each system is ≤5kg) are installed in the asset, this issue can be filtered out of the assessment.	All
2.	The issue applies to all equipment and areas using refrigerants including, but not limited to: a) Walk-in cold storage enclosures b) Cold storage, including commercial food/drink display cabinets but excluding residential-scale white goods (e.g. fridges and freezers) c) Comfort cooling and heating (e.g. heat pumps)	All

Criterion	Assessment criteria	Applicable Answer
	d) Process based cooling loads (e.g. servers/IT equipment)	
3.	A list of typical refrigerants with a low GWP can be found in Table 27 in the Checklist and Tables section of this issue.	All
4.	This issue applies to refrigerants used in equipment that is installed on-site only.	All

Checklists and Tables

Table 27: Common refrigerant types with a low GWP

R-Number	Chemical name	GWP 100-yr
R-30	Dichloromethane	9
R-170	Ethane	3
R-290	Propane	3
R-600	Butane	3
R-600a	Isobutane	3
R-717	Ammonia	0
R-718	Water	<1
R-729	Air (nitrogen, oxygen, argon)	0
R-744	Carbon dioxide	1
R-1150	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'

EN 378-1:2016 Refrigerating systems and heat pumps. Safety and environmental requirements. Basic requirements, definitions, classification and selection criteria

The Intergovernmental Panel on Climate Change 5th Assessment Report, Chapter 8, 'Anthropogenic and Natural Radiative Forcing', 2013

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
All	Copy of manufacturer's information confirming the global warming potential of refrigerants used on-site.
All	Photographic evidence of refrigerant packaging/systems (if necessary).
1	Statement from the building manager indicating that the asset does not contain any systems that contain refrigerants or confirmation that the total charge is ≤5kg in any systems that are present.

Definitions

GWP:

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.

Refrigerant:

A compound typically found in either a fluid or gaseous state that readily absorbs heat from the environment when combined with other components such as compressors and evaporators

Additional information

Refrigerants

There are three main make-ups of refrigerants:

a) **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 our ozone.

b) **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.

c) **Chlorofluorocarbon Refrigerants (CFCs)** contain chlorine, fluorine and carbon. These refrigerants carry high amounts of chlorine, so they are known for being the most hazardous to the ozone layer.

Hydrocarbons and ammonia-based refrigerants have low or zero GWP. These are now widely available and are valid alternatives to HFCs in all buildings, providing health and safety issues are fully addressed. 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. Table 27 contains a list of common refrigerant types with a low GWP.

Asset Performance:

Pol 05 Refrigerant leak detection systems

4 Credits

0 No Minimum Standard

Aim

To reduce the level of greenhouse gas emissions related to the leakage of refrigerants.

Question

Is there an automated refrigerant leak detection system in place for all equipment that uses refrigerants?

Credits	Answer	Select a single answer option
0	A.	Question not answered
0	B.	No leak detection system in place
3	C.	Yes, warning alarm or lighting only
4	D.	Yes, warning alarm or lighting, automatic shutdown and pump down of refrigerants
4	E.	Only environmentally benign refrigerants (GWP ≤1, or solid-state) are used

Assessment criteria

Criterion	Assessment criteria	Applicable Answer
1.	**Filtering** Where no refrigerants are used or only small (refrigerant charge in each system is ≤5kg) hermetic systems are installed in the asset, this issue can be filtered out of the assessment.	All
2.	A leak detection system should be in place for systems that are installed in the building for the following uses, including, but not limited to: a) Walk-in cold storage enclosures b) Cold storage, including commercial food/drink display cabinets but excluding residential-scale white goods (e.g. fridges and freezers) c) Comfort cooling and heating (e.g. heat pumps) d) Process based cooling loads (e.g. servers/IT equipment)	All

Criterion	Assessment criteria	Applicable Answer
3.	A list of typical refrigerants with a low GWP can be found in Table 27 in the Checklist and Tables section of Pol 04 Global warming potential of refrigerants	E
4.	This issue applies to refrigerants used in equipment that is installed on-site only.	All

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
All	Operation and maintenance manuals detailing installation of leak detection system or site inspection
All	In the case of environmentally benign refrigerants, manufacturer's confirmation of either minimal risk of leaks or minimal impact of leaks.
1	Statement from the building manager indicating that the asset does not contain any systems that contain refrigerants or confirmation that the total charge is ≤5kg in any systems that are present.

Part 2 Management Performance

Table 28: Management performance categories, credits available and environmental weightings

Environmental category	Credits available	Category weighting
Management	34	11%
Health and Wellbeing	27	17%
Energy	58	27%
Transport	n/a	0%
Water	16	9%
Resources	14	11%
Resilience	20	11%
Land Use and Ecology	10	7%
Pollution	15	7%
Total	194	100%
Exemplary (additional)	9	9%

Management Performance: Management

11%

Summary

This category encourages sustainable management practices throughout the life cycle of the asset, ensuring that both technical and non-technical building operators and users have appropriate guidance on how they can help maximise sustainable performance. This enables clear targets to be put in place and provides feedback loops to ensure that processes and performance can be optimised.

Context

New buildings are delivering healthier internal environments, more sustainably and efficiently than ever before. In turn, this raises the standards expected of existing buildings. Often, with limitations on what changes can be made whilst a building is still occupied, management practices become paramount in delivering the best performance that is possible from the existing building.

The aim of good building management should be to make sure that buildings performs in practice as well as, or better than, it was designed. This requires the building mangers to first understand how the building is supposed to perform and then second, to ensure they have the policies and procedures in place to maintain this performance. Finally, it must be ensured that the performance being delivered meets the needs of the building occupants. Additionally, for multi-tenanted assets, it is necessary to communicate this to those managing the tenanted spaces.

Issues

Man 01 Building user guide 2 credits

Aim:

To recognise and encourage the provision of appropriate guidance for non-technical building users which enables them to access, understand and operate the building efficiently, and in a manner in keeping with the original design intent or revised strategy.

Value:

Allows building users to better understand the functionality of the building and how to operate it effectively. Therefore, improving occupant comfort and helping to meet end-user requirements, consequently increasing occupant satisfaction and productivity.

Man 02 Management engagement and feedback 9 credits

Aim:

To facilitate structured feedback and awareness that enables management staff and building occupants to understand how to better operate the building.

Value:

Allows building managers to understand whether the building is meeting user needs.

Ensures that building users can feedback to building managers and assurance that any issues raised will be investigated and resolved as appropriate.

Man 03 Maintenance policies and procedures 13 credits

Aim:

To recognise and encourage best practice building maintenance practice.

Value:

Protecting the investment and the longer-term value of the asset through proactive maintenance policies and procedures.

Ensuring the knowledge of how to operate the building is accurate, effective and shared with those who need it for buildings to operate efficiently and as the building occupiers expect.

Man 04 Environmental policies and procedures 6 credits + 1 Exemplary

Aim:

To recognise and encourage implementation of the best environmental management provisions and ensure these are in place and acted on.

Value:

Ensures the commitment of the asset managers, operators and users to identifying and managing the environmental performance of the asset as well as documenting the actions required to minimize the environmental impact of building operations.

Encourages the enhancement of these commitments to include resilience related information.

Man 05 Green lease 4 credits

Aim:

To encourage the implementation of lease agreements that contain incentives to actively engage tenants in consideration of energy, water, and waste efficient practices.

Value:

A green lease can facilitate better coordination of building management between building operators and tenants, ensuring the building operates both efficiently and as the tenants wish, towards more sustainable outcomes for all parties.

Management Performance:
Man 01 Building user guide

2 Credits — 0 — No Minimum Standard

Aim

To recognise and encourage the provision of appropriate guidance for non-technical building users which enables them to access, understand and operate the building efficiently, and in a manner in keeping with the original design intent or revised strategy.

Question

Has relevant information from the building user guide been made accessible to all building users?

Credits	Answer	Select a single answer option
0	A.	Question not answered
0	B.	No
2	C.	Yes

Assessment criteria

Criterion	Assessment criteria	Applicable Answer
1.	A building user guide will provide easily accessible and understandable information relevant to the following stakeholders: a) The building's staff (or where relevant residents) b) The non-technical facilities management team/building manager c) Other building users, e.g. visitors/community users.	C
2.	The building user guides shall be building-specific or site-specific guidance. The purpose of the guide is to help building users access, understand and operate the building efficiently and in accordance with the original design intent. The content of the guide is specific to the building type and end users, but should include information on the following topics, where applicable: a) Overview of the building and its environmental strategy, e.g. energy, water or waste efficiency policy or strategy, and how users should engage with and deliver the policy or strategy. b) Provision of, and access to, shared facilities.	C

Criterion	Assessment criteria	Applicable Answer
	c) Provision of facilities, and features for users with disabilities or in need of additional support. d) Safety and emergency information or instructions. e) Building-related operational procedures specific to building type or operation, e.g. laboratories. f) Building-related incident reporting and feedback arrangements. g) Provision of, and access to, transportation facilities, e.g. public transport, cyclist facilities, pedestrian routes etc. h) Provision of and access to local amenities. i) Links, references and relevant contact details. j) Building services overview and access to building occupant controls, e.g. where to find them, what they control, how to operate effectively and efficiently etc. k) Pre-arrival information for visitors, e.g. access and security procedures or provisions.	
3.	There is no requirement on the format the building user guide should take. However, the guide should be appropriately accessible for all building users with specific consideration given to people with disabilities.	C

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
All	Copies of relevant sections of the building user guide.
All	Details of how relevant information has been made accessible to building users, examples include (but not limited to): a) Training schedules b) Copy of emails to (new) building users) c) Copy of information pack handed to new building users

Management Performance:

Man 02 Management engagement and feedback

9 0

Credits Minimum Standard

Aim

To facilitate structured feedback and awareness that enables management staff and building occupants to understand how to better operate the building.

Question

What processes are in place to ensure good communication between building managers, building users, and neighbours?

Credits	Answer	Select all answers from A - E that apply, select either answer F or G
0	A.	Question not answered
1	B.	Formal communications between building management and building users
2	C.	Regular meetings between building management and building users
1	D.	Building users are provided with information relating to environmental policies and performance of the asset
1	E.	Proactive engagement with neighbours and community, including a procedure that deals with any complaints relating to the asset and associated operations (e.g. noise, odour, and light)
2	F.	Occupant satisfaction surveys conducted by building management
4	G.	Occupant satisfaction surveys conducted by a third party

Assessment criteria

Criterion	Assessment criteria	Applicable Answer
1.	Formal communications and meetings should be scheduled at appropriate intervals and locations, and when new procedures are adopted, or systems/controls installed.	B, C
2.	Information can relate to: a) Health, Safety and Environmental policies	D

Criterion	Assessment criteria	Applicable Answer
	b) Building/Organisational Operating Procedures c) Asset/Organisational environmental performance d) Public transport e) Environmental best practice topics. f) Accessibility and equity	
3.	Examples of community engagement or positive/proactive engagement with neighbours include: • Online feedback opportunities • Surveys on and off-site with neighbours • Public engagement events or meetings • Participation in existing neighbourhood groups/activities • A standing community input committee	E
4.	The complaints procedure should detail how to deal with any complaints quickly and impartially.	E
5.	Occupant satisfaction surveys and feedback must be undertaken at least once every three years and additionally when major changes in facility planning, building services etc. have been undertaken.	F, G
6.	The survey process should be designed to cover, as a minimum: a) Internal environmental conditions b) Internal environmental controls c) Internal fit-out and contents d) Communal facilities in the building. Targets must be set for all topics for which building occupants have highlighted issues. Results and targets must be disseminated to all building users. Progress on targets must be reviewed annually.	F, G

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
3	Records demonstrating community engagement or positive/proactive engagement with neighbours.
4	Copy of relevant complaints procedure.
5, 6	A copy of the building occupants' satisfaction feedback forms and a sample of completed forms.
5, 6	Records of how information on target setting and procedure development has been communicated with building occupants.

Definitions

Formal communications:

These include, but are not limited to:

a) Standard feedback forms

b) Dedicated email address

c) Intranet feedback forms

d) Standard forms in areas accessible by all staff.

Management Performance:

Man 03 Maintenance policies and procedures

13

0

Credits

☆☆☆☆☆☆
☆☆☆☆☆
☆☆☆☆
☆☆☆
☆☆
☆

No Minimum Standard

Aim

To recognise and encourage best practice building maintenance practice.

Question

Which of the following maintenance policies and procedures are in place?

Credits	Answer	Select all the answers from A - F that apply, select either answer G or H
0	A.	Question not answered
1	B.	A full set of operation and maintenance (O&M) manuals available and accessible by building management/facilities management staff
2	C.	A proactive maintenance policy/procedure for the external site
2	D.	A proactive maintenance policy/procedure for the Building fabric
2	E.	A proactive maintenance policy/procedure for Heating, Ventilation and Cooling (HVAC) systems, as applicable, and hot water
2	F.	A proactive maintenance policy/procedure for Lighting
2	G.	Regular review of the Building Management Systems by suitably qualified staff from the in-house Facilities Management team
4	H.	Regular review of the Building Management Systems by an accredited third party auditor

Assessment criteria

Criterion	Assessment criteria	Applicable Answer
1.	**Filtering** Where systems are not installed, the associated credits can be filtered out of the assessment.	All
2.	Building O&M manuals should cover all current and relevant building services and building elements which may include (but are not limited to): a) Heating and cooling systems b) Water distribution systems c) Ventilation systems d) Lighting systems e) External shading systems f) Construction/specification details for building fabric g) Renewable and low carbon technologies (where present)	B
3.	Maintenance reports should state as a minimum: a) Person or organisation carrying out the maintenance b) Date the maintenance has been carried out c) Description of building service/element that has been maintained d) Outcomes of the maintenance procedure e) Actions following the maintenance procedure f) Date indicating next maintenance interval	C – H
4.	This issue is addressing full building management systems. Individual automated controls, such as Passive Infra Red (PIR) controlling lighting, are not considered to be a building management system.	G, H
5.	In-house FM team members must be trained in how to operate the building management system to high efficiency standards.	G, H
6.	Building management systems must be reviewed at least every 6 months.	G, H
7.	Accredited third party professionals should be experts in how to operate the specific system which is being assessed. An example of such persons would be: Members of relevant organisations such as the European Building Automation and Controls Association.	H

Methodology

Access to O&M manuals:

The Assessor is not required to assess the content of the O&M manuals but must ensure that all relevant documents are available and accessible. Where a building is managed by a building management contractor the manuals may be kept off site, but it is important that the information is in a form that makes it easy for contractors to obtain copies and make use of them on-site.

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
1, 2	Copy of the front cover and table of contents of the O&M manuals, and a list of all current and relevant building services and elements.
3 – 6	Formal organisational documentation illustrating maintenance schedules.
3– 6	Copy of reports of last maintenance procedure for the systems specified. This could be a cover page and table of contents, and must clearly state: a) Person or organisation carrying out the maintenance b) Date the maintenance has been carried out c) Description of building service/element that has been maintained.
7	Copy of inspection log or report from the accredited third party.

Definitions

Building Fabric:

The external fabric of a building including, walls, cladding, doors, windows and roofs.

Proactive maintenance policy:

A maintenance strategy to ensure that the reliability of the installed fittings and water systems is increased. These maintenance policies typically consist of two parts:

a. **Preventive maintenance**: maintenance, measurements, tests, parts replacement, etc. to prevent faults from occurring.

b. **Predictive maintenance**: techniques that are designed to help determine the condition of installed equipment in order to predict when maintenance should occur.

Management Performance: Man 04 Environmental policies and procedures

6 Credits

1 Minimum Standard

★★★★★★
★★★★★
★★★★
☆☆☆
☆☆
☆

Aim

To recognise and encourage implementation of the best environmental management provisions and ensure these are in place and acted on.

Question

Has an environmental management policy or plan been developed by the building management organisation?

Credits	Answer	Select all answers that apply
0	A.	Question not answered
2	B.	The building management organisation has developed and implemented an environmental policy or plan
2	C.	The environmental management policy or plan has been accredited to ISO 14001 or equivalent standards
2	D.	Improvement targets have been set for energy, water and waste/recycling
Exemplary	E.	The environmental management policy or plan addresses resilience and climate risks

Assessment criteria

Criterion	Assessment criteria	Applicable Answer
1.	The environmental management policy or plan must: a) Be implemented and the review process must ensure that targets are set, and actions plans are completed b) Be approved by the board of directors/senior managers c) Include scope, objectives and targets d) Be available and accessible by all building users. The level of detail required will depend on the size and complexity of the asset.	B, D

Criterion	Assessment criteria	Applicable Answer
2.	Where the environmental management policy or plan has been ISO 14001 certified, the Assessor does not need to check the content or structure.	C
3.	The environmental management policy or plan identifies which senior employee is responsible for climate risk and other resilience-related issues for the asset.	E

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
1	A copy of the environmental policy document highlighting areas in which improvement targets have been set.
2	Where the Environmental Management System is third party certified: a copy of a valid Environmental Management System certificate must be provided.

Additional information

Standards equivalent to ISO 14001

The following standards are currently recognised as equivalent to ISO 14001:

- The EU Eco-Management and Audit Scheme (EMAS)
- Eco-Lighthouse/Miljøfyrtårn

Management Performance:
Man 05 Green lease

4 Credits

0 No Minimum Standard

Aim

To encourage the implementation of lease agreements that contain incentives to actively engage tenants in consideration of energy, water, and waste efficient practices.

Question

Are green lease agreements/contracts with tenants in place?

Credits	Answer	Select a single answer option
0	A.	Question not answered
0	B.	No
1	C.	Yes for >25% of tenants, including sharing of environmental performance data
2	D.	Yes for >25% of tenants, including sharing of environmental performance data and targets for Energy, and Water use or Waste reduction
2	E.	Yes for >50% of tenants, including sharing of environmental performance data
3	F.	Yes for >50% of tenants, including sharing of environmental performance data and targets for Energy, and Water use or Waste reduction
3	G.	Yes for >75% of tenants, including sharing of environmental performance data
4	H.	Yes for >75% of tenants, including sharing of environmental performance data and targets for Energy, and Water use or Waste reduction

Assessment criteria

Criterion	Assessment criteria	Applicable Answer
1.	**Filtering** Where the asset does not have any tenanted areas, this issue can be filtered out of the assessment.	All
2.	Shared environmental performance data should include: a) Electricity b) Other energy c) Water d) Waste Assessors should use their judgement, and justify, if any of these are not applicable or not relevant.	C – H
3.	The percentage calculation can be based on either the number of tenants or the percentage of assessed floor area covered.	C – H

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
All	A copy of the tenant contract with the green lease section and scope highlighted or identified.

Definitions

Green Lease:

Green leases can include (but are not limited to):

a) Energy efficiency targets

b) Alteration

c) Tenant handbook/Environmental policy/Energy management plan data

d) Reporting

e) Improvements/Schedule of dilapidations

f) Financial incentives

g) Preferred maintenance contractors

h) Separate energy, water, and/or gas metering

i) Dispute resolution procedures

Schedule of dilapidations:

A document prepared by the landlord's surveyor, identifying items of damage (known as dilapidations) where the tenant has failed to comply with any repairing clauses in the lease. It will specify the work necessary to bring the asset back into repair.

Management Performance: Health and Wellbeing

17%

Summary

This category encourages provision of healthy, safe, comfortable and accessible environments, both internally and externally, for all users.

Context

The World Health Organisation (WHO) defines health as “a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity” and that “the enjoyment of the highest attainable standard of health is one of the fundamental rights of every human being without distinction of race, religion, political belief, economic or social condition”. The United Nations has made “Good Health and Wellbeing” one of its 17 Sustainable Development Goals (Goal 3) with the aim to “ensure healthy lives and promote wellbeing for all at all ages”. On average, people spend over 90% of their lives in and around buildings and much of the rest of their time travelling between them. Consequently, the built environment is critical to our health and wellbeing as a result of the conditions and facilities that it provides and the behaviours that it encourages. Additionally, staff costs typically contribute 90% of the total financial burden associated with a building-based business. The impact of productivity, attraction and retention, and general employee satisfaction on the bottom line means that staff wellbeing is vital to business success. The environments in which staff work, live and play are fundamental to all these factors. There is well established evidence that shows that the internal environmental conditions in buildings, including visual comfort, indoor air quality, thermal comfort and acoustic comfort, can have a significant impact on our physical and mental health. Health impacts associated with buildings include eyestrain, cardiovascular and coronary problems, bronchial complaints including asthma and allergies, dermatological complaints, musculoskeletal problems and a range of psychological impacts such as fatigue, stress, anxiety and depression. Higher risk individuals, including: the young, elderly, disabled and sick, can experience a range of other health impacts arising from their environment, many of which can have major and sometimes life-threatening effects.

Issues

Hea 14 Thermal comfort 8 credits

Aim:

To ensure that asset users are thermally comfortable in occupied spaces.

Value:

Reduces the risk to asset user comfort from extreme or unacceptable indoor temperatures.

Reduces the impact on operational costs and the environment through unnecessary heating or cooling.

Hea 15 Smoking policy 1 credit

Aim:

To recognise and encourage the health benefits of a smoke-free environment and to minimise fire risk.

Value:

Supports the short and long-term physical health of occupants by reducing the risk of health concerns associated with second-hand smoke.

Supports asset user comfort and productivity by eliminating a pollution source.

Hea 16 Indoor air quality management 6 credits

Aim:

To encourage and support healthy internal environments with good indoor air quality.

Value:

Reduces the potential for indoor air pollution from a variety of pollution sources.

Supports the physical health of building occupants by reducing the risk of health concerns associated with indoor air pollution.

Hea 17 Acoustic conditions 6 credits

Aim:

To ensure the asset provides a good indoor acoustic environment to provide comfortable conditions for asset users.

Value:

Minimises disturbances to occupants from noise transition and gradients between spaces.

Enhances productivity by providing an appropriate acoustic environment for the different functions of various assets and spaces.

Hea 18 Legionella risk management 4 credits

Aim:

To ensure that water systems are managed to minimise the risk from legionella.

Value:

Protects asset users from the health risks due to legionella bacteria.

Preserves the quality and hygiene of the asset water supply to ensure safe use by asset users.

Hea 19 Drinking water management 2 credits

Aim:

To ensure that the number and location of drinking water outlets meet the needs of asset users.

Value:

Ensures asset users can stay hydrated, supporting physical and mental wellbeing.

Helps to offset potential safety risks from reduced concentration caused by dehydration.

Management Performance: Hea 14 Thermal comfort

8 Credits

No Minimum Standard

Aim

To ensure that asset users are thermally comfortable in occupied spaces.

Question

Is the thermal comfort of asset users in occupied spaces regularly monitored?

Credits	Answer	Select all answer options that apply (only one of C or D can be selected)
0	A.	Question not answered
0	B.	No
2	C.	Yes, through temperature measurement
4	D.	Yes, through detailed thermal comfort measurement and analysis
4	E.	Yes, through occupant thermal satisfaction surveys

Assessment criteria

Criterion	Assessment criteria	Applicable Answer
1.	The temperature within a representative number of the asset's occupied spaces is measured and monitored during operational hours throughout the year. Measurement can be performed using real-time temperature sensor networks or systems (e.g. building management system readings), temperature data loggers or spot measurements.	C
2.	The content and format of occupant thermal satisfaction surveys is in accordance with the Methodology section. Surveys should be completed at least annually and all asset users, or a representative sample of asset users, must be offered the opportunity to complete the survey.	E
3.	A reasonable response rate should be achieved for the survey. A response rate of at least 35% is considered reasonable. Where there are fewer than 45 occupants. Assessors should use their judgement to determine a reasonable response rate.	E

Criterion	Assessment criteria	Applicable Answer

4.	Thermal comfort of asset users in occupied space is evaluated using a detailed thermal comfort measurement and analysis method. Compliant thermal comfort methods include:
	• ANSI/ASHRAE Standard 55-2017 – Thermal Environmental Conditions for Human Occupancy
	    ○ As a minimum, achieve Informative Appendix L PMV Model criteria for passing or Adaptive Model criteria for passing.
	• ISO 7730:2005 Ergonomics of the thermal environment - Analytical determination and interpretation of thermal comfort using calculation of the PMV and PPD indices and local thermal comfort criteria
	    ○ As a minimum, achieve Annex A Category C criteria for PPD, PMV and local discomfort.
	• EN 16798-1:2019 Energy performance of buildings - Ventilation for buildings - Part 1: Indoor environmental input parameters for design and assessment of energy performance of buildings addressing indoor air quality, thermal environment, lighting and acoustics - Module M1-6
	    ○ As a minimum, achieve Annex B Category III criteria for mechanically heated and cooled buildings or for buildings without mechanical cooling systems.
	Alternatively, where local standards have similar requirements to any of the above standards, the local standard may be used to demonstrate compliance with this criterion.
		D

5.	Procedures must be in place that cover how issues and feedback identified through the temperature and thermal comfort measurement and/or occupant thermal satisfaction surveys are addressed. The results and any potential improvement measures should be presented to and considered by senior management.	All

Methodology

Occupant thermal satisfaction surveys

ANSI/ASHRAE Standard 55-2017 - Thermal Environmental Conditions for Human Occupancy provides an example thermal satisfaction survey. The following is an adapted version of the survey which asset owners or managers can use as part of demonstrating compliance with this issue.

Survey question	Answers
1. How satisfied are you with the temperature in your space?	• Very satisfied • Satisfied • Somewhat satisfied • Neither satisfied nor dissatisfied

Survey question	Answers
	• Somewhat dissatisfied • Dissatisfied • Very dissatisfied
2. If you are dissatisfied with the temperature in your space, which of the following contribute to your dissatisfaction: a. In warm/hot weather, the temperature in my space is: b. In cool/cold weather, the temperature in my space is:	• Always too hot • Often too hot • Occasionally too hot • Occasionally too cold • Often too cold • Always too cold
3. If you are dissatisfied with the temperature in your space, which of the following contribute to your dissatisfaction: a. When is this most often a problem (check all that apply)?	• Morning (before 1100) • Midday (1100-1400) • Afternoon (1400-1700) • Evening (after 1700) • Weekends or holidays • Monday mornings • No specific time • Always • Other
4. If you are dissatisfied with the temperature in your space, which of the following contribute to your dissatisfaction: a. How would you describe the source of this discomfort (check all that apply)?	• Humidity too high (damp) • Humidity too low (dry) • Air movement too high • Air movement too low • Incoming sun • Heat from office equipment • Draughts from windows • Draughts from vents • My area is hotter or colder than other areas • Thermostat inaccessible • Thermostat is adjusted by other people • Clothing policy is not flexible • Heating/cooling system does not respond quickly enough to the thermostat • Hot or cold surrounding surfaces (floor, ceiling, walls or windows) • Deficient window (not operable) • Other

Survey question	Answers
5. If you are dissatisfied with the temperature in your space, which of the following contribute to your dissatisfaction:	• Please describe any other issues related to being too hot or too cold in your space.

Information collected as part of wider occupant satisfaction surveys, including those performed in accordance with the Man 02 Management engagement and feedback assessment issue requirements, may also be used to demonstrate compliance with the criteria. For example, there are numerous commercially available occupant satisfaction evaluation tools that include thermal comfort related content (e.g. BUS methodology) whose outputs will be relevant to this assessment issue.

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
All	Procedure and records for addressing thermal comfort related feedback and issues.
1, 2, 5	Occupant satisfaction surveys, response rate, analyses and associated records.
4	Physical measurement data, analyses and records.
5	Documentation, e.g. meeting minutes, showing senior management has reviewed the results of the survey and any potential improvement measures.

Definitions

Occupied space:

A room or space within the asset that is likely to be occupied for 30 minutes or more by an asset user. For the purpose of this issue, the definition excludes the following:

a) Atria or concourses

b) Entrance halls or reception areas

c) Ancillary space, e.g. circulation areas, storerooms and plant rooms

d) Operational or storage areas in industrial assets.

Management Performance:

Hea 15 Smoking policy

1 Credits

0 No Minimum Standard

Aim

To recognise and encourage the health benefits of a smoke-free environment and to minimise fire risk.

Question

Is there a policy that prohibits smoking inside the asset and directly outside of the asset?

Credits	Answer	Select a single answer option
0	A.	Question not answered
0	B.	No
1	C.	Yes

Assessment criteria

Criterion	Assessment criteria	Applicable Answer
1.	The smoking policy must cover the following: a) Apply to all sources of smoking and vaping, including tobacco products, electronic cigarettes and any other non-tobacco sources. b) Apply to all asset users including members of staff, tenants, contractors and visitors. c) Prohibit smoking in all internal areas of the asset including any tenant spaces, if this is not covered by national or local legislation. Dedicated smoking rooms are not permitted. d) Prohibit smoking in all regularly occupied external areas of the asset, e.g. rest spaces, balconies, patios and terraces. e) Prohibit smoking by asset users in any external areas that are within 10 metres horizontal distance (or the minimum distance permitted in local legislation) of all asset entrances, openable windows and ventilation system air intakes.	C

Specific notes

Asset type specific	
1.	**Assets with no or small external areas** Where there are no external areas within the asset's control that are at least 10 metres horizontal distance from the asset, e.g. an asset's entrance directly borders a public street, the policy must identify suitable external locations where asset users are permitted to smoke that are compliant with criterion 1(e) for both the asset and any other adjacent assets. While, criterion 1 does not apply to members of the public who are not asset users, e.g. passing pedestrians, the policy should include measures that try to discourage smoking by non-asset users within close proximity of asset entrances, openable windows and ventilation system air intakes, e.g. through appropriate signage.

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
All	Copy of the smoke-free policy and, where applicable, tenancy agreement(s).
All	Photographic evidence of 'No Smoking' signage and other infrastructure which demonstrates the separation (e.g. outdoor shelters, shade structures).

Management Performance:

Hea 16 Indoor air quality management

6 Credits

No Minimum Standard

Aim

To encourage and support healthy internal environments with good indoor air quality.

Question

Are there management processes in place to help maintain good levels of indoor air quality within the asset?

Credits	Answer	Select all answers that apply
0	A.	Question not answered
0	B.	No
1	C.	Yes, provision of information or training to asset users on how to operate and manage the asset's ventilation systems
1	D.	Yes, procedures and plans for cleaning the interior of the asset
1	E.	Yes, procedures and plans for inspecting the cleanliness of and for cleaning ventilation system components
1	F.	Yes, procurement policies and operation and maintenance procedures specify products that have low or no emissions of pollutants to air
1	G.	Yes, procedures and plans for regularly monitoring indoor air quality in occupied spaces
1	H.	Yes, procedures or plans that minimise the impacts on the asset's indoor air quality during maintenance, redecoration, refurbishment or construction activities on the asset

Assessment criteria

Criterion	Assessment criteria	Applicable Answer
1.	Information provided for general asset users must: • Cover the correct use of ventilation system controls (including openable windows) where provided in occupied spaces, in order to maintain acceptable levels of indoor air quality. • How to report indoor air quality problems to the asset management. • Be included in the Building User Guide produced for Man 01 Building user guide or, where the credits for Man 01 are not achieved, in other written documentation provided to asset users. Information and training provided for asset management staff and relevant contractors must: • Cover the technical operation and maintenance of all ventilation systems and associated components. • Include procedures detailing the action(s) to be taken in the event of problems being identified with indoor air quality.	C
2.	Cleaning procedures and plans include the following: • Extent and frequency of cleaning, i.e. daily, weekly and monthly tasks, including dated cleaning records. • Regular deep cleaning of relevant areas, e.g. carpet, mats and flooring in regularly used areas such as entrances and exits, stairways, lifts, toilets, etc. • Provision of appropriate cleaning equipment and materials that minimise impacts to indoor air quality, e.g. HEPA vacuum cleaners, lint free cloths and dusters, cleaning chemicals and products (see Methodology), etc. • Training requirements and records for cleaning personnel covering cleaning methods and use of equipment and materials.	D
3.	Inspection and cleaning procedures and plans include the following where present: • Air Handling Units (AHUs) • Ductwork • Filters • Humidifiers • Heating and cooling coil surfaces • Heat recovery units • Air intakes, extracts and exhausts • Terminal units • Decentralised air treatment units, e.g. fan-coil units and induction units.	E

Criterion	Assessment criteria	Applicable Answer
	Inspection and cleaning frequencies should be in accordance with the following standards: • EN 15780:2011 Ventilation for buildings - Ductwork - Cleanliness of ventilation systems, or • Table 8.2 of ANSI/ASHRAE Standard 62.1-2016 Ventilation for Acceptable Indoor Air Quality. Alternatively, where local standards have similar requirements to either of the above standards, the local standard may be used to demonstrate compliance with this criterion.	
4.	Products that should be covered by policies and procedures include, but are not limited to: • Interior paints and coatings • Interior adhesives and sealants • Flooring materials including carpet • Furniture • Cleaning products. As a minimum, policies and procedures must cover emissions of very volatile organic compounds (VVOCs), including formaldehyde, and volatile organic compounds (VOCs). The policies and procedures should stipulate appropriate selection criteria for low or no emission products, e.g. reference to specific local standards, testing protocols or product labelling initiatives (see Methodology).	F
5.	Procedures and plans for monitoring indoor air quality shall incorporate and document the following measures conducted at least annually: • Measure the concentrations of relevant indoor air pollutants within the asset using robust monitoring and testing methodologies at representative sampling locations. Real time sensor networks may be used in lieu of point sampling. As a minimum, the monitoring should cover carbon dioxide and at least two other pollutants, e.g. particulate matter, total volatile organic compounds (TVOC), formaldehyde, carbon monoxide, nitrogen oxides (NOx) or radon. • Perform occupant surveys that include asset users' perceptions of indoor air quality. • Conduct inspections of the asset's envelope, plumbing, and HVAC equipment to identify sources of moisture and potential for condensation. • Evaluate the asset's ventilation rates, including air flows at intakes and exhausts.	G

Criterion	Assessment criteria	Applicable Answer
	The procedures and plans must also include: • Operation and maintenance of a system for logging and addressing indoor air quality complaints from asset users. • Action(s) to be taken in the event of the above monitoring identifying any problems.	
6.	Procedures and plans covering maintenance, redecoration, refurbishment or construction activities should include, but are not limited to, the following measures where appropriate: • Avoiding running ventilation systems where possible during works. • Closing and covering air intakes and vents and sealing ductwork prior to works commencing. • Using tools with dust guards and/or collectors fitted with appropriate HEPA filters to capture dust and particulate matter generated during works. • Regularly cleaning work areas throughout the works and increasing cleaning schedules for occupied areas. • Cleaning HVAC ductwork and changing filters during and after completion of the works. • Planning and coordinating works to minimise disruption to occupied areas. • Isolating work areas from other spaces by sealing doorways and windows or through physical separation (e.g. temporary barriers). • Maintaining occupied spaces under positive pressure relative to the outside and to internal areas undergoing works. • Implementing measures to avoid the tracking of dirt and pollutants from work areas to occupied areas (e.g. use of mats at entrances and exits, separation of access routes for occupants and works).	H
7.	All policies, procedures and plans must be reviewed at least annually or sooner in the event of significant changes to the number of asset users, changes in working practices or a change in use of space.	C – H

Methodology

Low or no emission products

There are a wide range of local and international standards, testing protocols and labelling initiatives for low emission products. The uptake of such initiatives, and therefore the availability of low or no emission products on the market, will vary between countries. Therefore, policies and procedures should reference local or international product initiatives that are active in the asset's location. Examples of such initiatives include but are not limited to:

- Ausschuss zur gesundheitlichen Bewertung von Bauprodukten (AgBB) evaluation scheme
- Green Label Plus™
- GUT Label

• Belgian VOC regulation • Blue Angel Ecolabel • eco-INSTITUT-Label • EMICODE • EU Ecolabel • FloorScore® • French VOC regulation • GREENGUARD Certified/GREENGUARD Gold	• Indoor Air Comfort®/Indoor Air Comfort Gold® • Indoor Advantage™ Gold - Building Materials • M1 Emission Classification of Building Materials • Nordic Swan Ecolabel

Indoor air quality management procedures and plans

The indoor air quality within an asset and the associated management requirements to maintain a good level of indoor air quality will depend on various factors, including:

- The asset's location, size, layout and form
- The type and usage of the asset
- External air quality
- Internal sources of pollutants
- The asset's ventilation strategy
- The requirements of asset users, owners or managers.

The content and detail of indoor air quality management related procedures and plans will therefore need to be specific to the asset under assessment. For example, the procedures and plans for a small, naturally ventilated office asset located in an area of good external air quality with few sources of internal pollutants may be relatively simple, whereas other assets will require more complex procedures and plans. Procedures and plans must cover all areas of the asset within the scope of the assessment, i.e. those areas that are under the control of the asset management organisation.

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
All	Copies of relevant policies, procedures and plans and associated records.

Additional information

Guidance on indoor air quality during maintenance, redecoration, refurbishment or construction

The Sheet Metal & Air Conditioning Contractors' National Association (SMACNA) guidance 'IAQ Guidelines for Occupied Buildings Under Construction' provides guidance on minimising the impact of maintenance, redecoration, refurbishment or construction activities on indoor air quality in operational buildings. Projects may wish to reference the SMACNA guidance when demonstrating compliance with criterion 6.

Management Performance:
Hea 17 Acoustic conditions

6 Credits

0 No Minimum Standard

Aim

To ensure the asset provides a good indoor acoustic environment to provide comfortable conditions for asset users.

Question

Has the acoustic environment in occupied space been evaluated in terms of sound insulation, indoor ambient noise level and room acoustics?

Credits	Answer	Select all answer options that apply (C or F; D or G; E or H)
0	A.	Question not answered
0	B.	No
1	C.	Sound insulation performance standards are achieved in 50% of occupied space
1	D.	Indoor ambient noise level performance standards are achieved in 50% of occupied space
1	E.	Room acoustics performance standards are achieved in 50% of occupied space
2	F.	Sound insulation performance standards are achieved in 80% of occupied space
2	G.	Indoor ambient noise level performance standards are achieved in 80% of occupied space
2	H.	Room acoustics performance standards are achieved in 80% of occupied space

Assessment criteria

Criterion	Assessment criteria	Applicable Answer
1.	**Filtering** Where an asset does not have areas used for speech or music, the room acoustics credits can be filtered out of the assessment. Rooms or areas used for speech include meeting rooms and rooms for public speaking, or rooms used for music performance and rehearsal.	E, H

Criterion	Assessment criteria	Applicable Answer
2.	Credits are awarded based on the percentage of occupied space (weighted by floor area) that meet the relevant performance standards for each space (see Methodology).	C – H
3.	A suitably qualified acoustician (SQA) has evaluated the acoustic environment in occupied space against relevant performance standards for: a) Sound insulation. b) Indoor ambient noise levels. c) Room acoustics. The requirements for a good acoustic environment will depend on the asset type and the function and uses of the different spaces within the asset. Consequently, the SQA must select appropriate asset specific performance targets to assess the acoustic environment based on current local standards, building regulations or industry best practice. Alternatively, the SQA may use the performance standards stipulated in criteria 4, 5 and 6, e.g. in the case where it can be justified that there are no appropriate local standards, building regulations or industry best practice.	C – H
4.	Indoor ambient noise levels comply with the performance standards in Table 29.	D, G
5.	The sound insulation between acoustically sensitive space and other occupied space complies with the privacy index: • $D_w + L_{AeqT} > 75$. Where privacy is very important, e.g. in a doctor's consulting room or a consulting room within a bank, or where the room is adjacent to a noisy space such as a music room, the space should comply with the enhanced privacy index: • $D_w + L_{AeqT} > 85$. D_w is the weighted sound level difference between the two spaces, and L_{AeqT} is the measured indoor ambient noise level in the acoustically sensitive room. Bedrooms in hotels must be considered acoustically sensitive rooms. For partitions and floors between bedrooms and between bedrooms and corridors, airborne sound insulation $D_{nT,w} > 50$dB.	C, F
6.	Rooms or areas used for speech (including meeting rooms and rooms for public speaking) or rooms used for music performance and rehearsal, achieve the reverberation time performance standards in Table 30 and Table 31.	E, H
7.	Performance testing should be conducted in accordance with local standards or industry best practice selected by the SQA or in accordance with the Methodology section below.	C – H

Methodology

Testing, measurement and calculation procedures

The following procedures can be followed by the SQA when measuring or calculating the levels required to demonstrate compliance with this assessment issue. Where it is necessary to deviate from the procedures, the SQA should provide a reason for doing so and confirm that the alternative procedures are adequate for demonstrating that the asset meets the acoustic performance requirements.

Measurements of airborne and impact sound insulation should be made in accordance with the relevant part of the ISO 16283 series. Measurements should be conducted between one in four pairs of adjacent rooms of each room type or performance requirements category and construction type.

Measurements of reverberation time should be made in accordance with the engineering grade (or better) requirements of ISO 3382-2 and conducted within one in four rooms of each room type of performance requirement category and construction type. In the case of room acoustics where performance standards or targets relate to sound absorption, compliance with the relevant targets can be demonstrated by confirmation from the SQA that the required amount of sound absorptive material has been applied to relevant spaces, with reference to published product or generic data.

For measurements of ambient noise, the following guidance 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. Also, where windows are openable as part of the ventilation strategy, these should be assumed to be open for the purposes of calculations and measurements. If openable windows are present but do not form part of the background or permanent ventilation strategy, then these should be assumed to be closed for the purposes of calculations and measurements.
2. Noise from occupants and office equipment (e.g. computers) should not be included in the measurements.
3. A rate of testing of at least one 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 0900 and 1700).
7. Measurements need not be made over a period of 8 hours if a shorter measurement period would be suitably representative. In this case, measurements should be made when external noise levels are representative of normal conditions throughout the day.
8. Measurement periods 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. The measured level of ambient noise should be used to determine compliance with the criteria for acoustically sensitive space.

Where on-site performance testing was undertaken at the time of construction or refurbishment of the asset, this information can be used to demonstrate compliance with the criteria if no changes to the asset fabric or building services have been made since the original testing, and the SQA confirms that the testing and results were in accordance with criteria 3 - 7. Where changes to the asset fabric or building services have been made since the original asset was commissioned or previous testing was performed, then the testing information needs to be supplemented to take account of the changes. The additional testing should be performed in accordance with the guidance above and be targeted to take account of the specific alterations, e.g. sound insulation testing of replaced partitions or internal ambient noise level measurements where work has been performed on ventilation systems or the external fabric.

Calculating the percentage of occupied space that achieves the performance standards

This is based on floor area as follows:

Percentage of compliant occupied space =

$$\left(\frac{\boldsymbol{Net\ internal\ area\ of\ all\ occupied\ space\ that\ achieves\ the\ relevant\ performance\ standards}}{\boldsymbol{Total\ net\ internal\ area\ of\ all\ occupied\ space}}\right) \times \mathbf{100}$$

For example, for an asset with a total net internal area of all occupied space of 1,000m^2, at least 500m^2 of net internal floor area of the occupied space must meet the performance standards to achieve any credits.

Checklists and Tables

Table 29: Performance standards for indoor ambient noise levels in selected spaces

Function of space	Indoor ambient noise level (dB L_{AeqT}) *
General spaces (staffrooms, restrooms)	≤40
Single occupancy offices	≤ 0
Multiple occupancy offices	40 - 50
Meeting rooms	35 - 40
Reception areas	40 - 50
Spaces designed for speech, e.g. teaching, seminar or lecture rooms	≤35
Concert hall, theatre or auditoria	≤30
Informal café or canteen areas	≤50
Catering kitchens	≤50
Restaurant areas	40 - 55
Bars	40 - 45
Retail areas	50 - 55
Manual workshops	≤55
Sound recording studios	≤ 0
Laboratories	≤40
Sports halls or swimming pools	≤55
Library areas	40 - 50
Hotel bedrooms	<35
* Measurements must be carried out when the space is unoccupied. 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.	

Table 30: Performance standards for reverberation time (at 500 Hz) in rooms used for speech and music

Room volume (m^3)	Reverberation time, *T* (seconds) *	
	Rooms for speech	Rooms for 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
* Measurements must be carried out when the space is unoccupied. Where the above reverberation times are not appropriate for the type of space or asset being assessed, the SQA must confirm why this is the case and must set alternative appropriate reverberation times in order to demonstrate compliance.		

Table 31: Performance standards for reverberation time in teaching and study spaces

Function of space	Mid-frequency reverberation time, T_{mf} (seconds) *
Open plan teaching areas	< 0.8
Open plan resource areas	< 1.0
Small lecture rooms (≤ 50 people)	< 0.8
Large lecture rooms (> 50 people)	< 1.0
Recording studio	0.6-1.2
Control room for recording	< 0.5
Libraries	< 1.0
Audio-visual and video conference rooms	< 0.8
* Measurements must be carried out when the space is unoccupied. T_{mf} is the arithmetic average of the reverberation times in the 500 Hz, 1 kHz and 2 kHz octave bands.	

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
All	Records or report from SQA demonstrating the measured acoustic performance.
All	Details of the SQA responsible for the acoustic testing and assessment of the acoustic environment; including summary of their qualification(s).

Definitions

Acoustically sensitive space:

Any room or space that requires a level of privacy, which may include the following:

a) Cellular offices

b) Meeting, interview, consulting or treatment rooms

c) Rooms for teaching and learning, e.g. classrooms and lecture theatres

d) Rooms used for public speaking or seminars.

Occupied space:

A room or space within the asset that is likely to be occupied for 30 minutes or more by an asset user.

Room acoustics:

How sound behaves in an enclosed space in terms of the reverberation time (or degree of echo), overall noise levels and speech intelligibility. Room acoustics are influenced by room geometry and distribution of acoustic absorption either through the general room finishes or through the introduction of sound absorbing products.

Suitably qualified acoustician:

An individual achieving all the following items is considered as 'suitably qualified' for the purposes of this assessment issue:

- Has a minimum of three years' relevant experience (within the last five years) with such experience clearly demonstrating 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.
- An individual who holds a recognised acoustic qualification and membership of an appropriate professional body.

Where an 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:

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

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

Management Performance: Hea 18 Legionella risk management

4 Credits

No Minimum Standard

Aim

To ensure that water systems are managed to minimise the risk from legionella.

Question

Has an assessment of the asset's water systems been performed to identify the potential risk of exposure to legionella bacteria and, if so, are management processes in place to prevent or control the risk?

Credits	Answer	Select a single answer option
0	A.	Question not answered
0	B.	No
4	C.	Yes

Assessment criteria

Criterion	Assessment criteria	Applicable Answer
1.	**Filtering** Where water systems are not present in the asset and no water from nearby facilities (e.g. adjacent building) will be used by the asset users, this issue can be filtered out. Also see Specific Note below.	All
2.	A competent person has performed a risk assessment that identifies and assesses the risk of exposure of asset users to legionella bacteria from the asset's water systems and any required prevention or control measures. All water systems that present a potential risk from legionella bacteria must be assessed, including, but not limited to: a) Hot and cold water storage and distribution systems b) Evaporative cooling systems, e.g. cooling towers and evaporative condensers c) Spa pools, hot tubs and whirlpool baths d) Fountains and water features e) Humidifiers	C

Criterion	Assessment criteria	Applicable Answer
	f) Emergency showers, eyebaths and face-wash fountains g) Industrial water systems, e.g. air washers, wet scrubbers, vehicle washers, wastewater treatment plants, misting devices and sprinkler systems. A water system includes all equipment and components associated with that system, e.g. all associated pipework, pumps, feed tanks, valves, showers, heat exchangers, quench tanks, water softeners, chillers, etc.	
3.	Where the risk assessment identifies that prevention or control measures are necessary, the following must be in place: a) A competent person or persons appointed to manage the identified risks and control measures (this could be an employee or a contractor). b) Documentation specifying the measures implemented to prevent or control the risk (see Methodology). c) Process and procedure(s) for the regular monitoring and inspection of the condition and performance of the water systems and control measures, and the remedial actions to be taken in the event of a failure in control measures. d) Written records including details of: • The findings of the risk assessment. • The prevention and control measures and their implementation. • The state of operation of each system, i.e. in use or not in use. • The results and dates of all monitoring, inspection, testing or checks of the system(s). • The competent person(s) and all personnel concerned with the operation and maintenance of the system(s) and their training records. Where a risk assessment shows that risks are low and that no prevention and control measures are required, it is not necessary to demonstrate compliance with this criterion (subject to compliance with criterion 4).	C
4.	The risk assessment must be reviewed periodically, especially following any changes to the water system(s) or changes to the asset's operation that may result in significant changes to water use within the asset, e.g. change in number of users or change in use of space(s).	C

Specific notes

Asset type specific	
1.	**No facilities** Where the asset under assessment does not contain any water systems, and asset users have access to water facilities (e.g. taps, toilets, showers, etc.) in an adjacent asset, the adjacent asset's water systems must demonstrate compliance with the assessment criteria.

Methodology

Legionella prevention and control measures

Prevention and control measures include, but are not limited to:

a) Avoiding water temperatures between 20°C and 45°C and conditions that favour the growth of legionella bacteria and other microorganisms.

b) Avoiding water stagnation which may encourage the growth of biofilm.

c) Avoiding the use of materials that harbour bacteria and other microorganisms or provide nutrients for microbial growth.

d) Controlling the release of water spray.

e) Maintaining the cleanliness of the system and water in it.

f) Using water treatment techniques, e.g. biocides, chlorination, heat.

g) Ensuring the correct and safe operation and maintenance of the water system.

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
2	Documentation in accordance with Assessment criterion 2.

Definitions

Legionella:

Genus of bacteria that can cause infection (Legionellosis) through the inhalation of contaminated water droplets or aerosols, which can range in severity from a mild, febrile illness (Pontiac fever) to a rapid and potentially fatal pneumonia (Legionnaires' disease).

Competent person:

A person that has sufficient authority, competence and knowledge of the asset to ensure that all operational procedures are carried out in a timely and effective manner, and has such ability, experience, instruction, information, training and resources to enable them to carry out their tasks competently and safely. In particular, they should know the:

a) Potential sources of legionella bacteria and the risks they present;

b) Measures to adopt, including the precautions to take to protect the people concerned, and their significance;

c) Measures to take to ensure that the control measures remain effective, and their significance.

Additional information

Legionella and water systems guidance

Guidance on the risk assessment and control of legionella bacteria in water systems include:

- American Society of Heating, Refrigerating and Air-Conditioning Engineers; ANSI/ASHRAE Standard 188-2018 Legionellosis: Risk Management for Building Water Systems; 2018.
- American Society of Heating, Refrigerating and Air-Conditioning Engineers; ASHRAE Guideline 12-2000 - Minimizing the Risk of Legionellosis Associated with Building Water Systems; 2000.
- British Standards Institution; BS 8580-1:2019 Water quality – Risk assessments for Legionella control – Code of practice; 2019.
- The Chartered Institution of Building Services Engineers; CIBSE TM13: 2013 Minimising the risk of Legionnaires' disease; 2013.
- European Centre for Disease Prevention and Control; European Technical Guidelines for the Investigation, Control and Prevention of Travel Associated Legionnaires' Disease; 2017.
- World Health Organisation; Legionella and the Prevention of Legionellosis; 2007.

Management Performance:

Hea 19 Drinking water management

2 0

Credits No Minimum Standard

Aim

To ensure that the number and location of drinking water outlets meet the needs of asset users.

Question

Are the number and location of drinking water outlets regularly reviewed?

Credits	Answer	Select a single answer option
0	A.	Question not answered
0	B.	No
2	C.	Yes

Assessment criteria

Criterion	Assessment criteria	Applicable Answer
1.	The number and location of drinking water outlets are reviewed at least annually and after significant alterations have been made to the asset, e.g. refurbishment work, or significant changes in the number of asset users.	C
2.	Drinking water outlets must be: a) Appropriate in number and placement to serve all regular asset users (e.g. members of staff) as determined by the Assessor's best judgement (a minimum of one per floor for occupied space). b) Free of charge. c) Accessible to all regular users, including to those with disabilities. d) In a hygienic location and condition. e) Capable of refilling water bottles.	C
3.	Compliant drinking water outlets include taps in kitchen areas, water coolers and water fountains. Taps in toilet areas are not compliant due to potential hygiene issues.	C

Specific notes

Asset type specific	
1.	**Hotel** The assessment criteria are only applicable to common areas and areas where hotel staff work. Guest bedrooms do not need to be assessed. Applicable areas include, but are not limited to: • Lobby and reception areas • Staff offices • Dining areas.
2.	**Assets with large numbers of visitors** Where an asset contains space that is used by large numbers of visitors (e.g. shopping centres and malls, etc.), compliant drinking water outlets must be provided for use by visitors, as well as for regular asset users. It is not necessary to provide separate outlets for visitors if compliant drinking water outlets provided for regular asset users can also be used by visitors.

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
1	Documentation outlining review schedules, significant alterations to the asset or changes in numbers of users.
2	Documentation, e.g. building plans, showing the location of drinking water outlets, the number of asset users and occupied space.

Definitions

Occupied space:

A room or space within the asset that is likely to be continuously occupied for 30 minutes or more per day by an asset user.

Management Performance: Energy

27%

Summary

This category recognises buildings which have lower operational energy consumption and carbon emissions. Issues in this section assess the assessed energy efficiency of the asset. This includes the energy efficiency of the building fabric, the energy efficiency of installed services systems, installed renewable energy generation capacity and standard equipment associated with the use of the building, for example, office equipment. However, energy uses associated with specialist processes and equipment loads are excluded. The operational energy performance implicitly takes account of how well energy consumption is managed within the building. Improvements in the operational energy performance of the asset are also recognised in this category.

Context

Climate change is the biggest environmental challenge that the world is currently facing. It is already resulting in higher global temperatures, greater risk flooding and more extreme weather events. It is mainly due to rising levels of carbon dioxide and other greenhouse gases, such as methane, in the atmosphere create a 'greenhouse effect', that is causing the Earth to warm. Greenhouse gas emissions have increased by about 45% since before the industrial revolution and this is almost entirely due to human activity.

The observed increase in greenhouse gas emissions is mainly caused by the burning of fossil fuels for energy, agriculture, deforestation and industrial processes. Worldwide, buildings and construction together account of 39% of energy related carbon emissions, the majority of which is due to energy consumption in use. The impact on people and communities from climate change and energy generation must be recognised. Poorer communities are disproportionately impacted by the negative effects of climate change and energy generation from fossil fuels, contributing to poor health, higher mortality rates and higher risks of severe damage from extreme weather events.

The Paris Agreement, ratified in 2016, reflects a desire to accelerate the global response to the threat of climate change by limiting global temperature rise this century to at least 2^oC, and preferably 1.5^oC, above pre-industrial levels. Subsequently, in October 2018 the urgency of the need to tackle climate change was highlighted by an IPCC Special Report which indicates that it will be necessary to limit this increase to 1.5^oC to avoid the most severe impacts of climate change. The report concludes that to limit the increase to 1.5^oC CO_2 emissions must reduce by around 45% from 2010 levels by 2030, and to reach net zero emissions by 2050. The United Nations included clean energy as one of its SDGs (Goal 7) and target 'doubling the rate of improvement in energy efficiency' and 'increasing substantially the share of renewable energy in the global energy mix' by 2030. This scale of reduction will require rapid and far-reaching transitions for all energy systems, including buildings.

It is therefore vital to substantially reduce the total operational energy use in buildings and to increase use of renewable energy sources where possible, if the worse effects of climate change are to be avoided. Addressing climate change and shifting the way in which we produce and use energy can help address inequities such as fuel poverty that are currently present in our communities and provide a healthy environment for all demographic and economic groups, especially those that are part of less advantaged or underserved communities.

Issues

Ene 19-21	Operational energy calculator	50 credits

Aim

To minimise operational energy consumption and the associated carbon emissions by employing effective energy management practices, increasing intrinsic energy efficiency of the building fabric and installing energy efficient buildings services and equipment.

Value

Identifies assets that are performing poorly compared to their peers and to prompt improvement actions where appropriate.

Encourages the adoption of good energy management practices.

Increases the energy efficiency of the asset.

Reduces energy wastage.

Reduces costs relating to operational energy use.

Encourages the use of on-site renewable energy generation and the use of low carbon energy sources.

Encourages the specification of more energy efficient fabric and building servicing system components and equipment.

Ene 22	Energy audit	4 credits

Aim

To identify and implement cost-effective opportunities for energy savings.

Value

Encourages a systematic procedure for obtaining sufficient knowledge about the energy consumption of an asset.

Rewards the ability to identify and quantify cost-effective energy saving opportunities.

Encourages these findings to be reported.

Ene 23	Energy consumption data use	4 credits

Aim

To minimise operational energy consumption and the associated carbon emissions by encouraging measurement against energy performance targets and by increasing the awareness and understanding of energy consumption amongst building managers and users.

Value

Encourages the setting of energy performance targets.

Facilitates good energy management practices amongst building users.

Encourages increased energy efficiency of the asset.

Encourages reduced energy wastage.

Reduces costs relating to operational energy use.

Encourages the specification of more energy efficient fabric and building servicing system components and equipment.

Ene 24 Reduction of carbon emissions — 3 Exemplary credits

Aim

To recognise reductions in operational energy consumption and the associated carbon emissions achieved.

Value

Encourages and rewards the adoption of good energy management practices.

Encourages and rewards the use of on-site renewable energy generation and the use of low carbon energy sources.

Encourages and rewards increased energy efficiency of the asset.

Encourages and rewards reduced energy wastage.

Reduces costs relating to operational energy use.

Encourages the specification of more energy efficient fabric and building servicing system components and equipment.

Operational energy calculator guidance

Introduction

This section has been produced to give further guidance on the workings of the operational energy calculator so it is clear how any reductions in operational energy consumption will be reflected in the calculation of the operational energy rating.

Overview

In order to calculate the operational energy rating, the carbon dioxide (CO_2) emissions resulting from assessed asset energy consumption are compared to the equivalent CO_2 emissions for a reference asset. There are three main parts to the methodology: establishing the reference benchmark, establishing the assessed building CO_2eq emissions, and comparing the reference benchmark with the assessed CO_2eq emissions to generate a rating.

Establishing reference benchmark

The reference benchmark is set according to the asset subtype being assessed. For assets where more than one activity carried out (e.g. an office block with a retail unit on the ground floor), the floor area can be divided into a maximum of five different asset subtypes. This reference benchmark for the asset is determined based on a floor area weighted average for the asset which is adjusted to take account of local climate using the same degree day calculation methodology used for the asset model. Because the reference benchmarks are based on typical assets comprising a mix of both air conditioned and naturally ventilated spaces the methodology will recognise the lower energy consumption of naturally ventilated properties.

Establishing assessed energy consumption

The metered energy consumption is used as the starting point for establishing the actual energy consumption for the assessed asset. It is possible to make the following ‘corrections’ to the metered energy consumption data:

Where the asset does not have consumption data which covers the assessment area only, the asset will need to use the BREEAM In-Use International Energy Allocation Calculator when completing the Part 2 Energy Category. This can be accessed through the BREEAM In-Use Assessor extranet, or the BREEAM In-Use online platform. Full guidance explaining the requirements for this method is within this tool.

The BREEAM In-Use International Energy Allocation Calculator is intended to be used as part of a BREEAM In-Use International assessment only. It cannot be used to provide accurate energy consumption breakdown in multi-function/system contexts. BRE Global cannot accept any liabilities for variations in the performance of buildings or other assets from the results obtained through the use of this Energy Allocation Calculator, and therefore it should not be used as the basis for making decisions on enhancement and investment actions.

A final correction is then made to account for consumption data based on any reporting period that is not 365 days.

Users are able to enter metered energy consumption for many different fuel types including: grid supplied electricity, natural gas, LPG, gas oil, solid fossil fuels, biodiesel, biogas, wood, district heating and district cooling.

Once the energy consumption for each fuel type has been entered, the tool calculates the associated CO_2eq emissions for the assessed asset by multiplying the consumption data by the relevant carbon emission factors for each fuel type. As for the reference baseline, the carbon emission factor for electricity varies according to the country of assessment, but the emission factors for non-electrical consumption are fixed. The only exception to this is for district heating and cooling systems where it is possible to enter the actual emissions factor for the system where known.

Establishing final score

The operational energy rating is then calculated by comparing the assessed CO_2eq emissions to the reference CO_2eq emissions using a sliding scale with maximum of 50 credits being awarded for a zero carbon building, and zero credits awarded where the assessed emissions are more than four times the reference emissions. An additional five exemplary credits are available for buildings that are carbon positive. Table 32 shows the operational energy performance scale and the number of credits awarded.

Table 32 Operational energy performance scale and credits awarded.

Credits	Actual kgCO_2/m^2/ Benchmark CO_2/m^2
0	>4
1	<4 to 3.81
2	<3.81 to 3.63
3	<3.63 to 3.45
4	<3.45 to 3.27
5	<3.27 to 3.11
6	<3.11 to 2.95
7	<2.95 to 2.79
8	<2.79 to 2.64
9	<2.64 to 2.5
10	<2.5 to 2.36
11	<2.36 to 2.22
12	<2.22 to 2.09
13	<2.09 to 1.97
14	<1.97 to 1.85
15	<1.85 to 1.74
16	<1.74 to 1.63
17	<1.63 to 1.52
18	<1.52 to 1.42
19	<1.42 to 1.33
20	<1.33 to 1.24
21	<1.24 to 1.15
22	<1.15 to 1.06
23	<1.06 to 0.99
24	<0.99 to 0.91
25	<0.91 to 0.84
26	<0.84 to 0.77
27	<0.77 to 0.71
28	<0.71 to 0.65
29	<0.65 to 0.59
30	<0.59 to 0.53
31	<0.53 to 0.48
32	<0.48 to 0.44
33	<0.44 to 0.39
34	<0.39 to 0.35
35	<0.35 to 0.31
36	<0.31 to 0.28
37	<0.28 to 0.24
38	<0.24 to 0.21
39	<0.21 to 0.18
40	<0.18 to 0.16
41	<0.16 to 0.13
42	<0.13 to 0.11
43	<0.11 to 0.09
44	<0.09 to 0.07
45	<0.07 to 0.06
46	<0.06 to 0.04
47	<0.04 to 0.03
48	<0.03 to 0.02
49	<0.02 to 0.01
50	<0.01 to 0
50+1 exemplary	<0 to -0.2
50+2 exemplary	<-0.2 to -0.04
50+3 exemplary	<-0.04 to -0.6
50+4 exemplary	<-0.6 to -0.8
50+1 exemplary	<-0.8 to -1

Management Performance:

Ene 19 Energy consumption

-

0

Contributes to 50 credits available for operational energy rating

No Minimum Standard

Aim

To minimise operational energy consumption and the associated carbon emissions by employing effective energy management practices, increasing intrinsic energy efficiency of the building fabric and installing energy efficient building services and equipment.

Question

Annually, how much energy is consumed by the asset in kWh per year (as metered in the reporting period)? Please enter the start and end date of the annual reporting period for consumption data.

Credits	Fuel Type	Units	Start date	End date
-	Grid supply electricity	kWh/year		
-	Natural gas	kWh/year		
-	Burning oil /Kerosene	kWh/year		
-	Gas oil	kWh/year		
-	Fuel oil	kWh/year		
-	Diesel	kWh/year		
-	Petrol	kWh/year		
-	LPG	kWh/year		
-	Other petroleum gas	kWh/year		
-	Coal	kWh/year		
-	Biodiesel	kWh/year		
-	Landfill gas	kWh/year		
-	Other biogas	kWh/year		
-	Wood	kWh/year		

Credits	Fuel Type	Units	Start date	End date
-	Renewable heat source or renewable cooling source	kWh/year		
-	District heating	kWh/year		
-	District cooling	kWh/year		

Note: Consumption data, start and end date should be entered under Ene 19a in the BREEAM In-Use Online Platform.

Assessment criteria

Criterion	Assessment criteria
1.	For all energy sources, all consumption data must relate specifically to the floor area of the asset that is being assessed. This must be the GIA floor area that has been entered under Asset Dimensions.
2.	Assessors must ensure that the reporting period for each energy source is between 11 – 13 months (334 to 397 days) and that the maximum time gap between the earliest start and the latest end date across all fuels must be no greater than 14 months (428 days).
3.	All energy consumption must be entered for the asset. If the asset uses an energy source that is not listed, please contact BRE for guidance on how to account for this.

Methodology

Table 33: Fuel specific guidance for calculating energy consumption

Fuel type	Guidance	Notes
Burning oil / Kerosene	Fuel usage can be recorded through: a) Sub-metering of equipment which use these fuels b) Estimates of system efficiency and running times (Oils only) c) Calculations based on inventory data	Please note: the consumption figure is for fuel which has been used directly within the asset NOT for vehicles or other appliances which operate on-site, unless this is specified within the scope.
Diesel		
Fuel Oil		
Gas Oil		
Petrol		
LPG		
Natural gas		
Other petroleum gas		
Landfill gas		

Fuel type	Guidance	Notes
Coal	Calculating the amount of fuel consumption can be achieved through: a) Sub-metering of equipment which use these fuels b) Invoices for materials purchased during the reporting period and calculations based on the calorific content of the material.	Please note: fuel consumption related to the burning of solid material for the purposes of creating heat, such as Smokeless fuel, Coal and Anthracite.
Biodiesel		Please note cooking oil can only be used when it has been appropriately refined to a standard which is suitable for fuel usage.
Biogas		Please note biogas can be used from off-site suppliers or as a result of on-site generation, following a process such as anaerobic digestion etc.
Wood	For wood/waste wood, fuel consumption can be achieved through invoices for materials purchased during the reporting period and calculations based on the calorific content of the material.	-
Renewable heat source or renewable cooling source	Consumption date should be calculated from metered data	-
District heating	For district heating and/or cooling consumption, energy consumption can be calculated through, but not limited to: a) Sub-metering of equipment b) Building energy management systems c) Calculation via energy bills for fuel types if these fuel types are only used for district heating etc.	-
District cooling		

Note: Where the asset does not have consumption data which covers the assessment area only, the BREEAM In-Use International Energy Allocation Calculator may be used when completing the Management Performance Energy Category. This can be accessed through the BREEAM In-Use Assessor extranet, or the BREEAM In-Use online platform. Within this tool, there is full guidance explaining the requirements for this method.

Verification of consumption data

Where consumption data has been entered into the Part 2 Energy Calculator, the Assessor must provide evidence to support it and demonstrate its correlation to the assessed area. The consumption figures shall be supported by either corresponding energy bills or verified meter readings. This means that, for example, simply submitting a spreadsheet containing consumption figures is not compliant and clear demonstration that this has been verified is required. Furthermore, it is also possible that the energy bills available for an asset might not coincide with the assessed area for the asset, in which case further evidence is required to demonstrate the assessed consumption for the assessed area.

Since there are many different methods in which energy data can be monitored (e.g. manual meter readings, Energy Management Systems etc.), the format used when submitting meter readings often varies between assessments, leading to confusion for Assessors on whether particular evidence meets the requirements.

When neither energy bills nor meter readings (verified by the Assessor) are available for the assessed area it is possible to submit the following evidence to support consumption data figures:

1. Clear description of how the consumption data was obtained, e.g. manual reading, automatic reading from a BMS, energy bills, etc.;
2. Clear description of any calculation carried out, e.g. energy use determined by subtracting sub-metered data from main meter readings;
3. Clear reporting of the period the consumption data relates to, i.e. start date and end-date for each consumption figure;
4. Clear confirmation that the figures submitted refer to the consumption for the assessed area and that they are based on metered data, rather than estimations or apportionment, except for data submitted using the BREEAM In-Use International Energy Allocation Calculator, see Establishing assessed energy consumption section. Such confirmation will be provided and signed by either someone internal to the organisation or the Assessor themselves.

Note: Where this is undertaken by someone other than the Assessor, the Assessor must be satisfied that the information is correct, and that the individual has a good understanding of metering systems and of the metering strategy of the particular asset being assessed. This should be clearly outlined within the Assessor comments.

Energy sources start being used, or stop being used part way through the reporting period

BREEAM considers the overall consumption for a 12-month period rather than when sources were added or changed during that period. Where an energy source, such as on-site renewable energy generation capacity, begins contributing to or stops contributing to the energy used by the asset part way through the year, the start and end dates entered should still match the reporting period for all energy uses.

Non-standard energy consumption:

The energy consumption for large energy intensive loads and all external lighting may be subtracted from the overall asset energy consumption where it is separately sub-metered.

Examples of Non-standard energy uses include:

a. Regional server room: Energy used in a server room that services multiple satellite offices/servers
b. Trading floor: Energy used in a room where traders are gathered to operate on financial markets
c. Bakery oven: Energy used in a commercial sized oven used to bake foods.
d. Sports floodlighting: Energy used by broad-beamed, high intensity artificial lights (often used outside)
e. Furnace or forming process:
    i. Energy used in a furnace: an industrial devise used for many things, such as extracting metals or as heat source in chemical plants.
    ii. Energy used in forming process: a manufacturing process which makes uses of suitable stresses to cause deformation of materials to produce required shapes.

f. Blast chilling or freezing: Energy used for cooling materials (often food) quickly to low temperatures.

Reporting period

The intention is that the user enters energy consumption data based on a 365-day reporting period; for both years. However, it is possible to enter data for any reporting period between 11 and 13 months. Any reporting period outside of the 11 to 13-month range would be invalid and result in zero credits being scored.

Validity of consumption data

In order to maintain the reliability of data entered into the BREEAM In-Use Online Platform, any consumption-related data submitted must have a reporting period start date which is no more than one year prior to the start of the assessment (creation of a measurement).

For example, if the assessment was started on the 3rd of January 2020, the reporting period start date cannot be prior to 3rd of January 2019. A more recent period can always be entered, as long as the Assessor can verify that the data is correct for the period entered.

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
1	Calculations based on inventory data.
2	Copies of energy bills or verified meter readings/ photographic evidence of meters for the beginning and end of the reporting period for each energy source.

Management Performance:

Ene 20 Carbon intensity district heating and cooling

0

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☆☆☆
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☆

Contributes to 50 credits available for operational energy rating

No Minimum Standard

Aim

To minimise operational energy consumption and the associated carbon emissions by employing effective energy management practices.

Question

1. If known, what is the carbon intensity of the district heating system in $kgCO_2eq/kWh$ delivered heat?
2. If known, what is the carbon intensity of the district cooling system in $kgCO_2eq/kWh$ delivered cooling?

Credits	Question	Enter value
-	1	$kgCO_2eq/kWh$
-	2	$kgCO_2eq/kWh$

Assessment criteria

Criterion	Assessment criteria
1.	The carbon intensity of the district heating and/or cooling system should be sourced from the supplier of this system.
2.	The carbon intensity value should be an average annual value and should be provided for the most recent year available.
3.	As a minimum, the carbon emissions from all fuels used to generate heat or to generate cooling must include all direct (scope 1) emissions and indirect (scope 2) emissions associated with any electricity used to generate heat or to generate cooling and take account of distribution losses.

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.

Criteria	Evidence requirement
1	Relevant literature/records/data or other information from the district heating and/or district cooling supplier stating the carbon intensity of the system

Management Performance:

Ene 21 Renewable electricity generated

-

0

Contributes to 50 credits available for operational energy rating

No Minimum Standard

Aim

To minimise operational energy consumption and the associated carbon emissions by generating renewable electricity.

Question

1. What is the quantity of electricity generated by on-site and community renewable energy schemes in kWh per year (as metered in the reporting period)?
2. What is the net quantity of electricity exported off-site in kWh per year (as metered in the reporting period)?

Credits	Question	Enter value
-	1.	kWh/year
-	2.	kWh/year

Assessment criteria

Criterion	Assessment criteria
1.	To qualify as on-site or community renewable energy the generation source must be located on or near to the asset and must be connected to the asset using a private wire arrangement.
2.	Assessors must confirm that the metered electricity data relates to the start and end date

Methodology

Reporting period

The intention is that the user enters energy consumption data based on a 365-day reporting period; for both years. However, it is possible to enter data for any reporting period between 11 and 13 months. Any reporting period outside of the 11 to 13-month range would be invalid and result in zero credits being scored.

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
1	Photographic evidence of relevant generation meter
2	BEMS data or copies of verified data for the reporting period specified

Definitions

Private wire arrangement:

A private wire arrangement is one where electricity generated, on or in the vicinity of, the site is fed directly to the building being assessed, by dedicated power supplies. Electricity which is surplus to the instantaneous demand of the building, may be fed back to the grid supply network.

Management Performance: Ene 22 Energy audit

4 Credits

0

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No Minimum Standard

Aim

To identify and implement cost-effective opportunities for energy savings.

Question

Has an energy audit been carried out for the asset?

Credits	Answer	Select a single answer option
0	A.	Question not answered
0	B.	No energy audit has been carried out
2	C.	Yes, an energy audit has been carried out
3	D.	Yes, an energy audit has been carried out, and all measures with a payback time of 5 years or less have been implemented.
4	E.	Yes, an energy audit has been carried out, and all measures with a payback time of 10 years or less have been implemented.

Assessment criteria

Criterion	Assessment criteria	Applicable Answer
1.	The energy audit is not older than four years	All
2.	The energy audit and improvement measures identified specifically relate to the assessed asset.	All
3.	The energy audit has been carried out in accordance with ISO 50002:2014, or equivalent.	All

Methodology

Energy audit

As a minimum the energy audit should:

- Be based on up-to-date, measured, traceable operational data on energy consumption and (for electricity) load profiles
- Comprise a detailed review of the energy consumption profile of the asset
- Be based on Simple Payback Periods (SPP) or instead use life cycle cost analysis (LCCA) to take account of long-term savings, residual values of long-term investments and discounts rates;
- Be proportionate, and sufficiently representative to permit the drawing of a reliable picture of overall energy performance and the reliable identification of most significant opportunities for improvement.

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
1	Energy audit report including recommendations for energy efficiency improvement measures
2	Detailed and validated calculations of the payback periods for the improvement measures identified in the energy audit.
2	Photographic proof or documentation to demonstrate that measures which achieve the relevant payback periods have been implemented.
3	Documentation which demonstrates the standards, procedures or guidance that the energy audit complies with.

Definitions

Energy audit:

A systematic procedure for obtaining sufficient knowledge about the energy consumption of an asset, to identify and quantify cost-effective energy saving opportunities, and report the findings.

Management Performance:

Ene 23 Energy consumption reporting

4 Credits 0

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No Minimum Standard

Aim

To minimise operational energy consumption and the associated carbon emissions by encouraging measurement against energy performance targets and by increasing the awareness and understanding of energy consumption amongst building managers and users.

Question

What happens to asset energy consumption data?

Credits	Answer	Select a single answer option
0	A.	Question not answered.
0	B.	Asset energy consumption data not collected.
2	C.	Asset energy consumption data collected and compared against asset targets.
3	D.	Asset energy consumption data collected and compared against asset targets and reported on internally.
4	E.	Asset energy consumption data collected and compared against asset targets and reported on internally and published in an annual public report.

Assessment criteria

Criterion	Assessment criteria	Applicable Answer
1.	Answer option D has been selected in Man 04 Environmental policies and procedures and all relevant Assessment Criteria have been met.	C – E
2.	Asset energy consumption should be monitored, targeted and reported to the appropriate level within the building occupants' organisational structure	C – E

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
All	Records of energy consumption analysis, such as spreadsheets, summary reports etc.
All	Copies of documents showing energy consumption and analysis that have been reported internally.
All	Copies of documents showing energy consumption and analysis that have been reported publicly.
2	Total energy consumption should be reported by meaningful segmentation, for example by portfolio, fund, geographic location, or asset type.

Management Performance: Ene 24 Reduction of carbon emissions

0 3

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*Exemplary Credits

No Minimum Standard

Aim

To recognise reductions in operational energy consumption and the associated carbon emissions.

Question

What has been the average annual reduction in CO_2 emissions of the asset over the last 3 years?

Exemplary Credits	Answer	Select a single answer option
1	A.	≥5%
2	B.	≥10%
3	C.	≥15%

Assessment criteria

Criterion	Assessment criteria	Applicable Answer
1.	Assets that have not previously been certified with BREEAM In-Use will need to provide annual energy consumption data for an earlier period within 4 years prior to the current assessment. For assets that have previously been certified with BREEAM In-Use, energy consumption data entry is not required, and the number of credits will be calculated automatically.	A – C
2.	If the mix of asset subtypes differs between the two reporting periods the asset subtype mix for the earlier reporting period will need to be entered.	A – C
3.	Assessors must ensure that the reporting period for each energy source is between 11 – 13 months (334 to 397 days) and that the maximum time gap between the earliest start date and the latest end date across all fuels must be no greater than 14 months (428 days). This applies to both the current and the previous reporting periods	A – C

Criterion	Assessment criteria	Applicable Answer
4.	For all energy sources, please ensure that consumption data relates specifically to the area of the asset that is being assessed. This is the area that has been filled in as GIA under Asset Dimensions.	A – C
5.	Consumption data for all energy sources used in the asset must be entered. If the asset uses an energy source that is not listed, please contact BRE for guidance on how to account for this.	A – C
6.	Where the Energy Allocation method is employed it must be used for both reporting periods	A – C

Methodology

Carbon reduction calculation

For assets where energy consumption data for the previous reporting period has not been entered into the BREEAM In-Use platform, energy consumption data will need to be entered. The data requirements and methodology are the same as for the current reporting period and are described in Ene 19 - Ene 21.

Where energy consumption data has been entered for the previous reporting period this will be automatically extracted from the BREEAM In-Use online platform.

The calculation compares the difference in annual carbon emissions between two reporting periods 3-years apart (i.e. 2016 and 2019 for 2019 assessments). The carbon emissions are calculated based on the annual energy consumption data for the two reporting periods using the current (i.e. 2019) BREEAM CO_2 emission factors. This means the carbon improvement of the asset will exclude the impact of external factors such as decarbonisation of the electricity grid. Therefore, the carbon emissions per m^2 will be calculated using the BREEAM In-Use V6.0.0 CO_2 emission factors.

The carbon improvement calculation also takes account of changes in the mix of asset subtypes within the asset between the two reporting periods by measuring the performance improvement relative to the benchmark for the relevant asset subtype. Fuel specific guidance is provided in Table 33 under Ene 19 Energy consumption issue.

Reporting period

The intention is that the user enters energy consumption data based on a 365-day reporting period; for both years. However, it is possible to enter data for any reporting period between 11 and 13 months. Any reporting period outside of the 11 to 13-month range would be invalid and result in zero credits being scored.

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
All	Calculations based on inventory data.

Criteria	Evidence requirement
All	Copies of energy bills or verified meter readings/ photographic evidence of meters for the beginning and end of the reporting period.
All	Where the Energy Allocation method has been used, a copy of the completed BREEAM In-Use International Energy Allocation Calculator.

Management Performance:

Water

9%

Summary

This category encourages sustainable water use throughout the operation of the asset and associated site. This ensures that the asset is set up to reduce the use of potable water (both internally and externally) over the lifetime of the building. This includes minimising losses through leakage.

Context

Water efficiency has been one of the areas highlighted within the UN Sustainable Development Goals. Goal 6 (Clean Water and Sanitation) states that by 2030 we need to “substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity.”

Due to increasing population densities and high levels of water consumption, globally there are water shortages which are only likely to get worse over time, with water demand is projected to increase by 55% between 2000 and 2050[2]. Additionally, the energy required for the extraction, purification, delivery, heating/cooling treatment and disposal of water (and wastewater) contributes to climate change and air quality issues. Reducing water consumption by increasing efficient use is, therefore, crucial to try and guarantee enough supply to meet the future demand and address climate change.

Sub-metering water means that consumption can be measured and managed properly. Highly-consuming elements can be identified, with the aim of encouraging the reduction in water use where practical. Moreover, changes in consumption can be identified and dealt with as appropriate, thereby minimising risks of systems failures which can have costly and disruptive consequences.

Issues

Wat 11 Water consumption 4 credits

Aim:

To ensure management are aware of annual consumption from utility-supplied water resources.

Value:

Increases awareness of water usage within the building.

Reduces costs related to water consumption.

Wat 12 Water recycling 2 credits

Aim:

To encourage the use of alternative water supplies in order to reduce the demand for utility-supplied water.

Value:

Reduces portable water use in high-consumption elements and equipment, as well as the associated energy consumption.

Promotes innovation and manufacture of more water efficient equipment.

Wat 13 Water consumption reporting 4 credits

Aim:

To facilitate the structured and systematic provision of reporting on water consumption to encourage building users to understand and set efficiency improvement targets.

Value:

Ensures water usage is managed to maximise efficiency and sustainability.

Minimises damage, cost and disruption arising from water leaks.

Wat 14 Water strategy 6 credits

Aim:

To promote reduced utility-supplied water consumption through encouraging strategies that focus on water-efficiency and reduction on wastage.

Value:

Identifies and monitor large water uses and changed consumption levels to improve management and maintenance as well as to encourage reduction in unnecessary consumption.

Increases awareness of water usage in building.

Management Performance:

Wat 11 Water consumption

4 Credits

0 No Minimum Standard

Aim

To ensure management are aware of annual consumption from utility-supplied water resources.

Question

What is the asset's annual water consumption from utility-supplied water?

Credits	Answer	Enter volume in m^3
0	A.	Question not answered
4	B.	m^3

Assessment criteria

Criterion	Assessment criteria	Applicable Answer
1.	The annual water consumption should include the sum of the utility-supplied water drawn into the asset. This includes water consumption for any use over the course of the reporting period.	B
2.	Any consumption data submitted must be in accordance with Validity of consumption data guidance stated in the Methodology below.	B

Methodology

Validity of consumption data

In order to maintain the reliability of data entered into the BREEAM In-Use Online Platform, any consumption-related data submitted must have a reporting period start date which is no more than one year prior to the start of the assessment (creation of a measurement).

For example, if the assessment was started on the 3rd of January 2020, the reporting period start date cannot be prior to 3rd of January 2019. A more recent period can always be entered, as long as the Assessor can verify that the data is correct for the period entered.

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
All	Copies of water bills or verified meter readings for the beginning and end of the reporting period.

Definitions

Utility-supplied water:

Water that has been provided by an organisation that supplies a public service under regulation by the government (e.g. mains water).

Management Performance: Wat 12 Water recycling

2 Credits

0

No Minimum Standard

Aim

To encourage the use of alternative water supplies in order to reduce the demand for utility-supplied water.

Question

What is the asset's annual water consumption from alternative supplies?

Credits	Answer	Enter volume in m^3
*	A.	Question not answered
*	B.	m^3

* See Methodology

Assessment criteria

Criterion	Assessment criteria	Applicable Answer
1.	Answer option B has been answered in Wat 11 Water consumption and all relevant Assessment Criteria have been met.	All
2.	The consumption data for the alternative supplies must be over the same reporting period and floor area as Wat 11 Water consumption.	All
3.	Alternative water supplies include water that is both treated and untreated prior to reuse.	All
4.	Rainwater, blackwater and greywater can be considered as alternative water supplies.	All
5.	Other water sources can be used to meet the aim of the credit as long as the alternative water supply is used to reduce demand of utility-supplied water for unregulated water uses.	All

Methodology

Credit allocation

Credits for this issue will be allocated based on the proportion of water consumption from alternative supplies compared with the total water consumed in the asset annually, provided in Wat 11 Water consumption. The percentage of the asset's total water consumption that is provided from alternative supplies will be calculated and the number of credits awarded as follows:

Table 34: Allocation of credits

Percentage of consumption from alternative supplies	Credits
<5%	0
≥ 5% to <15%	1
≥ 15%	2

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
All	Verified meter readings for the alternative supplies.
All	Provision of robust estimates for annual water consumption from alternative supplies, if metered data/meter readings cannot be provided.

Definitions

Blackwater:

Wastewater that has been discharged from kitchen and utility sinks, urinals and toilets within the asset..

Greywater:

Water that has been discharged from all sources other than kitchen and sewage within the asset

Utility-supplied water:

Water that has been provided by an organisation that supplies a public service under regulation by the government (e.g. mains water)

Management Performance: Wat 13 Water consumption reporting

4 Credits

No Minimum Standard

Aim

To facilitate the structured and systematic provision of reporting on water consumption to encourage building users to understand and set efficiency improvement targets.

Question

How is the collected water consumption data used?

Credits	Answer	Select a single answer option
0	A.	Question not answered
0	B.	Filed away
2	C.	Compared against asset targets
3	D.	Compared against targets and reported on internally
4	E.	All of the above and in addition published in an annual public report

Assessment criteria

Criterion	Assessment criteria	Applicable Answer
1.	Answer option D has been selected in Man 04 Environmental policies and procedures and all relevant Assessment Criteria have been met.	B – E
2.	Building water consumption should be monitored, targeted and reported to the appropriate level within the building occupant's organisational structure.	B – E
3.	There are dedicated water management/reduction targets endorsed at senior level. The targets must address/declare that: a) The organisation is dedicated to reducing water consumed as a result of its operation(s). b) The organisation will work with occupiers/suppliers to address impacts of consumed water and strategies to reduce consumption (if relevant).	C – E

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
All	Records of water consumption analysis, such as spreadsheets, summary reports etc.
All	Copies of how water consumption and analysis have been reported internally.
All	Copies of how water consumption and analysis have been reported publicly.

Management Performance:

Wat 14 Water strategy

6 Credits

No Minimum Standard

Aim

To promote reduced utility-supplied water consumption through encouraging strategies that focus on water-efficiency and reduction on wastage.

Question

Is there a water strategy in place?

Credits	Answer	Select a single answer from A-C. Where C is selected tick all responses from D-E that apply
0	A.	Question not answered
0	B.	No
2	C.	Yes
2	D.	The water strategy includes replacing water appliances and fittings with low water use equivalents during refurbishment
2	E.	The water strategy includes a proactive maintenance policy for installed water systems

Assessment criteria

Criterion	Assessment criteria	Applicable Answer
1.	As a minimum, the replacement section of the strategy should include: a) A replacement programme which replaces high water consuming equipment with low water consuming equivalents b) A schedule of approved replacement appliances. The appliances listed in this schedule should be easy to identify as being of low water use by relevant labelling.	D
2.	If all water appliances and fittings have already been replaced with low water use equivalents, a strategy should still be in place to ensure a continuation of good practice.	D, E

Criterion	Assessment criteria	Applicable Answer
3.	The strategy must have senior management approval.	C – E

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
All	The strategy document with relevant sections highlighted.
2	Maintenance logs.
3	Evidence of monitoring data.

Definitions

Proactive maintenance policy:

A maintenance strategy to ensure that the reliability of the installed fittings and water systems is increased. These maintenance policies typically consist of two parts:

a. **Preventive maintenance**: maintenance, measurements, tests, parts replacement, etc. to prevent faults from occurring.

b. **Predictive maintenance**: techniques that are designed to help determine the condition of installed equipment in order to predict when maintenance should occur.

Utility supplied water:

Water that has been provided by an organisation that supplies a public service under regulation by the government (e.g. mains water).

Management Performance: Resources

11%

Summary

This category encourages the responsible and circular use of physical resources in the asset to increase value and sustainability performance in operation and at the end of life. This is achieved by encouraging the asset owner to integrate sustainability considerations into the procurement of construction products (used for maintenance), operational consumables and equipment. In addition, more circular use of waste resources generated during the use of the asset is facilitated by rewarding data gathering, target setting and engagement with asset users. This is to maximise the repurposing of waste stream resources where appropriate for other uses.

Context

The operational phase of an asset life cycle is a very significant consumer of resources and sources of waste at the end of useful life. Many key resources are non-renewable and are becoming more scarce, costlier and riskier to extract. Furthermore, the supply-chain extraction and processing activity required to create products, particularly from raw materials, frequently leads to social and environmental degradation. The United Nations' SDGs include 'responsible consumption and production' (Goal 12), with a target to 'achieve the sustainable management and efficient use of natural resources' and to 'substantially reduce waste generation through prevention, reduction, recycling and reuse' by 2030. Therefore, it is essential that the real estate sector does all it can to address these challenges by using existing assets for as long as possible; maintaining or increasing the value of the resources they contain; enabling the reuse or recycling of resources in existing assets; facilitating occupants to maximise the reuse and recycling of their waste; minimising resource use overall; choosing reused or recycled resources instead of virgin materials; and using resources that cause less harm to society and the environment.

Issues

Rsc 05	Sustainable procurement	8 credits + 2 Exemplary

Aim:

To recognise and encourage the procurement of more sustainable products and services.

Value:

Promotes more economically, socially and environmentally responsible practices across the construction products, component manufacturing and supply sectors.

Encourages the construction industry to identify risks and reduce the environmental, economic and social issues in the supply chain of construction products.

Encourages the use and the improvement of credible and comparable schemes to evaluate the responsible sourcing of products.

Promotes more economically, socially and environmentally responsible practices across the consumable products and equipment supply sectors.

Encourages consideration of circular economy principles during procurement.

Encourages the use of environmental management systems during procurement.

Rsc 06	Optimising resource use, reuse and recycling	6 credits

Aim:

To reduce resource consumption and facilitate the reuse, repurposing and recycling of waste resources from the asset.

Value:

Helps meet corporate and statutory waste recycling targets.

Reduces environmental impacts and costs arising from the disposal of waste.

Increases the quantity and quality of data on waste to inform waste reduction, reuse, recycling, target setting and measuring performance against targets.

Increases cooperation between the asset users and improve awareness of the impact of waste and how to improve.

Enables the realisation of circular economy principles during the operation of the asset.

Management Performance: Rsc 05 Sustainable procurement

8 2

Credits Minimum Standard

Aim

To recognise and encourage the procurement of more sustainable products and services.

Question

Is a sustainable procurement plan used?

Credits	Answer	Select all answers that apply. F or G must also be selected for any credits to be achieved in this issue
0	A.	Question not answered
0	B.	No sustainable procurement plan is used
0	C.	The organisation managing the asset has a procurement policy that requires all timber (and timber based) products used during the management of the asset to be legally harvested and traded
2	D.	A sustainable procurement plan is used for maintenance, repair, replacement and refurbishment works to the asset
2	E.	A sustainable procurement plan is used for procurement of consumables and equipment

Which organisations use the sustainable procurement plan(s)?

Credits	Answer	Select all answers that apply (if D or E have been selected above). F or G must be selected for any credits to be achieved in this issue
2	F.	The sustainable procurement plan is used for direct procurement by the organisation managing the asset
2	G.	The organisation managing the asset requires the use of the sustainable procurement plan for procurement by its contractors who undertake work on the asset Or, the sustainable procurement plan requirements are covered by the contractor’s own procurement policies/plan

Credits	Answer	Select all answers that apply (if D or E have been selected above). F or G must be selected for any credits to be achieved in this issue
Exemplary	H.	The organisation managing the asset requires the use of the sustainable procurement plan for procurement by the occupant(s) Or, the sustainable procurement plan requirements are covered by the occupant's own procurement policies/plan
Exemplary	I.	The organisation managing the asset has a third party certified environmental management system (EMS) to ISO 14001:2015 (or another type of certification/assurance that is accepted nationally as an acceptable alternative). The sustainable procurement plan is coordinated with the EMS

Assessment criteria

Criterion	Assessment criteria	Applicable Answer
1.	Answer option C has been of this issue has been selected and all relevant criteria have been met.	D – I
2.	The senior management of the organisation managing the asset shall endorse the timber procurement policy and require it to be used during the management of the asset. The policy shall be used for direct procurement by the organisation managing the asset and by its contractors who undertake work on the asset. The timber procurement policy may form part of a sustainable procurement plan.	C
3.	For all products, the sustainable procurement plan shall give preference to products that can robustly demonstrate the optimum combination of the following: a) have ISO 14024 (type I) compliant ecolabel certification b) have ISO 14025 (type III) compliant ecolabel certification c) have nationally recognised ethical/responsible sourcing third party certification d) generate less waste during use/installation e) after use on the asset, are more readily reusable f) are accepted by local recycling collection services g) can be sourced locally h) are from reused (preferred) or recycled sources i) utilise circular economy principles, e.g. servitisation, manufacturer take-back, material passports.	D – I

Criterion	Assessment criteria	Applicable Answer
	For timber (and timber based) products, the sustainable procurement plan shall give preference to products that can robustly demonstrate one of the following: a) FSC certification b) PEFC certification c) SFI certification d) another type of certification/assurance that is accepted nationally as an acceptable alternative to at least one of the above.	
4.	The sustainable procurement plan shall provide guidance on sourcing products that can demonstrate the items listed in criterion 3. The sustainable procurement plan shall provide guidance on how to choose between two or more products under consideration where each product demonstrates a different combination of the items listed in criterion 3.	D – I
5.	For services, the sustainable procurement plan shall give preference to, and provide sourcing guidance on, supplier organisations that have a third party certified environmental management system to ISO 14001:2015 (or another type of certification/assurance that is accepted nationally as an acceptable alternative).	D – I
6.	The sustainable procurement plan shall include sustainability aims, objectives and strategic targets to guide procurement activities.	D – I
7.	The sustainable procurement plan shall include details of procedures to check and verify the effective implementation of the sustainable procurement plan. The senior management of the organisation managing the asset shall review and endorse annual targets for increasing sustainable procurement.	D – I
8.	If the sustainable procurement plan is applied to several sites, or adopted at an organisational level, it must identify the risks and opportunities of procurement against a broad range of social, environmental and economic issues following the process set out in ISO 20400:2017.	D – I
9.	The senior management of the organisation managing the asset shall endorse the sustainable procurement plan and require it to be used during the management of the asset.	D – I
10.	Exemplary level credits: Answer option H can only be selected if options D, E, F, and G have been selected. Answer option I can only be selected if options F and G have been selected.	H, I

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
2	A copy of the timber procurement policy used by the organisation managing the asset and by contractors who undertake work on the asset.
3 – 9	A copy of the organisation managing the asset's sustainable procurement plan with the relevant sections identified according to each question answer and criterion.
7	An acknowledgement OR meeting minutes showing senior management have reviewed and endorsed the targets. Documentation showing the names and positions of senior management.
8	Confirmation by the organisation managing the asset that the sustainable procurement plan is/is not applied to several sites or adopted at an organisational level.
9	A written endorsement of the sustainable procurement plan by the senior management of the organisation managing the asset. Documentation showing the names and positions of senior management.
All	Where a contractor's or occupant's policies/plans are relied upon by the organisation managing the asset (see answers G and H), the same evidence requirements above apply to the contractor's or occupant's policies/plans.

Definitions

Consumables and equipment:

Products that are used for the normal functioning of the asset, e.g. security, janitorial and reception related stationery, IT equipment and office furniture; cleaning products; waste and recycling bins; lightbulbs; filters.

Contractors who undertake work at the asset:

Organisations that are contracted by the organisation managing the asset to provide a service at the asset (e.g. cleaning, construction work, gardening, security).

Legally harvested and traded timber:

Legally harvested timber (and timber based) products originate from a forest where the following criteria are met:

a) The forest owner or manager holds legal use rights to the forest.

b) There is compliance by both the forest management organisation and any contractors with local and national legal criteria, including those relevant to:

   i. Forest management

   ii. Environment

iii. Labour and welfare

iv. Health and safety

v. Other parties' tenure and use rights

vi. All relevant royalties and taxes are paid.

c) There is full compliance with the criteria of CITES.

And legally traded timber (and timber based) products are:

a) Exported in compliance with exporting country laws governing the export of timber and timber products, including payment of any export taxes, duties, or levies.

b) Imported in compliance with importing country laws governing the import of timber and timber products, including payment of any import taxes, duties, or levies.

c) Traded in compliance with legislation related to the convention on international trade in endangered species (CITES) where applicable.

Management Performance:

Rsc 06 Optimising resource use, reuse and recycling

6 Credits | 0 | No Minimum Standard

Aim

To reduce resource consumption and facilitate the reuse, repurposing and recycling of waste resources from the asset.

Question

Is data recorded on the waste generated during management of the asset?

Credits	Answer	Select a single answer option
0	A.	Question not answered
0	B.	No
2	C.	Yes
4	D.	Yes, plus separate data on the waste generated by the occupant(s)

Is the reduction, reuse and recycling of waste from the asset being optimised through target setting and encouraging occupant participation?

Credits	Answer	If answer option C or D has been selected, select all answers that apply
1	E.	Targets have been set for reducing waste generated from the asset and increasing reuse and recycling of waste from the asset
1	F.	The organisation managing the asset actively encourages reuse and recycling participation by occupant(s)

Assessment criteria

Criterion	Assessment criteria	Applicable Answer
1.	The data shall be recorded in the BREEAM In-Use Rsc 06 Waste data reporting tool according to the Methodology and Table 35 in Checklists and tables. The tool can be accessed through the BREEAM In-Use Assessor extranet or the BREEAM In-Use online platform.	C, D

Criterion	Assessment criteria	Applicable Answer
2.	Waste generated during management of the asset may be recorded in combination with occupant waste if separate data is not available.	C
3.	Waste generated by the occupant(s) shall be recorded separately from waste generated during management of the asset. Where the organisation managing the asset is also the sole occupant of the asset, waste from asset management and from occupant spaces shall still be recorded separately.	D
4.	The data shall be presented annually to the senior management of the organisation managing the asset.	C, D
5.	The senior management of the organisation managing the asset shall review and endorse annual targets for reducing waste generated from the asset and increasing reuse and recycling of waste from the asset.	E
6.	The organisation managing the asset communicates the following to the occupant(s): a) The waste hierarchy and other relevant background information on waste b) How and why recording waste from the asset is being done c) The quantities and types of waste produced by the asset d) The sustainability benefits of reducing, reusing and recycling waste from the asset e) Relevant examples/case studies from other assets f) The facilities provided for reuse and recycling g) How occupants can obtain more information and guidance. This information shall be communicated in-person or as a recorded presentation to the relevant senior staff: a) Of every new occupant organisation upon occupying a space b) And then at least annually to every occupant organisation.	F

Methodology

Waste collection requirements

The total mass or volume of waste generated from the asset shall be recorded annually by waste stream. The following data shall be recorded for each separate waste stream:

- Waste description
- Waste classification (including identification of hazardous waste)
- Quantity of waste generated
- Source of waste
- Disposal route

Either mass (tonnes) or volume (m^3) may be used, but the chosen unit shall be used consistently for all data gathered for the asset. Please note that if the data is to be reported to other organisations (e.g. industry benchmarking organisations) care should be taken to ensure the unit used is compatible.

Checklists and Tables

Table 35: Waste recording requirements

Input	Input type	Input options	Description
Waste description (optional)	Text	N/A	Description of waste generated by asset.
Waste code	List selection	- European Waste Catalogue - Other classification system	Waste classification code for each waste stream generated by the asset.
Hazardous waste classification	List selection	Yes/No	Identification of hazardous waste.
Quantity	Number	N/A	The quantity of waste generated by the asset. Reported as either mass (tonnes) or volume (m^3).
Source	List selection	- Asset management - Occupant(s) - Unknown (or combined asset management and occupant)	The source of waste.
Source activity	List selection	- Construction activities - Non-construction activities	The source activity.
Disposal route	List selection	- Diverted – reuse – at the asset (or stored for reuse at the asset) - Diverted – reuse – not at the asset - Diverted – recycling – at the asset - Diverted – recycling – closed-loop - Diverted – recycling – not closed-loop/unknown - Diverted – waste to energy	The destination of the waste generated by the asset.

		- Incineration - Landfill	

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
1 - 3	Data on waste generated during management of the asset should be correctly collected in the BREEAM In-Use Rsc 06 Waste data reporting tool and submitted into the BREEAM In-Use online platform. This includes evidence of the organisation/individual that collected the data provided and the source of the data.
3	Data on waste generated by the occupant(s) recorded separately from waste generated during management of the asset.
4	A copy of the document/presentation given. An acknowledgement from the senior management that the document was received OR meeting minutes showing the senior management were presented with the data. Documentation showing the names and positions of senior management.
5	A copy of the document containing the targets. An acknowledgement OR meeting minutes showing the senior management have reviewed and endorsed the targets. Documentation showing the names and positions of senior management.
6	A copy of the presentation, with the relevant sections identified according to each question answer and criterion. A list of dates and attendee lists, from the organisation managing the asset, when the presentation was given to each occupant.

Definitions

Closed-loop recycling:

Where waste is recycled back into the same product that the waste came from as opposed to open-loop recycling where it is recycled into a different product often of lower value (sometimes called downcycling). Closed-loop recycling may be achieved by, for example, a product manufacturer take-back scheme.

Hazardous waste:

Waste classified as hazardous by the nationally applicable waste classification system (e.g. in the EU, the Hazardous Waste List (HWL) of the European List of Waste (LoW).

Waste classification:

According to the nationally applicable waste classification system (e.g. in the EU, the European List of Waste (LoW) codes shall be used).

Management Performance: Resilience

11%

Summary

This category considers an asset's exposure and mitigation strategies for physical risks (including those related to climate change), climate-related transitional and social risks and opportunities, local watercourse pollution, excess material damage, and physical security. This encourages the pro-active management of these risks to minimise their impact and to identify opportunities to enhance resilience of the asset and the community in which it sits to ensure rapid recovery. While this category focuses on hazard preparedness and response, aspects beyond this focus that contribute to and support the broader resilience of the asset and communities it impacts can be found in each of the categories in this standard.

Context

Natural hazards, fires and other emergencies

'Climate action' is one of the United Nations' SDGs, with a target to 'strengthen resilience and adaptive capacity to climate-related hazards and natural disasters'. All buildings are exposed to a range of natural and man-made hazards. These can damage the assets and impact on the occupants significantly.

By understanding hazards that a building is exposed to, good management practice can be implemented to minimise impacts, ensure that the asset quickly recovers to 'business as usual'.

Climate Resilience

BRE defines climate resilience in this context as "The ability for assets to assess and respond to climate change through the assessment and management of associated risks (transition, social, physical) and the ability to capitalize on opportunities such as resource efficiency and lower emission energy sources". Investors are increasingly demanding to understand more about how assets and the portfolios which they belong are assessing the physical risks from climate change and taking action to address them to protect asset value. The driving force behind this is the Taskforce on Climate- related Financial Disclosures (TCFD). The TCFD is a global voluntary disclosure framework launched in June 2017 to allow organisations to identify the climate risks and opportunities they expect to face and to encourage the disclosure of those financial impacts to investors.

Security

Feelings of safety and security are essential to healthy and productive asset occupants. Freedom from crime and the fear of crime has a major impact on quality of life, and therefore effects the wellbeing of building occupants. Security risks are dependent on the context of a building and, as a result, need to be specifically determined based against a number of variables, including function and location. In addition to this, security risks are not static and can change over time. Consequently, security advice from the appropriate professionals is essential in determining the necessary security measures for any asset. Assets should consider how their approach to crime prevention and security may result in inequitable and exclusionary outcomes and solutions. Assets are encouraged to adopt policies and procedures that not only protect building users but contribute to the dignity, safety and security of all people and the wider neighbourhood

Issues

RsI 06	Emergency plans and climate related physical risks	6 credits + 2 Exemplary

Aim

To encourage emergency plans that go beyond statutory requirements and aim to protect property and the environment in addition to people. To recognise and encourage assessment of an asset's exposure to climate related physical risks and their impact on asset value.

Value

Ensures that the impact of any emergencies will be minimised.

Seeks to keep occupants, and surrounding communities, safe during incidents.

Seeks to protect physical asset and operational value.

RsI 07	Climate related transition risks and opportunities	4 credits

Aim

To recognize and encourage the assessment of the asset's exposure to climate-related transition risks and opportunities.

Value

Ensures that the impact of moving to a low carbon economy is minimised.

Reduces the risk of assets becoming stranded and losing value.

Highlights opportunities for the asset during the transition to a low carbon economy.

RsI 08	Social risks and opportunities	4 credits

Aim

To recognize and encourage the assessment of the asset's exposure to climate-related social risks and opportunities.

Value

Ensures that the social impacts of climate change are understood for the asset.

Highlights how the asset might maximise the social opportunities of climate change.

RsI 09	Fire risk management	4 credits

Aim

To ensure a consistent baseline of fire risk assessment.

Value

Ensures that the fire risk to the asset is understood and reduced, potentially saving lives.

Seeks to protect physical asset and operational value.

Rsl 10	Security risk assessment	2 credits + 1 Exemplary

Aim

To ensure all property-related security issues are identified and addressed in order to reduce risks from crime.

Value

Reduces the risk of crime and potentially insurance costs.

Increases the value of the building to future occupants.

Seeks to protect the physical asset and the building occupants.

Management Performance: RsI 06 Emergency plans and climate-related physical risks

6 Credits

2

No Minimum Standard

Aim

To encourage emergency plans that go beyond statutory requirements and aim to protect property and the environment in addition to people. To recognise and encourage assessment of an asset's exposure to climate related physical risks and their impact on asset value.

Question

What is included within the scope of the Emergency plans?

Credits	Answer	Select all answers that apply
0	A.	Question not answered
2	B.	The emergency plan includes protection of property
2	C.	The emergency plan includes environmental impacts
Exemplary	D.	The plans must detail how the asset provides a community space for emergencies and how this is coordinated with the community

Has the asset been assessed for climate-related physical risks?

Credits	Answer	Select a single answer option
0	E.	Question not answered
0	F.	No
2	G.	Yes
Exemplary	H.	Yes, and the risks posed to the asset value and the community have been identified

Assessment criteria

Criterion	Assessment criteria	Applicable Answer
1.	The emergency plan includes a coherent emergency strategy for all relevant natural hazards, fire and security risks for the time period specified.	B - D

Criterion	Assessment criteria	Applicable Answer
2.	Responsibility for emergency plans have been delegated to relevant individuals within the organisation at the asset and communicated appropriately to building users.	B - D
3.	The level of detail required will depend on the risks that the site is exposed to and the complexity of mitigating those risks.	B - D
4.	Community spaces for emergencies will vary depending on the needs of the community surrounding the asset, the existing community spaces and the types of emergency that might occur. Examples of community spaces include: • emergency shelters • cooling centres for heat waves • kitchen spaces • meeting space	D
5.	The assessment of climate related physical risks should cover both Acute and Chronic risks	G - H
6.	The assessment was carried out by a competent person or organisation, preferably third-party to the asset owner or manager within the last five years.	G - H

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
1 - 3	A copy of risk assessment on which the emergency plan is based and a copy of the emergency plan with sections which relate to the protection of property and environmental impacts.
4	Evidence of coordination with civic or other community leaders to offer the community space, communications within the community about the space available and how it can be utilized in the case of an emergency.
5 - 6	The report detailing the climate related physical risks and opportunities identified, the methodology used for the assessment and the key metrics where applicable.
5 - 6	Evidence of the competency of the individual(s) or organisation that undertook the assessment.

Definitions

Competent individual:

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

a) Determine the potential for natural hazards in the region of the development

b) Determine the likely impacts on the site, building and locality

c) Subsequently identify appropriate mitigation measures This (or these) individual(s) should practice to and abide by a professional code of conduct or similar.

Natural hazards:

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 to identify these fully:

a) Floods

b) Natural disasters of geological origin such as volcanic eruptions, earthquakes, landslides, tsunamis and tidal waves

c) Natural disasters of climatic or meteorological origin such as droughts, avalanches, wave surges, and wind storms including cyclones, hurricanes, tornadoes, tropical storms, and typhoons

d) Wildfires

Climate-Related Physical Risks:

The physical risks of climate change are risks resulting from events, such as extreme weather (hurricanes, floods, extreme heat), as well as longer-term shifts in climate patterns. Physical risks from climate change can be either acute, such as increased severity of extreme weather events, or chronic such as sea level rise or chronic heat waves.

Additional information

Task Force on Climate-related Financial Disclosures (TCFD)

The Financial Stability Board Task Force on Climate-related Financial Disclosures (TCFD) is a market-driven initiative that have developed and published a set of recommendations for voluntary and consistent climate-related financial risk disclosures in mainstream filings. This guidance provides companies with guidance on what kind of information to provide to investors, lenders, insurers, and other stakeholders on climate-related risks Further information can be found at: https://www.fsb-tcfd.org/

The final recommendations of the Task Force can be found at:

https://www.fsb-tcfd.org/wp-content/uploads/2017/06/FINAL-TCFD-Report-062817.pdf

Management Performance:RsI 07 Climate-related transition risks and opportunities

4 Credits

0

No Minimum Standard

Aim

To recognize and encourage the assessment of the asset's exposure to climate-related transition risks and opportunities.

Question

Has the asset been assessed for exposure to climate-related transition risks and opportunities through a risk assessment process?

Credits	Answer	Select a single answer option
0	A.	Question not answered
0	B.	No
2	C.	Yes, the asset has been assessed for climate-related transition risks and opportunities
4	D.	Yes, the asset has been assessed for climate-related transition risks and opportunities and has externally disclosed the metrics used by the asset to assess these risks and opportunities

Assessment criteria

Criterion	Assessment criteria	Applicable Answer
1.	The process for assessing transition risks and opportunities should evaluate one or more risks to the following areas: asset value, tenants, communities (with particular attention paid to underserved populations), continuity of operations, individuals working with or for the asset.	C, D
2.	The assessment was carried out by a suitably qualified person or organisation, preferably third-party to the asset owner or manager within the last five years.	C, D
3.	Metrics should include energy, water, land use and waste management where relevant and applicable.	D

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
1, 3	The report detailing the transition risks and opportunities identified, the methodology used for the assessment and the key metrics where applicable.
2	Evidence of the competency of the individual(s) or organisation that undertook the assessment.
3	Evidence of how the metrics have been externally disclosed.

Definitions

Suitably qualified person or organisation:

A person or organisation that has sufficient knowledge, training and experience to assess an asset's climate-related risks and opportunities.

Transition risks and opportunities:

Risks and opportunities related to the transition to a lower-carbon economy. These may include policy, legal, technology and market changes to address mitigation and adaptation requirements related to climate change. Examples include policy that requires reduction of carbon emissions from assets, resource efficiency and lower emission and more resilient energy sources.

Additional information

Task Force on Climate-related Financial Disclosures (TCFD)

The Financial Stability Board Task Force on Climate-related Financial Disclosures (TCFD) is a market-driven initiative that have developed and published a set of recommendations for voluntary and consistent climate-related financial risk disclosures in mainstream filings. This guidance provides companies with guidance on what kind of information to provide to investors, lenders, insurers, and other stakeholders on climate-related risks. Further information can be found at : https://www.fsb-tcfd.org/

The final recommendations of the Task Force can be found at:

https://www.fsb-tcfd.org/wp-content/uploads/2017/06/FINAL-TCFD-Report-062817.pdf

Management Performance:

Rsl 08 Social risks and opportunities

4 Credits 0

No Minimum Standard

Aim

To recognize and encourage the assessment of the asset's exposure to social risks and opportunities.

Question

Has the asset been assessed for exposure to social risks and opportunities through a risk assessment process?

Credits	Answer	Select a single answer option
0	A.	Question not answered
0	B.	No
2	C.	Yes, the asset has been assessed for social risks and opportunities
4	D.	Yes, the asset has been assessed for social risks and opportunities and has externally disclosed the metrics used by the asset to assess these risks and opportunities

Assessment criteria

Criterion	Assessment criteria	Applicable Answer
1.	The process for assessing social risks and opportunities should evaluate the impacts to and from the community and interdependent infrastructure deemed to be material to the asset. Particular attention should be given to underrepresented groups detailing how impacts to the assets may cascade outwards to potentially impact these groups. The assessment should encourage outcomes that contribute to enhancing the community's overall resilience.	C, D
2.	The assessment was carried out by a suitably qualified person or organisation, preferably third-party to the asset owner or manager within the last five years.	C, D
3.	Metrics should address both the social risks and opportunities that are relevant and applicable to the asset.	D

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
1, 3	The report detailing the social risks and opportunities identified, the methodology used for the assessment and the key metrics where applicable.
2	Evidence of the competency of the individual(s) or organisation that undertook the assessment.

Definitions

Interdependent infrastructure assets and services:

Infrastructure assets and services on which the asset may rely on or require to be operational. Examples include energy networks and transport systems.

Social risks and opportunities

Risks and opportunities related to the impacts and interdependencies between the community and the asset. Social risks include:

- Social disruption: social instability, labour relations, community relations, etc
- Public health: acute or chronic disease, social and environmental determinants of health, etc
- Poverty: income inequality, workforce training and capabilities, etc.
- Modern slavery/forced labour

Physical risks, including those that are climate-related, can also be social risks. Rsl 06 Emergency plans and climate-related physical risks addresses the risks and opportunities for the asset users. Rsl 08 Social risks and opportunities addresses potentially similar risks and opportunities but from the perspective of the wider community, considering how an asset might add social value to this community.

Social opportunities include those that enhance and support the community's resilience. Examples include the asset providing a community space for emergencies (i.e. emergency shelter, kitchen space, community tool share program, meeting space, community radio station, community mesh network) and/or a cooling centre for heat waves.

Suitably qualified person or organisation:

A person or organisation that has sufficient knowledge, training and experience to assess an asset's social risks and opportunities.

Management Performance:

RsI 09 Fire risk management

4 0

Credits Minimum Standard

Aim

To ensure a consistent baseline of fire risk assessment.

Question

Does the asset comply with all relevant fire regulations that apply to the asset?

Credits	Answer	Select a single answer option
0	A.	Question not answered
0	B.	No
0	C.	Yes, and the regulations do not include a requirement to conduct a fire risk assessment.
0	D.	Yes, and the regulations do include a requirement to conduct a fire risk assessment.

Where the relevant fire regulations do not include a requirement to conduct a fire risk assessment, has a fire risk assessment been carried out?

Credits	Answer	Answer H is available only if Answer G has been selected
0	E.	Question not answered
0	F.	No
2	G.	Yes, a fire risk assessment has been carried out.
2	H.	There is a fire safety manager or other member of staff in place who manages, monitors and initiates reviews of the relevant procedures as identified in the fire risk assessment.

Assessment criteria

Criterion	Assessment criteria	Applicable Answer
1.	**Filtering** Where the asset complies with all relevant fire regulations and the fire risk assessment required meets the requirements in Assessment criteria 2 - 5, the credits for the issue will be filtered out of the assessment.	D
2.	A fire risk assessment must be carried out on premises that are in use so that actual working conditions, practices and procedures can be taken into account. Risk assessments carried out at the design stage of new premises or to identify defects in fire precautions in newly constructed premises prior to occupation are not compliant.	C, D, G
3.	A fire risk assessment must be carried out by a competent person.	C, D, G
4.	A fire risk assessment should include all of the assessed area, and any associated access routes. It must explicitly set out the significant findings of the assessment including identifying who is responsible for fire risk management, details about the building that are relevant to the fire risk prevention measures required and actions required.	C, D, G
5.	The fire risk assessment is clear that appropriate consideration has been given to: a) Fire hazards and means for their elimination to their control b) Maintenance of fire protection measure c) Relevant aspects of fire safety management d) The likelihood of fire and its likely consequences e) The fire risk f) The fire risk assessment results in an action plan	C, D, G
6.	Procedures as identified in the fire risk assessment should be reviewed at least every 3 years AND when changes are made to the building.	G, H

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
All	Copy of most recent fire risk assessment, including: - • Evidence of the competence of the person undertaking the fire risk assessment.

	• Evidence that the fire risk assessment has been reviewed within the last 3 years or whenever changes were made to the building, whichever is soonest.
4	Evidence of fire safety manager checking through documentation and recent examples.

Definitions

Competent person:

A person with enough training and experience or knowledge and other qualities to enable them properly to assist in undertaking the preventative and protective measures. For more complex assessments, the necessary competency may not reside with a single individual, but will instead be provided by a team, including those with relevant local knowledge.

Fire risk assessment:

A fire risk assessment is a systemic and structured assessment of the fire risk in premises for the purpose of expressing the current level of fire risk, determining the adequacy of existing fire precautions and determining the need for, and nature of, any additional fire precautions. Additional fire precautions required are set out in the action place which forms part of the documented fire risk assessment. The objective of the action plan is to set out measures that will ensure that the risk level is reduced to, or maintained at, a tolerable level. This ensures that the focus concentrates on fire prevention measures. instead of just fire protection measures

Additional information

BREEAM's approach to fire risk assessment

BREEAM's approach to fire risk assessment has been adapted from Publicly Available Specification 79 *Fire risk assessment – Guidance and a recommended methodology*, 2012 (PAS 79:2012). This approach to fire risk assessment tends to parallel that adopted in health and safety risk assessments, whereby the objective of the risk assessment is not merely preventing harm to people as a result of a hazard but begins with endeavours to eliminate or reduce the hazard itself.

Management Performance: Rsl 10 Security risk assessment

2 1

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Credits **No Minimum Standard**

Aim

To ensure all property-related security issues are identified and addressed in order to reduce risks from crime.

Question

Has a security risk assessment been carried out?

Credits	Answer	Select a single answer option
0	A.	Question not answered
0	B.	No
2	C.	Yes, a security risk assessment has been carried out
Exemplary	D.	A risk-based security rating scheme has been used. The performance against the scheme has been confirmed by independent assessment and verification

Assessment criteria

Criterion	Assessment criteria	Applicable Answer
1.	A competent person has documented a security risk assessment for the asset. The risk assessment describes the security controls deployed (if any) to manage the identified security risks, and a procedure for ensuring the risk assessment is kept up to date.	C
2.	The security controls described in the security risk assessment have been, or are scheduled to be, implemented. Security controls that are schedule to be implemented should be completed over a reasonable timescale.	C
3.	Independent assessment and verification (e.g. certification) of performance against a risk-based security rating scheme has been achieved.	D

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
1, 2	Copy of the security risk assessment prepared by the competent person.
2	Photographic evidence and/or documentation to demonstrate the implementation of security controls.
3	Certification (or similar verification) to a recognised risk-based security rating scheme.

Definitions

Competent person:

The following are deemed to be appropriate

1. A SABRE Registered Professional meeting the criteria for 'Risk'. A current list of SABRE Registered Professionals can be found at www.redbooklive.com.
2. A practicing security consultant or security manager that meets the following requirements:
    a. Minimum 3 years relevant experience in the last 5 years. The experience must clearly demonstrate a practical understanding of security risk assessment in the built environment.
    b. Hold a suitable qualification relevant to security
    c. Maintains full membership of a relevant professional body that has a professional code of conduct.

Risk-based security rating scheme:

A security assessment method for buildings, led by an independent assessor, which grades security performance against a defined standard at design, shell and core, and post-construction stages. Through certification the system shall recognise and reward:

- Adoption of industry best practice, tools and standards,
- A systematic and risk-based approach to security,
- An appropriate and proportionate response to security needs,
- Innovation in security risk assessment
- Engagement of competent persons for the process of identifying security needs, security planning and design, and the implementation of security controls.

The following program is currently recognised as a compliant risk-based security rating schemes:

- SABRE (https://www.bregroup.com/sabre/)

Providers of programs not listed, who feel their programs meet this definition and who would like to be listed should contact BRE Global.

Additional information

Security and the impact on equity in communities

The approach to security in buildings has traditionally been defensive in nature and focused on protecting the asset and the building users from external threats. Assets should consider how their approach to crime prevention and security may result in inequitable and exclusionary outcomes and solutions. Assets are encouraged to adopt policies and procedures that not only protect buildings users but contribute to the dignity, safety and security of all people and the wider neighbourhood.

Management Performance: Land Use and Ecology

7%

Summary

This category encourages a greater awareness of how the potential ecological value of an asset or site can be enhanced, and the impact that the operation of the asset can have on this ecological value. This enables long-term strategies to be established that will facilitate improvement in this regard.

Context

Conserving and enhancing the biodiversity and wider natural environment around us is important for life on earth. The natural environment supports the variety of living organisms on the planet as well as the interdependence which exists between them. The United Nations have an SDG related to 'life in land' (Goal 15), with the target to 'integrate ecosystem and biodiversity values into national and local planning and development processes'. Landscape management can have a significant impact on the broader environment that it supports and can have a potentially positive impact on ecological value. It is therefore important to understand the existing value and condition of sites, where possible promote the use of ecological features to enhance and manage the biodiversity of the site.

Issues

Lue 03	Ecology report	4 credits

Aim:

To encourage organisations to establish the ecological value of their assets and sites and improve the ecological value based on recommendations that have been made by a suitably qualified ecologist (SQE).

Value:

Identifies the existing ecological value of the site and its surroundings to allow for the mitigation and management of the possible negative effects on ecology and supports making improvements to the overall ecology and biodiversity where possible.

Lue 04	Biodiversity management plan	6 credits

Aim:

To encourage organisations to develop a biodiversity and ecology management plan based on the outcomes of the ecology survey that set targets to improve the immediate natural environment of the site. It should be reviewed on a regular basis in order to enable assets to maintain and enhance the ecological value of the site.

Value:

Gives assurance that the expected benefits and outcomes will be achieved in a sustainable and efficient way during the occupation of the asset.

Assists the asset owners, clients and occupants with managing and improving the ecology and biodiversity of the asset and the immediate site.

Demonstrates compliance with the local and regional statutory requirements (Biodiversity Action Plan).

Highlights improvements in environmental stewardship and awareness, where applicable introducing corporate learning and involvement opportunities. This can also have wider benefits for organisations through enhanced market perceptions.

Supports local, national and international efforts to halt the loss of habitats and biodiversity by promoting net gain where possible.

Management Performance: Lue 03 Ecology report

4 Credits

0 No Minimum Standard

Aim

To encourage organisations to establish the ecological value of their assets and sites and improve the ecological value based on recommendations that have been made by a suitably qualified ecologist (SQE).

Question

Has an ecological survey been carried out and reported on within the last 3 years?

Credits	Answer	Select a single answer option
0	A.	Question not answered
0	B.	No
2	C.	Yes, and all of the SQE's minor recommendations for increasing the site's ecological value have been implemented on-site.
4	D.	Yes, and all of the SQE's minor and major recommendations for increasing the site's ecological value have been implemented on-site to make a significant contribution to local biodiversity, given the scope and scale of the asset
3	E.	Yes, and all of the SQE's minor recommendations for increasing the site's ecological value have been implemented on-site. In addition, off-site enhancement has been carried out within the local area, according to the SQE's recommendations for making a significant contribution to local biodiversity, given the scope and scale of the asset
2	F.	Yes, and the SQE has confirmed that there are no or very limited opportunities to improve the site's ecological value. Off-site enhancement has been carried out within the local area, according to the SQE's recommendations for making a significant contribution to local biodiversity, given the scope and scale of the asset

Assessment criteria

Criterion	Assessment criteria	Applicable Answer
1.	Before any ecological enhancement/creation is recognised, any existing ecological value must be protected and maintained in line with the Suitably Qualified Ecologist's recommendations and the mitigation hierarchy.	C – F
2.	An SQE should be independent of the organisation.	C – F
3.	Where there are no ecological features found on-site, credits can be achieved for increasing the ecological value of an area within 2km of the asset, in line with recommendations and guidance by an SQE. The size of the area must be greater than 60% of the asset footprint.	F

Specific notes

Asset type specific	
1.	**Assets with no outdoor space** Where there is no outside space or area to implement an ecology plan for the asset please see answer option E. It is possible for enhancement measures outside of 2km to be considered under special circumstances. If this is the case, please send details and justifications for why this cannot be done within 2km to BRE for consideration.

Methodology

Ecology report process

A survey and evaluation must be carried out by an SQE (or on their behalf, see below), to determine the asset site's ecological baseline including:

a) Current and potential ecological value and condition of the site, and related areas within the zone of influence.

b) Direct and indirect risks to current ecological value from the asset

c) Capacity and feasibility for enhancement of the ecological value of the site and, where relevant, areas within the zone of influence

The survey and evaluation must be carried out at appropriate time(s) of the year for assessing the habitats and species active likely to be active on the site.

Once established, the ecological baseline should be used to determine the SQE's minor and major recommendations for protection and enhancement of the asset and its site.

The SQE should use their expertise and ecology good and best practice, to determine the appropriate scope of their survey and evaluation. As part of this they should consider any aspects that they think are relevant for the asset being assessed:

Survey:

1. Determining the zone of influence for the site including neighbouring land and habitats

2. Current flora, fauna (including permanent and transient species) and habitat characteristics (including but not limited to ecological features in or on built structures)
3. Habitat extent, quality, connectivity and fragmentation
4. Recent and historic site condition
5. Existing management and maintenance levels and arrangements
6. Existing ecological initiatives within the zone of influence
7. Identification of, and consultation with, relevant stakeholders impacted or affected by the site.
8. Local knowledge or sources of information.

Evaluation:

1. Current value and condition of the site and the zone of influence in terms of:
    a. Features including habitats, species, food sources and connectivity
    b. Broader biodiversity and ecosystem services benefits or opportunities
2. Direct and indirect risks to current ecological value:
    c. Sensitive areas and features on or near the site
    d. Direct risks including those from, human activity (e.g. construction work), habitat fragmentation, and potentially harmful species
    e. Indirect risks including water, noise and light pollution
3. Capacity and feasibility to enhance the ecological value
4. Habitat restoration and creation potential
5. Impact of the asset's current management and maintenance practices and any future developments (refurbishments, extensions etc.) such as disturbance to habitats or species using the site or asset.

The report detailing the outcomes of the ecological survey can be written by an ecologist who does not meet the Suitable Qualified Ecologist (SQE) criteria if the report has been reviewed by a SQE who confirms it:

a) Represents sound industry good practice
b) Has been written objectively (avoiding biased and exaggerated statements)
c) Is appropriate given the local site conditions and scope of works proposed.

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
1	Copy of ecology survey, including the report.
2	Evidence that the ecology survey was carried out by a competent individual such as: copies of relevant documents, qualifications, CV or industry membership.

Criteria	Evidence requirement
1, 3	Evidence showing the recommendations for protecting or improving the asset and site's ecological value have been implemented, such as: copies of site surveys and management plans for specific biodiverse /ecological important areas on the site.

Definitions

Suitably Qualified Ecologist:

An individual achieving all the following items can be considered to be suitably qualified for the purposes of a BREEAM In-Use International assessment:

c) Holds a degree or equivalent qualification in ecology or in a related subject comprising a significant ecology component.

d) 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.

Zone of Influence

Areas of land or water bodies impacted by the site undergoing assessment. These areas can be adjacent to the site or can be areas that are dependent on the site but not physically linked, including areas downstream from a site. Areas within the zone of influence can be negatively affected by changes on an assessment site but they also provide further opportunity to maximise enhancement activities.

Asset footprint:

For buildings only:

The asset is a building on its own without any associated site attached (for example, an office tower in the city centre). In this case, the asset footprint can be considered to be the area of the asset/ building only (typically the ground floor area).

For buildings located on a site:

The asset footprint can be taken as the site on which the building is situated. The boundary of the site must be drawn when either:

a) Responsibility of management or ownership of the site changes; **OR**

b) If a site includes multiple assets and there is a clear demarcation of the area associated with each asset, then this must be considered to be the site boundary for the asset footprint.

Additional information

Mitigation hierarchy

The mitigation hierarchy is a method which limits the negative impacts on biodiversity during the asset's life cycle. The main principles are: avoidance, mitigation, compensation. for example, if bats are roosting in the roof, measures should be implemented to ensure their ongoing protection and avoidance of disruption in the future.

Management Performance:

Lue 04 Biodiversity management plan

6 Credits

0

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No Minimum Standard

Aim

To encourage organisations to develop, implement and keep under review a biodiversity action plan based on the outcomes of the ecology survey, which sets targets to maintain and enhance the ecological value of the site.

Question

Is there a biodiversity management plan in place which aligns with local and regional biodiversity action plans and sets specific targets to enhance the ecological value of the site?

Credits	Answer	Select one answer A-D, select answer E if applicable
0	A.	Question not answered
0	B.	No
2	C.	Yes, plans have been put in place to manage and maintain existing ecological features, which align with local or regional biodiversity action plans
4	D.	Yes, an action plan has been put in place to ensure continued improvement to the ecological value and biodiversity of the site in line with local guidance.
2	E.	The Management plan has been informed by recommendations made by a Suitably Qualified Ecologist (SQE) and meets the guidance set out in the National / Regional Biodiversity action plans.

Assessment criteria

Criterion	Assessment criteria	Applicable Answer
1.	A Biodiversity management plan should set targets that are: a) Specific to the asset/site b) Measurable and achievable c) Realistic and time bound	C, D

Criterion	Assessment criteria	Applicable Answer
2.	The management plan should be informed by the local biodiversity strategies and action plans. If credits have been awarded for Lue 03 Ecology report the management plan should also take into consideration these findings and the recommendations made by the SQE. If there are no ecological features on the site and credits were achieved in Lue 03 Ecology report for enhancing the local area off-site, the biodiversity management plan must apply to the same area used to gain these credits.	C, D
3.	The management plan should be reviewed and updated every 3 years or earlier if there are significant changes to the asset's footprint or the ecological features on-site.	C, D
4.	Organisations responsible for the site's landscape management should either, a) Have their own policies that stipulate that the work they undertake will maintain or enhance (if getting extra credit for this) the ecological value on-site in line with the biodiversity management plan. OR b) Have contractual agreements with building management or building owner that stipulate that the work they undertake will maintain or enhance the ecological value on-site in line with the biodiversity management plan. Progress should be reviewed to ensure ecological value is being maintained or enhanced as appropriate. Where it is not, management plans need to be updated.	C, D
5.	The management plan should cover (but is not limited to): a) Landscaping b) Integrated pest management c) Cleaning of façade, landscaping and hardscaping d) Planting/installation of features to enhance flora and fauna on-site e) Clearly defined and allocated roles and responsibilities.	C, D
6.	The management plan for the asset should link to local and regional biodiversity requirements as well as the local biodiversity action plan (BAP), in accordance with the Convention on Biological Diversity where applicable.	C

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
All	Copy of biodiversity plan /strategy
2, 3	Evidence that the plan/strategy was developed by a competent individual such as copies of relevant documents, qualifications, CV or industry membership.

Definitions

Biodiversity action plan (BAP):

An international programme brought about at the convention on biological diversity in 1992. The programme encourages nations to develop and adopt a strategy which will protect and restore biological systems around the world by addressing threats to native species and habitats in any given area. The action plans should include four major steps:

a) A survey of all species and habitats located within the area relating to the BAP.

b) An assessment of the conservation status of all the species and habitats

c) Targets for the conservation and creation of the biodiversity within the given area

d) An established budget, timeline and partnership where necessary for implementing the enhancement and protection of the local ecosystem.

Integrated Pest Management (IPM):

A method of controlling pests by prevention, monitoring, and control. This method of pest control offers the opportunity to eliminate or drastically reduce the use of pesticides, and to minimise the toxicity of and exposure to any products which are used.

Suitably Qualified Ecologist:

An individual achieving all the following items can be considered to be "suitably qualified" for the purposes of a BREEAM In-Use International assessment:

a) Holds a degree or equivalent qualification in ecology or in a related subject comprising a significant ecology component.

b) 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.

Additional information

Other information

Convention on Biological Diversity – For more information regarding this please visit the official website: http://www.cbd.int/convention/

Management Performance: Pollution

7%

Summary

The pollution category addresses the prevention and control of pollution and surface water run-off associated with an asset location and use. This facilitates a reduction in impact on surrounding communities and environment, arising from flooding and emissions to air, land and water.

Pollution source reduction is a proactive, and ultimately more cost effective and desirable, process than focusing on pollution treatment and disposal. It reduces the financial, societal and environmental costs from building operations. In addition to reducing the risk of significant financial and reputational implications in the event of a pollution incident, addressing pollution can help address the inequities that are currently present in our communities and provide a healthy environment for all demographic and economic groups, including those that are less advantaged or part of a vulnerable population.

Context

The United Nations have made 'good health and wellbeing' one of their SDGs, with an aim to 'substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination' by 2030.

Light pollution

The external lighting used by buildings can have a detrimental impact on the use and enjoyment of neighbouring properties, and on the mental and physical wellbeing of individuals in them. It also has a significant and often detrimental impact on local wildlife.

Refrigerants

The typical refrigerants used in building cooling systems are major greenhouse gases that are many times more potent than carbon dioxide in their contribution to global warming and climate change. Although, released in much smaller quantities they are, nevertheless, a significant contributor to increasing global temperatures. As such, they are the focus of increasingly strict regulatory controls internationally. Worldwide agreements (such as the 1992 United Nations Framework Convention on Climate Change (UNFCCC)) and its extension, the Kyoto Protocol, commits signatories to reducing greenhouse gas emissions and banning the most damaging gases. The agreements seek to shift use to low impact refrigerants over time and so provide a timescale for the phasing out of more potent refrigerants. Because the use of the gases is so prolific actions taken to limit their use are vital.

BREEAM supports this agenda and stimulates a more rapid change market transformation by creating market value for assets with reduced impact refrigerants by limiting the volume or weight of gases used, their potential impact, and for specifying systems which detect and control leakage of gas to the atmosphere.

Refrigerant leaks impact both the environment and financial performance of an asset, increasing the running time of the equipment and potentially damaging components of the system. Whilst many countries have regulatory systems in place that require leak testing and repair for systems of a certain size during regular maintenance, knowing as soon as possible when a leak has developed is key to minimising the environmental impacts, managing operating costs and maximising the life cycle of the installed equipment.

Issues

Pol 06	Reduction of nighttime light pollution	4 credits

Aim:

To ensure that external lighting is concentrated in the appropriate areas and that upward lighting is minimised, thereby reducing unnecessary light pollution and nuisance to neighbours.

Value:

Minimise nuisance to neighbouring properties due to lighting.

Maintain an adequate level of safety and security lighting on the site.

Reduce energy use by designing coverage and control systems that are appropriate for the development.

Pol 07	Inspection of watercourse pollution prevention features	3 credits

Aim:

To maintain the effectiveness of any features installed to prevent watercourse pollution.

Value:

Reduce the risk of damage to local watercourses and potential breaches of environmental law.

Reduces the risk of blocked drains both on-site and in the wider sewerage system.

Pol 08	Refrigerant replacement	2 credits

Aim:

To reduce the impact of refrigerants on the environment.

Value:

Reduces the overall contribution to climate change.

Reduces the cost of regulatory compliance by encouraging on-going and proactive maintenance.

Pol 09	Local contamination mitigation	4 credits

Aim

To ensure that there are no land contamination issues associated with the asset site.

Value:

Reduces the risk of land contamination that may occur due to operational activities of the asset.

Reduces risk to human health, property and environment.

Pol 10 Response to pollution incidents 2 credits

Aim:

To reduce the impact of any pollution incidents on the surrounding environment.

Value:

Minimises the impact of any pollution incidents, resulting in less disruption and less damage to the environment.

Management Performance:

Pol 06 Reduction of nighttime light pollution

4 Credits

No Minimum Standard

Aim

To ensure that external lighting is concentrated in the appropriate areas and that upward lighting is minimised, thereby reducing unnecessary light pollution and nuisance to neighbours.

Question

Has an assessment been performed that demonstrates that external lighting does not result in light pollution at night?

Credits	Answer	Select a single answer option
0	A.	Question not answered
0	B.	No
2	C.	Yes, qualitative assessment performed
4	D.	Yes, quantitative assessment performed by a lighting professional
4	E.	Exterior lighting is not provided, and it is not required from a safety perspective

Assessment criteria

Criterion	Assessment criteria	Applicable Answer
1.	For qualitative assessments where external lighting is present: a) All external lighting is aimed downwards, to avoid upward sky glow. b) All external lighting is aimed away from neighbouring buildings or open spaces or has screens or baffles to prevent light spill to them. c) There are no illuminated signs. d) Lighting is automatically controlled to be switched off or dimmed to a much lower level between 23:00 and 07:00 (the curfew period).	C
2.	For quantitative assessments where external lighting is present, a lighting professional confirms: a) All external lighting (except for safety and security lighting) complies with the pre-curfew limitations in Table 36 in the Checklists and Tables section and can be automatically switched off between 23:00 and 07:00 (the curfew period).	D

Criterion	Assessment criteria	Applicable Answer
	b) Illuminated signs, where present, comply with the maximum luminance (cd/m²) in Table 36. c) If safety or security lighting is installed and is used between 23:00 and 07:00 it complies with the post-curfew limitations in Table 36 (e.g. by using an automatic switch to reduce the lighting levels at 23:00 or earlier). d) Where non-security lighting is essential between 23:00 and 07:00, i.e. for buildings which open or operate between these times, the lighting system can automatically switch to the lighting levels for post-curfew in Table 36.	
3.	A lighting professional confirms that 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.	E
4.	Assessment of illuminance or luminous intensity is not required if all luminaires are cut-off types and angled so that light in potentially obtrusive directions is blocked. Assessment of upward light ratio is not required if all luminaires are cut-off types delivering downward light only.	C - E
5.	Flush stud lights used for safety purposes in vehicle manoeuvring areas may be excluded from the assessment.	C - E
6.	All types of illuminated sign must meet the criteria, both self-illuminated and those illuminated by reflection from other sources.	C - E
7.	For the purposes of this issue, external lighting includes both lighting mounted externally, and lighting mounted inside an asset that is primarily intended to enhance its external appearance or light external spaces after dark.	C - E

Specific notes

Asset type specific	
1.	**Different Curfew times** 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.
2.	**Security lighting** Where light fittings are specified to comply with specific security standards and these conflict with the criteria, they can be excluded from assessment. In these circumstances, the Assessor

Asset type specific	
	must obtain evidence confirming the specific security standards and that they are applicable to the asset.

Methodology

Quantitative assessment by lighting professional

The direct measurement of upward light ratio (ULR), vertical illuminance and luminous intensity may not be possible due to issues with access to luminaires or to neighbouring properties. Consequently, the lighting professional may use their professional judgement to determine compliance with the requirements in Table 36, e.g. visual assessment to estimate the proportion of ULR, or where access to sensitive receptors is not possible, luminous intensity measurements could be made from accessible locations in the direction of the view of luminaires as seen from sensitive receptors. Where lighting design documentation is available from when the lighting was installed, this may be used to demonstrate compliance with the assessment issue criteria.

Checklists and Tables

Table 36: Obtrusive light limitations for exterior lighting installations and illuminated signs

Zone (see Table 37)	Maximum luminaire upward light ratio (ULR) / %	Maximum vertical illuminance on nearby properties' windows (E_v) / lux		Maximum luminous intensity emitted by luminaire (I) / cd		Maximum average surface luminance of building façade (L)* / cd/m²	Maximum average surface luminance of signs (L)* / cd/m²
		Pre-curfew	Post-curfew	Pre-curfew	Post-curfew		
E0	0	0	0	0	0	<0.1	<0.1
E1	0	2	0#	2,500	0	<0.1	50
E2	2.5	5	1	7,500	500	5	400
E3	5.0	10	2	10,000	1,000	10	800
E4	15	25	5	20,000	2,500	25	1000

* The values apply to both pre- and post-curfew, except in Zones 0 and 1 when the values shall be zero post-curfew. The values for signs do not apply to signs for traffic control purposes.

Up to 1 lux for public road lighting.

Table 37: Environmental lighting zones

Zone	Lighting Environment	Surrounding	Examples
E0	Dark	Protected	UNESCO Starlight Reserves, IDA Dark Sky Parks
E1	Intrinsically dark	Natural	Relatively uninhabited rural areas, e.g. national parks

Zone	Lighting Environment	Surrounding	Examples
E2	Low district brightness	Rural	Sparsely inhabited rural areas
E3	Medium district brightness	Suburban	Well inhabited rural and urban settlements
E4	High district brightness	Urban	Town and city centres and other commercial areas

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
All	Nighttime lighting levels report or any other relevant study.
All	Photographic evidence confirming that external luminaires are designed to restrict upward light and light spill.
All	Confirmation that lighting is switched off during the curfew period.

Management Performance:

Pol 07 Inspection of watercourse pollution prevention features

3 Credits

0

No Minimum Standard

Aim

To maintain the effectiveness of any features installed to prevent watercourse pollution.

Question

Are bunded areas, light-liquid separators and grease separators effectively maintained?

Credits	Answer	Select all answers that apply
0	A.	Question not answered
0	B.	No
1	C.	Yes, the maintenance policy covers inspection and maintenance of bunded areas
1	D.	Yes, the maintenance policy covers light-liquid separators and detailed inspection and maintenance is carried out
1	E.	Yes, the maintenance policy covers grease separators and detailed inspection and maintenance is carried out

Assessment criteria

Criterion	Assessment criteria	Applicable Answer
1.	**Filtering** Where no bunded areas are required (as no liquids requiring bunded storage are stored on-site) or the asset does not require light-liquid separators or grease separators, the associated credits can be filtered out of the assessment.	All

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
All	Copy of the maintenance policy or contract highlighting the sections relevant to bunding, light-liquid separators and grease separators
All	Copy of logbook or inspection schedule.

Definitions

Bund:

A structure made of an impermeable material which forms a barrier to retain liquids.

Light-liquid separators:

Vessels that are part of a surface water drainage system, into which potentially contaminated waste water will flow and where light-liquids are separated from the waste water by means of gravity and/or coalescence and retained.

Management Performance:

Pol 08 Refrigerant replacement

2 Credits

0 No Minimum Standard

Aim

To reduce the impact of refrigerants on the environment

Question

Is a strategy and timetable to replace refrigerants with low environmental impact alternatives in place?

Credits	Answer	Select a single answer option
0	A.	Question not answered
0	B.	No
2	C.	No, low environmental impact refrigerants (GWP ≤10) already in use
2	D.	Yes, all refrigerants will be replaced with low environmental impact alternatives (GWP ≤10)

Assessment criteria

Criterion	Assessment criteria	Applicable Answer
1.	**Filtering** Where no refrigerants are used or only small (refrigerant charge in each system is ≤5kg) hermetic systems are installed in the asset, this issue can be filtered out of the assessment.	All
2.	The strategy needs to cover: a) On-site equipment containing refrigerants which is to be replaced b) Which low environmental impact refrigerants will be used to replace the existing refrigerants c) A reasonable timescale over which this is to be delivered.	D
3.	The strategy should cover air conditioning and refrigeration systems equipment within the building for the following uses: a) Walk-in cold storage enclosures	D

Criterion	Assessment criteria	Applicable Answer
	b) Cold storage, including commercial food/drink display cabinets but excluding residential-scale white goods e.g. fridges and freezers c) Comfort cooling and heating (e.g. heat pumps) d) Process based cooling loads (e.g. servers/IT equipment)	
4.	A list of typical refrigerants with a low GWP can be found in Table 27 in the Checklist and Tables section of issue Pol 04 Global warming potential of refrigerants.	All

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
1	Statement from the building manager indicating that the asset does not contain any systems that contain refrigerants or confirmation that the total charge is ≤5kg in any systems that are present.
2, 3	Copy of the strategy/ objectives relating to replacing refrigerants.

Management Performance:

Pol 09 Land contamination mitigation

4 Credits

0 No Minimum Standard

Aim

To ensure that there are no land contamination issues associated with the asset site.

Question

Has the risk from potential land contamination associated with the asset site been assessed?

Credits	Answer	Select a single answer option
0	A.	Question not answered
0	B.	No
2	C.	Yes, land contamination issues have been identified that require further investigation or remediation
4	D.	Yes, no land contamination issues have been identified
4	E.	Yes, all land contamination issues have been remediated

Assessment criteria

Criterion	Assessment criteria	Applicable Answer
1.	An assessment of the risks from potential land contamination associated with the asset's site has been performed by a contaminated land professional or conducted under the supervision of a contaminated land professional within the last 5 years.	C – E
2.	The assessment comprises review or compilation of the following as appropriate to the site's condition: a) Preliminary (Phase I) investigation (comprising a desk study and site reconnaissance). b) Intrusive (Phase II) investigation (exploratory, detailed and/or supplementary site investigation). c) Remediation strategy or action plan. d) Verification that remedial actions have been implemented.	C – E

Criterion	Assessment criteria	Applicable Answer
	Where any of the above tasks have previously been performed, e.g. as part of the construction of the asset or through environmental due diligence work, this information may be used to demonstrate compliance with this assessment issue. Where this information is older than 5 years, a contaminated land professional must review the status of the information and confirm that the assessment is still valid.	

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
All	Report(s) from contaminated land professional(s).
All	Written confirmation from the asset or site owner that further intrusive investigation and/or remedial works have been planned.

Definitions

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.

Land contamination:

Any substance or agent in or on the ground, which presents an unacceptable risk to human health, property or the environment.

Remediation:

Any activity undertaken to prevent, minimise, remedy or mitigate the risk to human health, property or the environment caused by land contamination.

Additional information

Land contamination

Land contamination is usually caused by previous industrial uses on or within the vicinity of a site but may also be present due to spills or leaks from current or recent activities on or near the site. However, it cannot be ruled out in other locations including in rural areas (e.g. by inappropriate spreading of materials such as sludge, or as a result of contamination being moved from its original source). In addition, some areas may be affected by the natural or background occurrence of potentially hazardous substances, such as radon, methane or elevated concentrations of metallic elements.

Guidance on the performance of land contamination investigations and remediation include:

a) ASTM E1527-13 Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process
b) ASTM E1903-11 Standard Practice for Environmental Site Assessments: Phase II Environmental Site Assessment Process
c) ASTM E2893-16 Standard Guide for Greener Cleanups
d) BS 10175:2011+A2:2017 Investigation of potentially contaminated sites - Code of practice
e) ISO 18400-202:2018 Soil quality - Sampling - Part 202: Preliminary investigations
f) ISO 18400-203:2018 Soil quality - Sampling - Part 203: Investigation of potentially contaminated sites
g) ISO 18504:2017 Soil quality - Sustainable remediation

Management Performance:

Pol 10 Response to pollution incidents

2 Credits

No Minimum Standard

Aim

To reduce the impact of any pollution incidents on the surrounding environment.

Question

Is a response plan in place to deal with pollution incidents in line with national standards or best practice guidelines?

Credits	Answer	Select a single answer option
0	A.	Question not answered
0	B.	No
2	C.	Yes

Assessment criteria

Criterion	Assessment criteria	Applicable Answer
1.	**Filtering** Where no sources of pollution are located on the site, this issue can be filtered out of the assessment.	All
2.	A response plan outlining an emergency response procedure for dealing with potential pollution incidents should be in place. Sources of potential pollution include (but are not limited to): a) Fuel storage (e.g. diesel for emergency back-up generators) b) Refrigerants that are used or stored on-site	C
3.	The response plan should be reviewed at least every 5 years and after the occurrence of any accidents or emergency situations.	C
4.	Where practical, the response procedures should be tested periodically.	C

Evidence

Criteria	Evidence requirement
-	The evidence below is not exhaustive, please also refer to the 'BREEAM evidential requirements' section in the scope of the Guidance for appropriate evidence types which can be used to demonstrate compliance.
2, 3	Copy of the response plan outlining the incident response procedures.
4	Records of any testing of emergency response procedures.