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BREEAM UK Refurbishment and Fit-out 2014 Pre-Assessment

Unit H George Curl Way

P01

19/08/2026

BREEAM REFURBISHMENT AND FIT OUT UK 2014 PRE-ASSESSMENT

Unit H George Curl Way

Our Ref: 8255

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Rev	Issue Date	Additions
P01	19/08/2026	Initial Issue

BREEAM PROJECT AUDIT SUMMARY

BRE registration number	TBC
BREEAM Scheme	BREEAM UK Non-domestic Refurbishment and Fit-out ('RFO') 2014
BREEAM Scheme version	Issue 2.0
Assessment Stage	Pre-assessment stage
Technical Manual version	SD216 2.0

EXECUTIVE SUMMARY

This BREEAM Pre-assessment report relates to George Curl Way situated at Unit H, George Curl Way in Southampton, in the Borough of Eastleigh.

The Proposed Development is to fall under the BREEAM UK Non-domestic Refurbishment and Fit-out ('RFO') 2014 guidance including Parts 1-4. The proposed development is targeting BREEAM 'Excellent' benchmark in line with Policy DM2 within the Eastleigh Local Plan.

The current targeted score is ~73.0% equivalent to BREEAM 'Excellent' rating, with a difference between the minimum required score for a BREEAM 'Excellent' rating of 3.0%.

A margin of at least 2-5% is recommended above the minimum required score at this stage to secure the target rating considering contingency for design changes and potential constraints identified during the construction stage.

The following targeted credits are time-sensitive, with specific requirements that must be completed prior to the end of Stage 2. Failure to meet these requirements within the required timeframe will result in the associated credits being unavailable and, consequently, the project will not achieve the targeted BREEAM 'Excellent' rating:

- Man 01 Stakeholder consultation (project delivery) +1 credit (stage 2)
- Man 01 Stakeholder consultation (third party) +1 credit (stage 2)
- Man 02 Elemental life cycle cost (LCC) +2 credits (stage 2)
- Mat 06 Material efficiency +1 credit (stages 1-2)
- Wst 01 Pre-refurbishment audit +1 credit (stage 2)
- Wst 05 Structural and fabric resilience +1 credit (stage 2)
- Wst 06 Functional adaptability +1 credit (stage 2)

The following potential credits have been identified for further exploration and, where feasible, pursuit to strengthen the robustness of the targeted BREEAM 'Excellent' rating:

- Hea 01 visual comfort +2 credits
- Hea 02 Indoor air quality +1 credit
- Hea 06 Safety and security +1 credit
- Ene 01 Reduction of energy use and carbon emissions + 7 credits
- Tra 01 Sustainable transport solutions – Accessibility Index +2 credits
- Tra 02 Proximity to amenities +1 credit
- Tra 04 Maximum car parking capacity +1 credit
- Wat 01 Water Consumption +2 credits
- Le 04 Ecologists report and recommendations +1 credit
- Innovation: Post occupancy exemplary criteria +1 credit
- Innovation: Watercourse pollution exemplary criteria +1credit

BREEAM PRE-ASSESSMENT

Introduction

This BREEAM Pre-Assessment reports relates to the proposed Unit H at George Curl Way. Due to the scope of works being undertaken on the scheme, the development will be appraised against the BREEAM UK Non-domestic Refurbishment and Fit-out ('RFO') 2014 guidance criteria applying Parts 1-4 of the framework.

Due to the type of assessments and varying scope of works being undertaken on different schemes, BREEAM offers a flexible approach for RFO schemes allowing clients, developers, and assessors to choose relevant parts based on specific projects needs. Assessment parts refer to the various parts of a building and whether these apply to the upcoming changes. The assessment parts cover 4 different areas including Fabric and Structure, Core Services, local Services, and Interior Design. A summary of each of the parts has been provided below:

Part 1 Fabric and Structure

Applicable to for refurbishment projects that involve significant alterations to the building fabric when the renovation area exceeds 50% of an individual element or 25% of the entire building envelope.

Part 2 Core Services

Applicable where at least two key systems are being installed or upgraded to comply with building regulations. E.g., Central air handling units, heating boilers, more than 50% of heat distribution, chiller pants, over 50% of chiller distribution, water services, BMS, community heating systems and LZC technologies.

Part 3 Local services

Applicable where at least two of the following local building services are being installed or upgraded e.g., replacement of more than 50% of light fittings, controls, zone controls, ventilation, heating units, cooling units and point of use water heaters.

Part 4 Interior design

Applicable for development that involve significant layout and decoration changes e.g., modifying 50% in at least two of the following areas – wall, floor coverings, ceiling systems, partitions, raised floor systems, or furniture and fittings. Additionally, at least one change of 50% is needed for sanitary fittings, equipment, or local electrical installations.

For the Unit H Curl Way assessment we have applied all 4 parts of the framework to the assessment based on our current understanding of the proposed changes taking place.

Pre-Assessment

This Pre-Assessment has been carried out by Futura Bright who have been appointed to deliver a Pre-assessment strategy confirming the proposed BREEAM excellent route which is to be followed for the project. Overall, the following assessment scores have been confirmed:

Baseline score / rating: ~73.0% equivalent to a BREEAM Excellent rating.

The following time sensitive credits are required to be completed prior to the end of stage 2 in order to achieve the targeted rating:

- Man 01 Stakeholder consultation (project delivery) +1 credit (stage 2)
- Man 01 Stakeholder consultation (third party) +1 credit (stage 2)
- Man 02 Elemental life cycle cost (LCC) +2 credits (stage 2)
- Mat 06 Material efficiency +1 credit (stages 1-2)
- Wst 01 Pre-refurbishment audit +1 credit (stage 2)
- Wst 05 Structural and fabric resilience +1 credit (stage 2)
- Wst 06 Functional adaptability +1 credit (stage 2)

Failure to achieve these credits will result in the targeted rating of 'Excellent' being unattainable.
The following potential credits have been identified to strengthen the robustness of the targeted BREEAM 'Excellent' rating and provide additional contingency. These include:

- Hea 01 visual comfort +2 credits
- Hea 02 Indoor air quality +1 credit
- Hea 06 Safety and security +1 credit
- Ene 01 Reduction of energy use and carbon emissions + 7 credits
- Tra 01 Sustainable transport solutions – Accessibility Index +2 credits
- Tra 02 Proximity to amenities +1 credit
- Tra 04 Maximum car parking capacity +1 credit
- Wat 01 Water Consumption +2 credits
- Le 04 Ecologists report and recommendations +1 credit
- Innovation: Post occupancy & Watercourse pollution exemplary criteria +2 credits

All mandatory and minimum standards for the BREEAM 'Excellent' rating have been included within the assessment strategy for the potential score.

BREEAM Scores

The following graphs provide a visual representation of the credits targeted per category as well as credits targeted overall.

FIGURE 1 BREEAM CREDITS TARGETED PER CATEGORY.

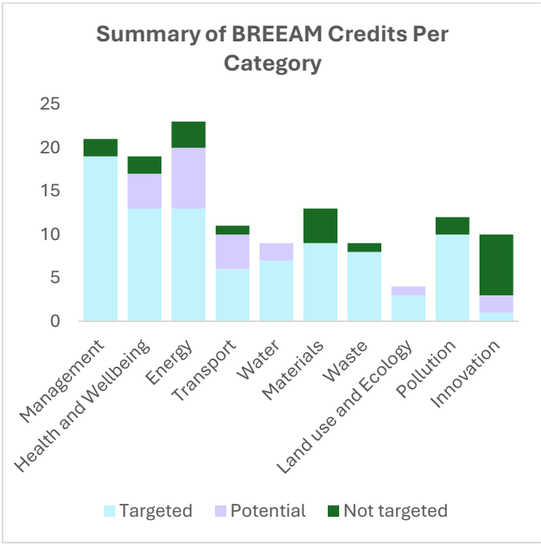
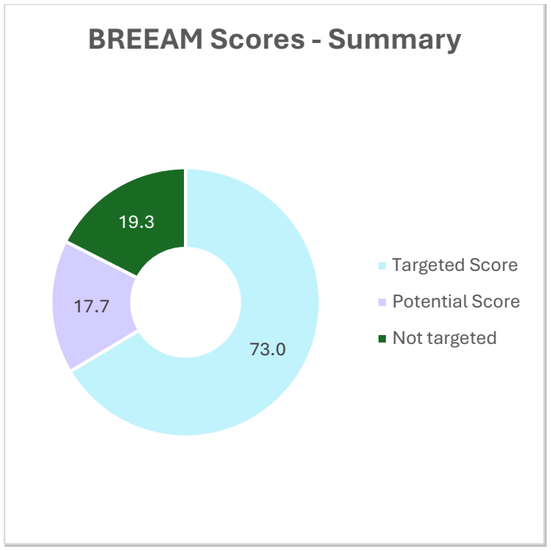


FIGURE 2 BREEAM SUMMARY OF CREDITS TARGETED.



DETAILED CREDIT ASSESSMENT

Issue	Credit Requirements	Credits		Comments / Actions	Responsible Team Member
		Available	Targeted (Potential)		
Management					
Man 01 Project Brief and Design	**One credit – Stakeholder consultation (project delivery)** 1. A clear sustainability brief is developed prior to Concept Design which sets out: a. Client requirements e.g. internal environmental conditions required. b. Sustainability objectives and targets including target BREEAM rating, business objectives etc. c. Timescales and budget d. List of consultees and professional appointments that may be required e.g. Suitably Qualified Acoustician etc. e. Constraints for the project e.g. technical, legal, physical, environmental. 2. Prior to completion of the Concept Design (RIBA Stage 2 or equivalent), the project delivery stakeholders have met to identify and define their roles, responsibilities, and contributions for each of the key phases of project delivery. 3. In defining the roles and responsibilities for each key phase of the project, the following must be considered: a. End user requirements. b. Aims of the design and design strategy c. Particular installation and construction requirements/limitations d. Design and construction risk assessments e.g. CDM, legionella risk assessment. e. Legislative requirements e.g. building control notification, heritage requirements. f. Procurement and supply chain g. Identifying and measuring project success in line with project brief objectives h. Occupiers 'budget and technical expertise in maintaining any proposed systems. i. Maintainability and adaptability of the proposals j. Requirements for the production of project and end user documentation k. Requirements for commissioning, training, and aftercare support. 4. The project team demonstrate how the project delivery stakeholder contributions and the outcomes of the consultation process have influenced or changed the Initial Project Brief, including if appropriate, the Project Execution Plan, Communication Strategy, and the Concept Design.	1	1	Credit Targeted Sustainability brief to be issued covering criteria A-E. Confirmation on the roles and responsibilities of each of the consultants throughout the project programme. Please refer to criterion 3A-3K. Early-stage meeting minutes demonstrating the team have met, engaged and how this process has changed the initial project brief. **STAGE 2 CREDIT**	Project Manager
	One credit - Stakeholder consultation (third party) 5. Prior to completion of the Concept Design stage, all relevant third-party stakeholders have been consulted by the design team, and this covers the minimum consultation content. 6. The project must demonstrate how the stakeholder contributions and outcomes of the consultation exercise have influenced or changed the Initial Project Brief and Concept Design 7. Prior to completion of the detailed design (RIBA Stage 4, Technical Design or equivalent), consultation feedback has been given to, and received by, all relevant parties.	1	1	Credit Targeted Stakeholder consultation and feedback to be provided demonstrating how the design has changed / been influenced within the early stages. **STAGE 2 CREDIT** **STAGE 4 CREDIT**	Project Manager
	One credit - Sustainability Champion (design) 8. A Sustainability Champion has been appointed to facilitate the setting and achievement of BREEAM performance targets for the project. The design stage Sustainability Champion is appointed to perform this role during the feasibility stage (Stage 1, Preparation and Brief stage, as defined by the RIBA Plan of Work 2013 or equivalent).	1	0	Credit not targeted. Appointment required to be in place during feasibility stage (RIBA Stage 1). As appointment has not been secured, credit cannot be achieved. **STAGE 1 CREDIT**	

	9. The defined BREEAM performance target(s) has been formally agreed (see Relevant definitions) between the client and design/project team no later than the Concept Design stage (RIBA Stage 2 or equivalent). 10. To achieve this credit at the interim design stage assessment, the agreed BREEAM performance target(s) must be demonstrably achieved by the project design. This must be demonstrated via the BREEAM assessor's design stage assessment report.				
	One credit - Sustainability Champion (monitoring progress) 11. The Sustainability Champion design credit has been achieved. 12. A Sustainability Champion is appointed to monitor progress against the agreed BREEAM performance target(s) throughout the design process and formally report progress to the client and design team. To do this the Sustainability Champion must attend key project/design team meetings during the Concept Design, Developed Design and Technical Design stages, as defined by the RIBA Plan of Work2013, reporting during, and prior to, completion of each stage, as a minimum.	1	0	Credit not targeted. Credit requires Sustainability Champion to be appointed for the Sustainability Champion (design) credit as a mandatory requirement. As the appointment has not been secured the credit cannot be targeted or achieved.	
Man 02 Life Cycle Cost and Service Life Planning	**Two credits - Elemental life cycle cost (LCC)** 1. An outline, entire asset elemental life cycle cost (LCC) plan has been carried out at Process Stage 2 (equivalent to Concept Design - RIBA Stage 2) together with any design option appraisals in line with 'Standardised method of life cycle costing for construction procurement' PD 156865:20081. 2. The Elemental LCC plan: a. An outline LCC plan has been undertaken for the project based on the building's basic structure and envelope, appraising a range of options, and based on the life expectancy of the refurbished building, e.g. 20, 30, 50+years. b. The servicing strategy for the project outlining services component over a 15 - year period, in the form of an 'elemental LCC Plan'. c. A fit-out strategy is developed outlining fit-out options over a 10-year period.	2	2	Credits Targeted *LCC Plan to be provided by sustainability consultant – FB can be appointed to complete this if required* **STAGE 2 CREDIT**	Sustainability Consultant
	One credit - Component level LCC option appraisal 3. A component level LCC plan has been developed by the end of Process Stage 4 (equivalent to Technical Design – RIBA Stage 4) in line with PD 156865:2008 and includes the following component types (where present). 4. Demonstrate, using appropriate examples provided by the design team, how the component level LCC plan has been used to influence building and systems design/specification to minimise life cycle costs and maximise critical value.	1	1	Credit Targeted *LCC Plan to be provided by sustainability consultant – FB can be appointed to complete this if required* **STAGE 4 CREDIT**	Sustainability Consultant
	One credit - Capital cost reporting 5. Report the capital cost for the refurbishment/fit-out works in pounds per square metre (£k/m2) via the BREEAM Assessment Scoring and Reporting tool (see other information).	1	1	Credit targeted. *Capital cost to be provided including* the expenses related to the initial construction of the building: • Construction, including preparatory works, materials, equipment, and labour. • Site management • Construction financing • Insurance and taxes during construction • Inspection and testing Costs relating to land procurement, clearance, design, statutory approvals, and post occupancy aftercare should not be included. Contractor Prelims document to capture requirement and inform Principal Contractors tender package.	Project Manager / Cost Consultant / Client Project Manager / Client on behalf of Principal Contractor

Man 03 Responsible construction practices	**Pre-requisite (Mandatory Credit)** 1. All timber and timber-based products used on the project is 'Legally harvested and traded timber'(see Relevant definitions).	✓	✓	Requirements targeted. Contractor Prelims document to capture requirement and inform Principal Contractors tender package.	Project Manager / Client on behalf of Principal Contractor
	One credit – Environmental management 3. The principal contractor operates an environmental management system covering their main operations. The EMS must be either: a. Third party certified, to ISO14001/EMAS or equivalent standard; or b. Have a structure that is in compliance with BS8555:2003 and has reached phase four of the implementation stage, 'implementation and operation of the environmental management system,' and has completed phase audits 1 to 4, as defined in BS8555:2003. 4. The principal contractor implements best practice pollution prevention policies and procedures on-site in accordance with Pollution Prevention Guidelines, Working at construction and demolition-sites: PPG61.	1	1	Credit targeted. Contractor Prelims document to capture requirement and inform Principal Contractors tender package.	Project Manager / Client on behalf of Principal Contractor
	One credit – Sustainability Champion (construction) 5. A Sustainability Champion is appointed to monitor the project to ensure ongoing compliance with the relevant sustainability performance/process criteria, and therefore BREEAM target(s), during the Construction, Handover and Close Out stages (as defined by the RIBA Plan of Works 2013, Stages 5 and 6). To do this the Sustainability Champion will ideally be site based or will visit the site regularly to carry out spot checks, with the relevant authority to do so, and will require action to be taken to address short comings in compliance. The Sustainability Champion will monitor site activities with sufficient frequency to ensure that risks of non-compliance are minimised. They will report on progress at relevant project team meetings including identifying potential areas of non-compliance and any action needed to mitigate. 6. The defined BREEAM performance target forms a requirement of the principal contractor's contract. 7. To achieve this credit at the final post construction stage of assessment, the BREEAM-related performance target for the project must be demonstrably achieved by the project. This is demonstrated via the BREEAM assessor's final post construction stage assessment report.	1	1	Contractors' responsibility to ensure Sustainability Champion is appointed. Contractor Prelims document to capture requirement and inform Principal Contractors tender package.	Project Manager / Client on behalf of Principal Contractor
	Up to two credits - Considerate construction 8. For small scale or low value refurbishment or fit-out projects (see Relevant definitions): a. One credit can be awarded where an individual(s) is responsible for implementing and maintaining the following considerate construction practices throughout the work stage (see Relevant definitions): i. Keeping the site clean and tidy ii. Reducing impacts on the community through community/neighbour engagement iii. Continuous improvement in safety iv. Commitment to respect and fair treatment of all workers v. Suitable site facilities for operatives and visitors b. Two credits can be awarded where the contractor achieves 'compliance' with the criteria of a 'compliant 'scheme. OR 9. Where the refurbishment or fit-out project does not meet the definition of a small scale or low value project (see Relevant definitions) the principal contractor has used a 'compliant' organisational, local, or national considerate construction scheme and their performance against the scheme has been confirmed by independent assessment and verification. The BREEAM credits can be awarded as follows:	2	2	Credits targeted. **Mandatory one credit for BREEAM Excellent** Contractor Prelims document to capture requirement and inform Principal Contractors tender package.	Project Manager / Client on behalf of Principal Contractor

	c. One credit where the contractor achieves 'compliance' with the criteria of a compliant scheme. d. Two credits where the contractor significantly exceeds 'compliance' with the criteria of the scheme. Refer to the Relevant definitions section for a list of compliant schemes and therefore how performance, as determined by a compliant scheme, translates into BREEAM credits.				
	Exemplary level criteria The contractor achieves compliance with the criteria of the compliant scheme to an exemplary level of practice.	1	1	Credit targeted. Contractor Prelims document to capture requirement and inform Principal Contractors tender package.	Project Manager / Client on behalf of Principal Contractor
	Up to two credits - Monitoring of refurbishment or fit-out-site impacts 10. Responsibility has been assigned to an individual(s)for monitoring, recording, and reporting energy use, water consumption and transport data (where measured) resulting from all on-site refurbishment or fit-out processes (and dedicated off-site monitoring) throughout the refurbishment or fit-out programme. To ensure the robust collection of information, this individual(s) must have the appropriate authority and responsibility to request and access the data required. Where appointed, the Sustainability Champion could perform this role.	2	2	Credit targeted. Contractor Prelims document to capture requirement and inform Principal Contractors tender package.	Project Manager / Client on behalf of Principal Contractor
Man 04 Commissioning and handover	**One credit - Commissioning and testing schedule and responsibilities** 1. There is a schedule of commissioning and testing that identifies appropriate commissioning required for the scope of works that includes a suitable timescale for commissioning and re-commissioning of all relevant works carried out. Commissioning should be carried out where changes are being made to the following: a. Building services (including both complex and non-complex systems) b. Building services control systems (including Building Management Systems) c. Changes to the building fabric that will affect thermal performance. 2. The schedule will identify the appropriate standards that all commissioning activities will be conducted in accordance with, such as current Building Regulations, BSRIA1and CIBSE2 guidelines and/or other appropriate standards, where applicable. 3. An appropriate project team member(s) is appointed to monitor and programme pre-commissioning, commissioning, testing and, where necessary, re-commissioning activities on behalf of the client. 4. The principal contractor accounts for the commissioning and testing programme, responsibilities, and criteria within their budget and main programme of works, allowing for the required time to complete all commissioning and testing activities prior to handover.	1	1	Credit targeted. M&E consultant to ensure requirements are captured in specifications. Contractor Prelims document to capture requirement and inform Principal Contractors tender package.	M&E Consultant & Project Manager / Client on behalf of Principal Contractor
	One credit - Commissioning building services 5. The commissioning and testing schedule and responsibilities credit is achieved. 6. For projects where work is being undertaken to upgrade, renovate or install newbuilding services and systems, an appropriate project team member needs to be appointed to undertake the work. a. For complex building services and systems, this role must be carried out by a specialist commissioning manager who is appointed during the design stage (by either client or contractor) with responsibility for: i. Undertaking design reviews and giving advice on suitability for ease of commissioning ii. Providing commissioning management input to construction programming and during installation stages iii. Management of commissioning, performance testing and handover/post handover stages.	1	1	Credit targeted. M&E consultant to ensure requirements are captured in specifications. Contractor Prelims document to capture requirement and inform Principal Contractors tender package.	M&E Consultant & Project Manager / Client on behalf of Principal Contractor

	b. For simple building services, this role can be carried out by an appropriate project team member (see criterion 3), provided they are not involved in the general installation works for the building services system(s).				
	One credit - Testing and inspecting building fabric. 7. Projects where the fabric of the building is being upgraded, the integrity of the building fabric, including continuity of insulation, avoidance of thermal bridging and air leakage path is quality assured through completion of a thermographic survey as well as airtightness testing and visual inspection at appropriate times during the refurbishment. The survey/testing is undertaken by a Suitably Qualified Professional (see Relevant definitions) in accordance with the appropriate standard, with visual inspection conducted by a representative of the main contractor or by an independent inspector such as a clerk of works. 8. Any defects identified in the site inspection, thermographic survey and the airtightness testing reports are rectified prior to building handover and close out. Any remedial work must meet the required performance characteristics for the building/element.	1	1	Credit targeted. M&E consultant to ensure requirements are captured in specifications. Contractor Prelims document to capture requirement and inform Principal Contractors tender package.	Architect & Project Manager / Client on behalf of Principal Contractor
	One credit – Handover 9. A Building User Guide (BUG) is developed or (where present) an existing Building User Guide is updated, prior to handover for distribution to the building occupiers and premises managers(see Relevant definitions), with a draft copy developed and discussed with users first (where the building occupants are known)to ensure the guide is most appropriate and useful to potential users. 10. A training schedule is prepared for building occupiers/premises managers, timed appropriately around handover and proposed occupation plans, which includes the following content as a minimum: a. The design intent of refurbishment/fit-out works. b. The available aftercare provision and aftercare team main contact(s), including any scheduled seasonal commissioning and post occupancy evaluation. c. Introduction to, and demonstration of, installed systems and key features, particularly building management systems, controls, and their interfaces, to ensure they are fully conversant with the detailed operation of the building. d. Introduction to the Building User Guide and other relevant building documentation, e.g. design data, technical guides, maintenance strategy, operations, and maintenance (O&M) manual, commissioning records, logbook etc e. Maintenance requirements, including any maintenance contracts and regimes in place.	1	1	Credit targeted. M&E consultant to ensure requirements are captured in specifications. **Criteria 9 mandatory for BREEAM Excellent** Contractor Prelims document to capture requirement and inform Principal Contractors tender package.	M&E Consultant & Project Manager / Client on behalf of Principal Contractor
Man 05 Aftercare	**One credit - Aftercare support** 1. There is (or will be) operational infrastructure and resources in place to provide aftercare support to the building occupier(s), which includes the following as a minimum: a. A meeting programmed to occur between the aftercare team/individual and the building occupier/management (prior to initial occupation, or as soon as possible thereafter) to: i. Introduce the aftercare team or individual to the aftercare support available, including the Building User Guide (where existing) and training schedule/content. ii. Present key information about features of the refurbished building including the design intent and how to use the building to ensure it operates as efficiently and effectively as possible (including the use of local services and controls and central services, as applicable). b. On-site facilities management training, to include a walkabout of the refurbished area of the building and introduction to, and familiarisation with the	1	1	Credit targeted. Client to commit to ensuring BREEAM compliant aftercare support is in place post-handover.	Client

	building systems, their controls and how to operate them in accordance with the design intent and operational demands. c. Initial aftercare support provision for at least the first month of building occupation, e.g. on-site attendance on a weekly basis to support building users/and management and to conduct a walk-around to examine how the refurbished area of the building is being used/operated to identify any issues that need to be communicated to building users/facilities managers(this could be more or less frequent depending on the complexity of the building and building operations). d. Longer term aftercare support provision for occupants for at least the first 12 months from occupation, e.g. a helpline, nominated individual or other appropriate system to support building users/management. 2. There is (or will be) operational infrastructure and resources in place to coordinate the collection and monitoring of energy and water consumption data for a minimum of 12 months (for Part 4, where local metering is available and accessible) once the building is occupied. Discrepancies between actual and predicted performance should be identified, with a commitment to identify actions required to address any discrepancies such as adjusting systems and/or to develop/review operational policies to influence user behaviours accordingly.				
	One credit - Seasonal commissioning 3. The following seasonal commissioning activities will be completed over a minimum 12-month period, once the building becomes substantially occupied (except solar photovoltaics): a. Complex systems- Specialist Commissioning Manager: i. Testing of all building services under full load conditions, i.e. heating equipment in mid-winter, cooling/ventilation equipment in mid-summer, and under part load conditions(spring/autumn). ii. Where applicable, testing should also be carried out during periods of extreme (high or low) occupancy. iii. Interviews with building occupants (where they are affected by the complex services) to identify problems or concerns regarding the effectiveness of the systems. iv. Re-commissioning of systems (following any work needed to serve revised loads) and incorporating any revisions in operating procedures into the operations and maintenance (O&M) manuals. b. Simple systems (naturally ventilated)- external consultant/aftercare team/facilities manager: i. Review thermal comfort, ventilation, and lighting, at three-, six- and nine-month intervals after initial occupation, either by measurement or occupant feedback ii. Take all reasonable steps to re-commission systems following the review to take account of deficiencies identified and incorporate any relevant revisions in operating procedures into the O&M manuals.	1	1	Credit targeted. **One mandatory credit for BREEAM excellent** Client to commit to ensuring BREEAM compliant seasonal commissioning is enforced once the building becomes occupied over a minimum 12-month period.	Client
	One credit - Post occupancy evaluation 4. The client or building occupier makes a commitment to carry out a post occupancy evaluation (POE) exercise one year after initial building occupation (see compliance note CN7). This is done to gain in-use performance feedback from building users to inform operational processes, including re-commissioning activities, and maintain or improve productivity, health, safety, and comfort. The POE is carried out by an independent party (see Man 01 Project brief and design – Relevant definitions) and needs to cover: a. A review of the design intent and construction process (review of design, procurement, construction, and handover processes). b. Feedback from a wide range of building users including facilities management on the design and environmental conditions of the building covering:	1	1	Credit targeted. Client to commit to conducting a post-occupancy evaluation exercise one year after initial building occupation.	Client

	i. Internal environmental conditions (light, noise, temperature, air quality) ii. Control, operation and maintenance. iii. Facilities and amenities iv. Access and layout v. Other relevant issues c. Sustainability performance (energy/water consumption, performance of any sustainable features or technologies, e.g. materials, renewable energy, rainwater harvesting etc.). 5. The client or building occupier makes a commitment to carry out the appropriate dissemination of information on the building's post occupancy performance. This is done to share good practice and lessons learned and inform changes in user behaviour, building operational processes and procedures, and system controls. Refer to compliance notes CN8 and CN9 for a definition of appropriate dissemination. This also provides advice on appropriate dissemination where the building or building information is commercially or security sensitive.				
	Exemplary level criteria The following outlines the exemplary level criteria to achieve one innovation credit for this BREEAM issue: 1. There are, or will be, operational infrastructure and resources in place to coordinate the following activities at quarterly intervals for the first three years of building occupation: a. Collection of occupant satisfaction, energy consumption and (where available) water consumption data. b. Analysis of the data to check the building is performing as expected and make any necessary adjustments to systems controls or to inform building user behaviours. c. Setting targets and/or appropriate actions for reducing water and energy consumption and monitor progress towards these. d. Feedback any 'lessons learned' to the design team and developer for use in future projects. e. Provision of the actual annual building energy, water consumption (where available and accessible) and occupant satisfaction data to BRE for the purpose of future BREEAM performance benchmarking. f.	1	0 (+1)	Potential credit targeted. Client to commit to conducting a post-occupancy evaluation exercise for the first three years after initial building occupation.	Client
Health and Wellbeing					
Hea 01 Visual comfort	**One credit - Glare control** 1. The potential for disabling glare has been designed out of all relevant building areas using a glare control strategy, either through building form and layout and/or building design measures 2. The glare control strategy avoids increasing lighting energy consumption, by ensuring that: a. The glare control system is designed to maximise daylight levels under all conditions while avoiding disabling glare in the workplace or other sensitive areas. The system should not inhibit daylight from entering the space under cloudy conditions, or when sunlight is not on the façade: AND b. The use or location of shading does not conflict with the operation of lighting control systems.	1	1	Credit Targeted Glare Control Strategy to be provided by Architect reporting on the risk of glare in the relevant building areas and the appropriate mitigation measures which are required to be included. Not applicable to any shell and core areas. *FB can be appointed to complete this if required*	Architect
	Up to three credits – Daylighting 3. Up to three credits are awarded on a sliding scale depending on the percentage of relevant building areas that comply with one of the following daylighting criteria: a. The relevant building areas meet good practice daylight factor(s) and other criterion as outlined in Table 12 and Table 13 OR	3	1 (+2)	One Credit Targeted *Dynamic modelling is required to confirm this - Maximum Credits are unlikely to be achieved due to daylighting requirements not being achievable.*	Sustainability Consultant

	b. The relevant building areas meet good practice average and minimum point daylight illuminance criteria as outlined in Table 14 a. Two credits where daylighting provision, averaged over all relevant spaces, has improved after refurbishment or fit-out by 30% or more and there is a minimum glazing to floor area ratio of either: c. 5% glass to floor area ratio for side windows; O d. 2.5% glass to floor area ratio for roof lights. b. One credit where daylighting provision, averaged over all relevant spaces, has improved after refurbishment or fit-out by 15% or more and there is a minimum glazing to floor area ratio of either: e. 5% glass to floor area ratio for side windows; OR f. 2.5% glass to floor area ratio for roof lights			Sport Halls (yoga studios) TBC for compliance under this standard. Modelling to be completed to determine whether up to 3 no. credits can be achieved under this section *FB can be appointed to complete this if required*	
	Exemplary level criteria The following outlines the exemplary level criteria to achieve an innovation credit for daylighting: Daylighting criteria have been met using either of the following options: ➢ Relevant building areas meet exemplary daylight factor(s) and the relevant criteria in Table 17 OR ➢ Relevant building areas meet exemplary average and minimum point daylight illuminance criteria in Table 18	1	0	Credit not targeted. Should Daylighting criteria above be targeted and achieved this credit could then be considered for targeting.	Sustainability Consultant
	Up to two credits - View out. 4. Two credits where 95% or one credit where 80% of the floor area in each **relevant building area** is within 7m of a wall which has a window or permanent opening that provides an adequate view out. 5. The window/opening must be ≥ 20% of the surrounding wall area (refer to Relevant definitions in the Additional information section). Where the room depth is greater than 7m, compliance is only possible where the percentage of window/opening is the same as, or greater than, the values in Table 1.0 of BS8206 1. 6. In addition, the building type criteria in Table 15 are applicable to view out criteria.	2	2	2 Credits Targeted Provided that there are no relevant building areas without windows at the development. *KBCN1240 - Where the criteria are otherwise met, an internal view across an unobstructed atrium void can be considered compliant.* *FB can be appointed to complete this if required*	Architect
	One credit - Internal and external lighting levels, zoning, and control **Internal lighting** 7. All internal fluorescent and compact fluorescent lamps are fitted with high frequency ballasts. 8. Internal lighting in all relevant areas of the building is designed to provide an illuminance (lux) level appropriate to the tasks undertaken, accounting for building user concentration and comfort levels. This can be demonstrated through a lighting design strategy that provides illuminance levels in accordance with the SLL Code for Lighting 2012 and any other relevant industry standard. 9. For areas where computer screens are regularly used*, the lighting design complies with CIBSE Lighting Guide 7 2 sections 2.4, 2.20 and 6.10 to 6.20. This gives recommendations highlighting: a. Limits to the luminance of the luminaires to avoid screen reflections. (Manufacturers' data for the luminaires should be sought to confirm this.) b. For uplighting, the recommendations refer to the luminance of the lit ceiling rather than the luminaire; a design team calculation is usually required to demonstrate this. c. Recommendations for direct lighting, ceiling illuminance, and average wall illuminance.	1	1	Credit targeted. M&E consultant to ensure requirements are captured throughout the design and within appropriate M&E specifications.	M&E Consultant

	KBCN1161 - The references given in the technical manual are out of date. When assessing the internal lighting in areas where computer screens are regularly used, the sections of the CIBSE standard to refer to are: **2.4, **2.20**, and **6.10 to 6.20**.* **External lighting** 10. All external lighting located within the refurbishment or fit-out zone is designed to provide illuminance levels that enable users to perform outdoor visual tasks efficiently and accurately, especially during the night. To demonstrate this, external lighting provided is specified in accordance with BS5489-1:2013 Lighting of roads and public amenity areas3 and BS EN 12464-2:2014 Light and lighting - Lighting of workplaces- Part 2: Outdoor workplaces. **Zoning and occupant control** 11. Internal lighting is zoned to allow for occupant control (see Relevant definitions) in accordance with the criteria below for relevant areas present within the building: **a. In office areas, zones of no more than four workplaces** **b. Workstations adjacent to windows/atria and other building areas separately zoned and controlled.** c. Seminar and lecture rooms: zoned for presentation and audience areas. d. Library spaces: separate zoning of stacks, reading and counter areas. e. Teaching space or demonstration area f. Whiteboard or display screen. g. Auditoria: zoning of seating areas, circulation space and lectern area h. Dining, restaurant, café areas: separate zoning of servery and seating/dining areas i. Retail: separate zoning of display and counter areas j. Bar areas: separate zoning of bar and seating area k. Wards or bedded areas: zoned lighting control for individual bed spaces and control for staff over groups of bed spaces l. Treatment areas, dayrooms, waiting areas: zoning of seating and activity areas and circulation space with controls accessible to staff.				
Hea 02 Indoor air quality	**Minimising sources of air pollution** **One credit - Indoor Air Quality (IAQ) plan** 1. An Indoor Air Quality Plan has been produced and implemented, with the objective of facilitating a process that leads to design, specification and installation decisions and actions that minimise indoor air pollution during the design, construction, and occupation of the building. The Indoor Air Quality Plan must consider the following: a. Removal of contaminant sources b. Dilution and control of contaminant sources c. Procedures for pre-occupancy flush out d. Protection of Heating Ventilation and Air Conditioning (HVAC)systems from sources of pollution during refurbishment/fit-out works e.g. dust. e. Procedures for protecting the indoor air quality of areas outside of the refurbishment or fit-out zone that may be affected by the refurbishment/fit-out works. f. Procedures for identifying and implementing third party testing and analysis required to ascertain that the contaminant sources have been removed effectively before occupancy. g. Commitments for maintaining indoor air quality in-use, e.g. maintenance and cleaning of the HVAC system, ductwork, and filters.	1	1	Credit targeted. Indoor Air Quality Consultant to be appointed and provide BREEAM compliant IAQP.	Indoor Air Quality Consultant / Client / Project Manager
	One credit- Ventilation	1	0 (+1)	Potential Credit	

	Refurbishment and fit-out works include measures to minimise the concentration and recirculation of pollutants in the building as follows: 2. Provide fresh air into the building in accordance with the criteria of the relevant standard for ventilation. 3. Design ventilation pathways to minimise the build-up of air pollutants in the building, as follows: a. In air conditioned and mixed mode buildings/spaces: i. The building's air intakes and exhausts are over 10m apart and intakes are over 20m from sources of external pollution, OR ii. The location of the building's air intakes and exhausts, in relation to each other and external sources of pollution, is designed in accordance with CEN/TR 16798-4:20171 Sections 8.8.1 to 8.8.4 b. In naturally ventilated buildings/spaces: openable windows/ventilators are over 10m from sources of external pollution. 4. Where present, HVAC systems must incorporate suitable filtration to minimise external air pollution, as defined in EN 16798-3:20171 Section B4.2. 5. Areas of the building subject to large and unpredictable or variable occupancy patterns have carbon dioxide (CO2) or air quality sensors specified and: a. In mechanical ventilated buildings/spaces: sensor(s) are linked to the mechanical ventilation system and provide demand-controlled ventilation to the space. b. In naturally ventilated buildings/spaces: sensors either have the ability to alert the building owner or manager when CO2 levels exceed the recommended set point or are linked to controls with the ability to adjust the quantity of fresh air, i.e. automatic opening windows/roof vents. *Note: when using this standard, the design values of category 1 buildings should be used			Subject to confirmation from MEP consultant that that criteria can be met.	
	One credit - Volatile organic compound (VOC) emission levels (products) 6. All decorative paints and varnishes specified meet the criteria in Table 20 7. At least five of the seven remaining product categories listed in Table 20 meet the testing requirements and emission levels criteria for volatile organic compound (VOC) emissions (listed in the table).	1	1	Credit targeted. Architect to ensure all decorative paints and varnishes specified align with the VOC requirements as detailed in Table 20 of the BRE guidance. Contractor Prelims document to capture requirement and inform Principal Contractors tender package.	Indoor Air Quality Consultant, Architect & Project Manager / Client on behalf of Principal Contractor
	Exemplary level criteria (up to 2 credits) **Minimising sources of air pollution - volatile organic compound (VOC) emission levels (products)** The following outlines the exemplary level criteria to achieve innovation credits for this BREEAM issue: <u>One credit</u> ➢ Criterion 6 has been achieved. ➢ All seven remaining product categories listed in Table 20 meet the testing requirements and emission levels criteria for Volatile Organic Compound (VOC) emissions (listed in the table). ➢ For products B – F listed in Table 20, the formaldehyde emission levels have been measured and found to be less than or equal to 0.06mg/m3 air in accordance with the approved testing standards in Table 20. <u>Two credits</u>	2	0	Credit not targeted. Exemplary criteria to be explored should Ventilation credit be achievable.	

	➢ Criterion 6 has been achieved. ➢ All seven remaining products categories listed in Table 20 meet the testing requirements and emission levels criteria for Volatile Organic Compound (VOC) emissions (listed in the table). ➢ For products B to F listed in Table 20, the formaldehyde emission levels have been measured and found to be less than or equal to 0.01mg/m3 air, in accordance with the approved testing standards in Table 20.				
	One credit - Volatile organic compound (VOC) emission levels (post construction) 8. The formaldehyde concentration level is measured post construction (but pre-occupancy) and is found to be less than or equal to 100µg/averaged over 30 minutes (WHO guidelines for indoor air quality: Selected pollutants, 20102). 9. The total volatile organic compound (TVOC) concentration level is measured post construction (but pre-occupancy) and found to be less than 300µg/over 8 hours, in line with the Building Regulation requirements. 10. Where VOC and formaldehyde levels are found to exceed the limits defined in criteria 8 and 9, the project team confirms the measures that have, or will be taken, in accordance with the IAQ plan, to reduce the levels to within these limits, including re-measurement. The IAQ Plan should outline what remedial measures are appropriate depending on the severity and type of the non-compliance with prescribed limits. Such measures may include re-testing as a matter of 'best practice'. 11. The testing and measurement of the above pollutants are in accordance with the following standards where relevant: a. BS ISO16000-4:2011 Diffusive sampling of formaldehyde in air b. BS ISO16000-6:2011 VOCs in air by active sampling c. BS ENISO16017-2:2003 VOCs- Indoor, ambient and workplace air by diffusive sampling d. BS ISO16000-3:20116 Formaldehyde and other carbonyls in air by active sampling 12. The measured concentration levels of formaldehyde (µg/m3) and TVOC (µg/m3) are reported, via the BREEAM Assessment Scoring and Reporting Tool	1	1	Credit targeted. Contractor Prelims document to capture requirement and inform Principal Contractors tender package.	Project Manager / Client on behalf of Principal Contractor
	Adaptability - Potential for natural ventilation **One credit (credit not applicable to prison buildings)** 13. The building ventilation strategy is designed to be flexible and adaptable to potential building occupant needs and climatic scenarios. This can be demonstrated as follows: a. Occupied spaces of the building are designed to be capable of providing fresh air entirely via a natural ventilation strategy. The following are methods deemed to satisfy this criterion dependent upon the complexity of the proposed system: i. Room depths are designed in accordance withCIBSEAM10 (section 2.4) to ensure effectiveness of any natural ventilation system. The openable window area in each occupied space is equivalent to 5% of the gross internal floor area of that room/floor plate, OR ii. The design demonstrates that the natural ventilation strategy provides adequate cross flow of air to maintain the required thermal comfort conditions and ventilation rates. This is demonstrated using ventilation design tool types that meet the requirements of CIBSEAM107 (or for education buildings by using the Class Vent tool). b. For fit-out projects (Part 3 assessments), local services are designed to provide fresh air via a natural ventilation strategy and are appropriately designed according to the room depth in accordance withCIBSEAM10. 14. The natural ventilation strategy is capable of providing at least two levels of user-control on the supply of fresh air to the occupied space (see compliance note CN9 for further details).	1	0	Credit not targeted.	

	Note: Any opening mechanisms must be easily accessible and provide adequate user-control over air flowrates to avoid draughts. Relevant industry standards for ventilation can be used to define 'adequate levels of fresh air' sufficient for occupancy and internal air pollution loads relevant to the building type.				
Hea 04 Thermal comfort	**One credit - Thermal modelling** 1. Thermal modelling has been carried out using software in accordance withCIBSEAM111 Building Energy and Environmental Modelling. 2. The software used to carry out the simulation at the detailed design stage provides full dynamic thermal analysis. For smaller and more basic building designs with less complex heating or cooling systems, an alternative fewer complex means of analysis may be appropriate (such methodologies must still be in accordance withCIBSEAM11). 3. The modelling demonstrates that: a. For air-conditioned buildings, summer and winter operative temperature ranges in occupied spaces are in accordance with the criteria set out in CIBSE Guide A Environmental design, Table 1.5; or other appropriate industry standard (where this sets a higher or more appropriate requirement/level for the building type). b. For naturally ventilated/free running buildings: i. Winter operative temperature ranges in occupied spaces are in accordance with the criteria set out in CIBSE Guide A Environmental design, Table 1.5; or other appropriate industry standard (where this sets a higher or more appropriate requirement/level for the building type). ii. The building is designed to limit the risk of overheating, in accordance with the adaptive comfort methodology outlined in CIBSE TM52: The limits of thermal comfort: avoiding overheating in European buildings. 4. Where undertaking a Part 4 assessment a competent person (e.g. chartered building services engineer) must assess the suitability of existing building services and controls to identify any changes that may be required as a result of fit-out works(e.g. as a result of changes to internal layout, occupant density, additional equipment that may increase cooling loads etc.). 5. For air-conditioned buildings, the PMV (predicted mean vote) and PPD (predicted percentage of dissatisfied) indices based on the above modelling are reported via the BREEAM assessment scoring and reporting tool.	1	1	Credit targeted. Energy consultant to be appointed to undertake BREEAM complaint thermal modelling assessment. Not currently included in Futura Brights scope of works. We can provide a fee for undertaking this work.	Energy consultant, Client / Project Manager
	One credit - Adaptability - for a projected climate change scenario 6. Criteria 1 to 4 of Thermal modelling credit are achieved. 7. The thermal modelling demonstrates that the relevant requirements set out in criterion 3 are achieved for a projected climate change environment (see Relevant definitions). 8. Where thermal comfort criteria are not met for the projected climate change environment, the project team demonstrates how the building has been adapted or designed to be easily adapted in the future using passive design solutions in order to subsequently meet the requirements under criterion 7. 9. For air-conditioned buildings, the PMV and PPD indices based on the above modelling are reported via the BREEAM assessment scoring and reporting too.	1	1	Credit targeted. Energy consultant to be appointed to undertake BREEAM complaint thermal modelling assessment. Not currently included in Futura Brights scope of works. We can provide a fee for undertaking this work.	Energy consultant, Client / Project Manager
	One credit - Thermal zoning and controls 1. Criteria 1 to 4 of Thermal modelling credit are achieved. 2. The thermal modelling analysis (undertaken for compliance with criteria 1 to 4) has informed the temperature control strategy for the building and its users. 3. The strategy for proposed heating/cooling system(s) demonstrates that it has addressed the following: a. Zones within the building and how the building services could efficiently and appropriately heat or cool these areas. For example, consider the different requirements for the central core of a building compared with the external perimeter adjacent to the windows.	1	1	Credit targeted. Energy consultant to be appointed to undertake BREEAM complaint thermal modelling assessment. Not currently included in Futura Brights scope of works. We can provide a fee for undertaking this work.	Energy consultant, Client / Project Manager

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b. Where specified, any new local cooling or heating services (or changes to existing services) are designed to ensure they do not conflict with core services (e.g. conflicts between two separate cooling systems, conflicts between core heating and locally provided cooling systems).
c. The degree of occupant control required for these zones, based on discussions with the end user (or alternatively building type or use specific design guidance, case studies, feedback) considers:
i. User knowledge of building services
ii. Occupancy type, patterns, and room functions (and therefore appropriate level of control required)
iii. How the user is likely to operate or interact with the system(s), e.g. are they likely to open windows, access thermostatic radiator valves (TRV) on radiators, change air-conditioning settings etc.
iv. The user expectations (this may differ in the summer and winter) and degree of individual control (i.e. obtaining the balance between occupant preferences, for example some occupants like fresh air and others dislike draughts).
d. How the proposed systems will interact with each other (where there is more than one system) and how this may affect the thermal comfort of the building occupants.
e. The need or otherwise for an accessible building user actuated manual override for any automatic systems.
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<td>Hea 05 Acoustic performance</td>
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Up to three credits are available for Industrial, Retail, Prisons, and ‘Other’ building types.

Where the building meets the acoustic performance standards and testing requirements detailed in Table 25 (see below) for all relevant functional areas.
<table>
<tr><td colspan="2">Industrial, Retail, Prisons and Other building types (two credits)</td></tr>
<tr><td colspan="2">First credit – Sound insulation and internal indoor ambient noise levels</td></tr>
<tr><td>Room Function</td><td>All room functions</td></tr>
<tr><td>Criteria</td><td>Internal indoor ambient noise Levels :
Indoor ambient noise levels comply with the design ranges given in BS 8233: 2014 unless otherwise stated below. Where the room types below are present, the appropriate criteria for ambient noise levels, sound insulation and acoustic privacy must also be achieved.</td></tr>
<tr><td>Testing requirement</td><td>Internal indoor ambient noise levels: A programme of pre-completion acoustic testing is carried out by a compliant test body in accordance with the acoustic testing and measurement procedures outlined in the Additional information section of this BREEAM issue</td></tr>
<tr><td colspan="2">Second credit - Reverberation</td></tr>
<tr><td>Room function</td><td>Rooms/areas used for speech or performance, including public speaking</td></tr>
<tr><td>Criteria</td><td>Achieve reverberation times compliant with Section 1 of BB93. In addition, or alternatively, if relevant to the assessed building; classrooms, seminar rooms and lecture theatres achieve reverberation times compliant with section 1 of BB93.</td></tr>
<tr><td>Testing requirement</td><td>Reverberation times within teaching and study spaces: A programme of acoustic measurements is carried out by a compliant test body to achieve the required performance standards set out in table 6 in section 1 of BB93. Measurements should be carried out in accordance with the ANC Good Practice Guide, Acoustic testing of Schools.

Open Plan teaching spaces: STI Measurements of the STI should be taken in at least one in ten typical student listening positions in the open plan spaces</td></tr>
</table>
</td>
<td>3</td>
<td>2</td>
<td>2 Credits targeted.

Suitably Qualified Acoustician to be appointed and provided BREEAM compliant Acoustics report.</td>
<td>Suitably Qualified Acoustician, Client / Project Manager, Architect</td>
</tr>
</table>

	in accordance with the ANC Good Practice Guide, Acoustic testing of Schools. Corridors and stairwells: installation of a specification compliant with the BB93 criteria demonstrates compliance. Reference is also made to the Notes below. Notes: Where the reverberation time required by the relevant standard is not appropriate for the type of space/building assessed, the acoustician must confirm why this is the case. In addition, the acoustician must set alternative appropriate reverberation times and provide these to demonstrate compliance. • Where undertaking a partial refurbishment or fit-out, the performance standards and testing requirements detailed in Table 25 for the following principles are applicable to each assessment part: a. Part 1: criteria for sound insulation and indoor ambient noise levels b. Part 2: criteria for indoor ambient noise levels only c. Part 3: criteria for sound insulation and indoor ambient noise levels d. Part 4: sound insulation and reverberation control **OR up to three credits** 1. Where a Suitably Qualified Acoustician (see relevant definitions) is appointed to define a bespoke set of performance requirements for all function areas in the building using the three acoustic principles defined in criterion 1, setting out the performance requirements for each and the testing regime required.				
Hea 06 Safety and security	**One credit - Security of site and building** 1. A Suitably Qualified Security Specialist (SQSS)* conducts an evidence-based Security Needs Assessment (SNA) during or prior to Concept Design (RIBA Stage 2 or equivalent), see CN9 where the refurbishment or fit-out zone comprises part of a larger building. 2. The SQSS develops a set of recommendations or solutions during or prior to Concept Design (RIBA Stage 2 or equivalent). These recommendations or solutions aim to ensure that the design of buildings, public and private car parks and public or amenity space are planned, designed, and specified to address the issues identified in the preceding SNA. 3. The recommendations or solutions proposed by the SQSS are implemented (see CN7). Any deviation from those recommendations or solutions will need to be justified, documented, and agreed in advance with a Suitably Qualified Security Specialist. ***Suitably Qualified Security Specialist (SQSS)** An individual achieving any of the following can be considered to be 'suitably qualified' for the purposes of compliance with BREEAM: 1. Crime Prevention Design Advisors (CPDA) or Architectural Liaison Officers (ALO), Designing Out Crime Officer (DOCO), Counter Terrorism Security Advisor (CTSA); or 2. A specialist registered with a BREEAM-recognised third party accreditation scheme for security specialists. 3. A practising security consultant that meets the following requirements: a. Minimum of three years relevant experience within the last five years. This experience must clearly demonstrate a practical understanding of factors affecting security in relation to construction and the built environment, relevant to the type and scale of the project being undertaken. b. Hold a suitable qualification relevant to security. c. Maintains (full) membership to a relevant professional body or accreditation scheme that meets the following: i. Has a professional code of conduct, to which members must adhere; and	1	0 (+1)	Credit potentially targeted. Confirmation of Suitably Qualified Security Specialist (SQSS) appointed during RIBA Stage 2 (Pre-planning) to provide set of recommendations or solutions to enhance security of site and building. **STAGE 2 CREDIT**	Suitably Qualified Security Specialist (SQSS) & Design Team where applicable, Client / Project Manager

	ii. Ongoing membership is subject to peer review.				
Energy					
Ene 01 Reduction of energy use and carbon emissions	**Up to fifteen credits - Whole building energy model (option 1)** 1. Calculate the Energy Performance Ratio for Non-Domestic Refurbishment (EPRNDR) and compare with the benchmark in Table 27 to determine the corresponding number of BREEAM credits.	15	8 (+7)	Credits targeted. **6 Credits minimum for BREEAM excellent** SBEM analysis needed	Energy consultant
	Exemplary level criteria The following outlines the exemplary level criteria to achieve up to five innovation credits for this BREEAM issue: **Two credits - Zero regulated carbon** ➢ The building achieves an EPRNDR ≥ 0.9 and zero net regulated CO2emissions (see Relevant definitions **Up to four credits - Zero regulated carbon and carbon neutral unregulated energy** ➢ Zero regulated carbon credit has been achieved. ➢ An equivalent percentage of the building's modelled regulated operational delivered energy consumption, as stipulated in Table 29, is generated by carbon neutral on-site or near-site sources and used to meet energy demand from unregulated building systems or processes. **Five credits - Carbon negative** 1. The building is carbon negative in terms of its total modelled operational delivered energy consumption, including regulated and unregulated energy (see Relevant definitions).	11	0	Credits not targeted.	
Ene 02 Energy monitoring	**One credit - Sub-metering of major energy consuming systems** 1. Energy metering systems are installed that enable at least 90% of the estimated annual energy consumption of each fuel to be assigned to the various end-use categories of energy consuming systems (see Methodology). 2. The energy consuming systems in buildings with a total useful floor area greater than 1,000m2 are metered using an appropriate energy monitoring and management system. 3. The systems in smaller buildings are metered either with an energy monitoring and management system or with separate accessible energy sub-meters with pulsed or other open protocol communication outputs, to enable future connection to an energy monitoring and management system (see Relevant definitions) 4. The end energy consuming uses are identifiable to the building users, for example through labelling or data outputs.	1	1	Credit targeted. **First sub metering credit mandatory for BREEAM excellent** M&E consultant to confirm feasibility.	M&E Consultant
	One credit - Sub-metering of high energy load and tenancy areas 5. An accessible energy monitoring and management system or separate accessible energy sub-meters with pulsed or other open protocol communication outputs to enable future connection to an energy monitoring and management system are provided, covering a significant majority of the energy supply to tenanted areas or, in the case of single occupancy buildings, relevant function areas within the building/unit.	1	1	Credit targeted. M&E consultant to confirm feasibility.	M&E Consultant
Ene 03 External lighting	**One credit** 1. The building has been designed to operate without the need for external lighting (which includes on the building, signs and at entrances). OR alternatively, where the building does have external lighting, one credit can be awarded as follows: 2. The average initial luminous efficacy of the external light fittings within the construction zone is not less than 60 luminaire lumens per circuit Watt.	1	1	Credit targeted. M&E consultant / Lighting consultant to confirm feasibility.	M&E Consultant / Lighting designer

	3. All external light fittings are automatically controlled to prevent operation during daylight hours and have presence detection in areas of intermittent pedestrian traffic.				
Ene 04 Low carbon design	**Passive design** **One credit - Passive design analysis** 1. The first credit within issue Hea 04 Thermal comfort has been achieved to demonstrate the building design can deliver appropriate thermal comfort levels in occupied spaces. 2. The project team carries out an analysis of the existing building fabric, form, site location and outline scheme design to influence decisions made during the Concept Design stage (RIBA Stage 2 or equivalent) and identifies opportunities for the implementation of passive design solutions and retrofit measures that reduce demands for energy consuming building services(see compliance note CN7). 3. The building uses passive design measures to reduce the total heating, cooling, mechanical ventilation and lighting loads and energy consumption in line with the findings of the passive design analysis and the analysis demonstrates a meaningful reduction in the total energy demand as a result (see compliance note CN19).	1	0	Credit not targeted. HEA 04 credit must be achieved as a pre-requisite to this criterion. FB has determined credit as a risk due to Stage 2 requirements and not currently being included in Futura Brights scope of works. **STAGE 2 CREDIT**	
	One credit - Free cooling 4. The passive design analysis credit is achieved. 5. The passive design analysis, carried out under criterion 2, includes an analysis of free cooling and identifies opportunities for the implementation of free cooling solutions. 6. The building is naturally ventilated or uses any combination of the free cooling strategies listed in CN8.	1	0	Credit not targeted. First ENE 04 credit required to be achieved. As credit has not been targeted or completed Free Cooling has not been targeted.	
	Low and zero carbon technologies **One credit - Low and zero carbon feasibility study** 7. A feasibility study has been carried out by the completion of the Concept Design stage (RIBA Stage 2 or equivalent) by an energy specialist (see Relevant definitions)to establish the most appropriate recognised local (on-site or near-site) low and zero carbon (LZC) energy source(s)for the building/development (see compliance note CN10). 8. A local LZC technology/technologies has/have been specified for the building/development in line with the recommendations of this feasibility study and this method of supply results in a meaningful reduction in regulated carbon dioxide (CO2) emissions (see compliance note CN19).	1	0	Credit not targeted. Energy consultant to be appointed to undertake feasibility study. FB has determined credit as a risk due to Stage 2 requirements and not currently being included in Futura Brights scope of works. **STAGE 2 CREDIT**	
Ene 05 Energy efficient cold storage	**One credit - Refrigeration energy consumption** 1. The refrigeration system, its controls and components have been designed, installed, and commissioned as follows: a. In accordance with the Code of Conduct for carbon reduction in the refrigeration retailsector1 (see other information) and BS EN378-2 Refrigeration systems and heat pumps- Safety and environmental requirements. b. Using robust and tested refrigeration systems/components, normally defined as those included on the Enhanced Capital Allowance (ECA) Energy Technology Product List (ETPL)2 or an equivalent list (see CN8 for a list of components) 2. The refrigeration plant has been commissioned to comply with the criteria for commissioning outlined in BREEAM issue Man 04 Commissioning and handover.	N/A	N/A	The scope of this issue covers freezer and cold storage rooms which are integral to the building, i.e. the store is specifically designed for the assessed development. **Credit not applicable to development.**	
	One credit - Greenhouse gas emissions from energy use 3. Criteria 1 and 2 have been achieved. 4. The installed refrigeration system demonstrates a saving in greenhouse gas emissions from energy use (CO2 eq.) over the course of its operational life.	N/A	N/A	The scope of this issue covers freezer and cold storage rooms which are integral to the building, i.e. the store is specifically designed for the assessed development. **Credit not applicable to development.**	
Ene 06 Energy efficient	**One credit - Energy consumption**	N/A	N/A	Credit not applicable to assessment as there are no lifts, escalators and/or moving walks included in the buildings.	

transportation systems	1. Where new lifts, escalators and/or moving walks (transportation types) are specified within refurbishment works: a. An analysis of the transportation demand and usage patterns for the building has been carried out to determine the optimum number and size of lifts, escalators and/or moving walks. b. The energy consumption has been estimated in accordance with BS ENISO25745 Energy performance of lifts, escalators and moving walks, Part 2: Energy calculation and classification for lifts(elevators) and/or Part 3 - Energy calculation and classification of escalators and moving walks, for one of the following: i. At least two types of system (for each transportation type required); OR ii. An arrangement of systems (e.g. for lifts, hydraulic, traction, machine room-less lift (MRL)); OR iii. A system strategy which is 'fit for purpose'. c. The use of regenerative drives should be considered, subject to the requirements in CN6. d. The transportation system with the lowest energy consumption is specified (when demonstrating compliance through either b.i. or b.ii.).			**Credit not applicable to development.**	
	Two credits - Energy efficient features 2. Criterion 1 is achieved for newly specified lifts. <u>Lifts</u> 3. For each newly specified lift, the following three energy efficient features are specified and for existing lifts within the project scope of influence, at least two of the following energy efficient features are specified: a. The lifts operate in a standby condition during off-peak periods. For example, the power side of the lift controller and other operating equipment such as lift car lighting, user displays, and ventilation fan switch off when the lift has been idle for a prescribed length of time. b. The lift car lighting and display lighting provides an average lamp efficacy, (across all fittings in the car) of >55 lamp lumens/circuit Watt. c. The lift uses a drive controller capable of variable speed, variable-voltage, and variable-frequency (VVVF) control of the drive motor. 4. Where the use of regenerative drives is demonstrated to save energy, they are specified. <u>Escalators and/or moving walks.</u> Each newly specified or existing escalator and/or moving walk complies with, or (in the case of existing) is retrofitted to comply with at least one of the following: 5. It is fitted with a load sensing device that synchronises motor output to passenger demand through a variable speed drive, OR 6. It is fitted with a passenger sensing device for automated operation (auto walk), so the escalator operates in standby mode when there is no passenger demand.	N/A	N/A	Credit not applicable to assessment as there are no lifts, escalators and/or moving walks included in the buildings. **Credit not applicable to development.**	
Ene 08 Energy efficient equipment	**Two credits** 1. Identify the building's unregulated energy consuming loads and estimate their contribution to the total annual unregulated energy consumption of the building, assuming a typical/standard specification. 2. Identify the systems and/or processes that use a significant proportion of the total annual unregulated energy consumption of the development and its operation. 3. Demonstrate a meaningful reduction in the total annual unregulated energy consumption of the building.	2	2	Credits targeted. M&E consultant and client to report on the equipment which is to be installed throughout the building and ensure the specified products align with the criteria as outlined in Table 32. Product specifications and manufacturers literature to be provided to demonstrate compliance.	M&E consultant & Client Project Manager / Client on behalf of Principal Contractor

	Table 32 contains solutions deemed to satisfy compliance for common examples of significant contributors to unregulated energy consumption, for a number of different building types/functions. Areas applicable to criteria include the following: A. Small power, plug in equipment. B. Swimming pool C. Communal laundry facilities with commercial sized appliances D. Data centre E. IT-intensive operating areas F. Residential areas with domestic scale appliances (individual and communal facilities) G. Healthcare H. Kitchen and catering facilities I. Internal display lighting J. Overheat warm air heaters (e.g., air curtains)			Client to confirm whether Principal Contractor will have a choice over the selection of equipment. If required, Contractor Prelims document to capture requirement and inform Principal Contractors tender package. CN1.1 Reuse of equipment - Reuse of electrical equipment does not comply by default, as it may not be the most energy efficient option. However, the credit could be awarded if either of the following criteria are demonstrated: 1. The existing electrical appliances meet the criteria for inclusion on the Enhanced Capital Allowance Scheme Energy Technology Product List. 2. Reusing the old equipment would, over the course of its life, be a more energy efficient option than specifying new equipment.	
Ene 09 Drying space	**One credit** 1. For self-contained dwellings: an adequate internal or external space with posts and footings, or fixings capable of holding: a. One to two bedrooms:4m+of drying line b. Three or more bedrooms:6m+of drying line. OR 2. Individual bedrooms: an adequate internal or external space with posts and footings, or fixings capable of holding: a. Two metres or more of drying line where drying facilities are provided for each room. OR b. Two metres of drying line per bedroom, for the first 30 bedrooms, plus one metre of drying line for each additional bedroom where drying facilities are shared. AND 3. The space (internal or external) is secure.	N/A	N/A	**The building contains no residential function therefore this issue is not applicable and will not require assessment.**	
Transport					
Tra 01 Sustainable transport solutions	**Up to five credits - Accessibility Index** 1. The public transport Accessibility Index (AI) for the assessed building is calculated and BREEAM credits awarded according to the building type. For Accessibility Index benchmarks see Table 34 in the Checklists and tables section. 2. The Accessibility Index is determined by entering the following information into the BREEAM Tra 01 calculator: 1. The distance (m)from the main building entrance to each compliant public transport node 2. The public transport type(s)serving the compliant node, e.g. bus, rail, or tram. 3. The average number of services stopping per hour at each compliant node during the operating hours of the building for a typical day (see compliance notes and Table 36 in the Additional information section).	3	1 (+2)	Credits targeted. Transport Consultant to confirm AI (up to 3 credits available)	Transport Consultant
	Up to three credits - Alternative transport measures 3. Where alternative transport measures are provided (see table below), credits can be awarded based upon the number of measures implemented as detailed. Credits: One — No. of measures required from Table 35: Two	2	2	2 credits targeted Design team to report on alternative measures which are to be implemented. Four measures required from opposite table	Transport Consultant, Architect.

	Two: Four Three: Six **Ref** / **Measure** A: For buildings with a fixed shift pattern, i.e. where building users will predominantly arrive/depart at set times, this measure is achieved where the building occupier provides or commits to providing a dedicated bus service to and from the building at the beginning and end of each shift/day. B: Where two credits under BREEAM issue Tra 03 have been achieved and the number of compliant cycle storage spaces provided is 10% greater than is required within 'Tra 03 Cyclist facilities', thus providing extra capacity for future growth and allowing more building users to cycle as a result C: Where two credits under BREEAM issue Tra 03 have been achieved and three or more types of compliant cycle facilities that are required within Tra 03 Cyclist facilities are to be provided, which includes the following facilities: showers, changing facilities, lockers, and drying spaces. D: Where at least 5% of the car parking spaces provided for the building users include electrical charging points, with a minimum of two spaces being provided E: Where priority spaces for car sharers are provided for at least 5% of the total car parking capacity for the building, with a minimum of two spaces being provided. F: Where the building has digital information points providing details on alternative transport options; this could include bus times, car sharing and cycle routes. These information points must be well positioned and accessible to all building users. G: Where on-site facilities have been provided that reduce the need to travel (taking into account the activities being undertaken in the building), for example the specification of video conferencing systems or where the appropriate amenities are available on-site. H: Where negotiations with local bus companies have resulted in an increase of the local service provision in the building's local area that results in improving the existing Accessibility Index (AI) for the building by at least one point I: Where another alternative measure has been implemented that is not listed above, which has been approved by BRE Global Limited. Any additional approved measures will be listed on the assessor FAQs and added to this list over time as and when BRE Global Limited re-issue the technical manual			Potential measures highlighted however this can be reallocated to align with client build intent and building design	
Tra 02 Proximity to amenities	**One credit (except for multi-residential buildings where two credits are available)** 1. Where a building is located within close proximity of, and accessible to, local amenities which are likely to be frequently required and used by building occupants, as outlined in table below. **Criteria** / **Building types** — **Type 1: Offices, Retail, Industrial, Courts** No. of BREEAM Credits: 1 No. of amenities: 2 Proximity (metres): 500 Appropriate food outlet: ✓ Access to cash: ✓ Access to a recreation/leisure facility for fitness/sports: ✓	1	0 (+1)	Potential Credit Targeted Transport consultant to review Architect to provide marked up drawings highlighting where facilities are in proximity to the Proposed Development. Designated route must be marked as safe pedestrian route (i.e. safe pedestrian crossings) not 'as the crow flies.	Transport Consultant, Architect
Tra 03 Cyclist facilities	**One credit - Cycle storage (excluding sheltered housing, care homes, supported living facilities and prison building types)** 1. Compliant cycle storage spaces that meet the minimum levels set out in Table 38 (see Checklists and tables) are installed (1 cycle space per 10 staff) Compliant cycle storage spacers must meet the following criteria: ➢ Cycles can be secured within spaces in rack(s). They are covered overhead, and the cycle racks 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.	1	1	Credit targeted. Architect to provide marked-up plans showing location of cycle storage and adequate cycle storage spaces have been provided in line with BRE criteria. Supporting calculations to have been provided demonstrating how no. of spaces has been determined for entire building.	Architect, Transport Consultant M&E consultant

	➢ The distance between each cycle rack, and cycle racks 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. ➢ The storage facility or entrance to the facility is 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. ➢ The cycle storage facility has adequate lighting; this could be demonstrated with the lighting criteria defined in BREEAM issue Hea 01 Visual comfort. The lighting must be controlled to avoid out-of-hours use and operation during daylight hours, where there is sufficient daylight in or around the facility.				
	One credit - Cyclist facilities (excluding sheltered housing, care homes and supported living facilities, student residencies, key accommodation, transport hub and MOD residential and prison building types) 2. Criterion 1 (Cycle Storage) has been achieved. 3. At least two of the following types of compliant cyclist facilities have been provided for all building users (including pupils where appropriate to the building type)-see Relevant definitions for the scope of each compliant cyclist facility: a. Showers b. Changing facilities c. Lockers d. Drying spaces. **Compliant cycle storage spaces** Compliant cycle storage spaces are defined as those that meet the following: 1. Cycles can be secured within spaces in rack(s). They are covered overhead, and the cycle racks are set in or fixed to a permanent structure (building or hardstanding). Alternatively, the cycle storage may be located in a locked structure fixed to, or part of, a permanent structure with appropriate surveillance. 2. The distance between each cycle rack, and cycle racks and other obstructions, e.g. a wall, allows for appropriate access to the cycle storage space to enable bikes to be easily stored and accessed. 3. The storage facility or entrance to the facility is in a prominent site location that is viewable or overlooked from either an occupied building or a main access to a building. In the scenario where cycle storage spaces are within the building, prominent signage should be provided to advertise their location to building users and cyclists. 4. The cycle storage facility has adequate lighting; this could be demonstrated with the lighting criteria defined in BREEAM issue Hea 01 Visual comfort. The lighting must be controlled to avoid out-of-hours use and operation during daylight hours, where there is sufficient daylight in or around the facility. **Compliant showers** Compliant showers are defined as those that meet the following: 1. Provision of one shower for every 10 cycle storage spaces, subject to a minimum provision of one shower. 2. Any building providing eight showers or more will comply regardless of the number of cycle storage spaces provided. 3. Both male and female users must be catered for, i.e. either separate showers within shared gender-specific facilities (required provision split 50-50) or single shower cubicles and changing space for mixed use. 4. The showers do not need to be dedicated to cyclists and can be those shared with other users/uses. **Compliant lockers** Compliant lockers are defined as those that meet the following: 1. The number of lockers is at least equal to the number of cycle spaces required.	1	1	Credit targeted. Confirmation on the two types of compliant cyclist facilities which have been provided for all building users. N.B all facilities have detailed criteria associated with them. Please consult BREEAM assessor for specific details.	Architect, Transport Consultant. M&E consultant

<table>
<tr><td></td><td>2. Lockers are either in, or adjacent to, compliant changing rooms, where provided.
3. The lockers are sized appropriately for the storage of a cyclist's equipment.

Compliant drying spaces
A compliant drying space is defined as a space that is specifically designed and designated for this purpose. it be provided with suitable finishes, adequate air movement around them to heating and ventilation dry and the facility to h ang wet clothes should with sufficient effectively. Examples of non-compliant spaces:
- Plant rooms: these are not specifically designed for the purpose and their use as a drying space may create a health and safety hazard.
- Coat hooks in cloakrooms or staff changing areas: these are not specifically designed and are unlikely to provide adequate ventilation or allow sufficient air movement to dry clothing effectively.</td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td>One credit - Cycle storage and cyclist facilities (sheltered housing, care homes and supported living facilities and prison building types only)
2. Where criteria 1 to 3 have been met for cycle space and cycle facilities requirements.</td><td>N/A</td><td>N/A</td><td>Credit not applicable as scheme is industrial.</td><td></td></tr>
<tr><td>Tra 04 Maximum car parking capacity</td><td>Up to two credits - Car parking capacity
1. The building's car parking capacity is compared to the maximum car parking capacity benchmarks in Table 39 and the relevant number of BREEAM credits awarded.
<table>
<tr><td>Building Accessibility Index</td><td colspan="3">Criteria</td><td rowspan="2">Credits</td></tr>
<tr><td></td><td><4</td><td>≥ 4 - < 8</td><td>≥ 8</td></tr>
<tr><td>Building type</td><td colspan="3">Max Parking capacity
1 space per x building users, where x is:</td><td></td></tr>
<tr><td rowspan="2">Office, industrial, student residences and key worker accommodation</td><td>3</td><td>4</td><td>5</td><td>1</td></tr>
<tr><td>4</td><td>5</td><td>6</td><td>2</td></tr>
</table>
2. For most building types, except those where stated, the benchmarks vary according to the building's public transport Accessibility Index (AI determined in accordance with BREEAM issue Tra 01 Sustainable transport solutions). Therefore, for these building types of the AI must be determined prior to assessing this issue. This is required to ensure that the building's car parking capacity is relative to the building's accessibility to the public transport network.</td><td>2</td><td>0 (+1)</td><td>Potential Credit Targeted

Architects and Transport consultant to liaise to confirm provision falls within BREEAM limits.</td><td>Transport Consultant, Client / Project Manager Architect</td></tr>
<tr><td>Tra 05 Travel plan</td><td>One credit
1. A travel plan has been developed as part of the feasibility and design stages.
2. A site-specific travel assessment/statement has been undertaken to ensure the travel plan is structured to meet the needs of the particular site and covers the following (as a minimum):
a. Where relevant, existing travel patterns and opinions of existing building or site users towards cycling and walking so that constraints and opportunities can be identified.
b. Travel patterns and transport impact of future building users.
c. Current local environment for walkers and cyclists (accounting for visitors who may be accompanied by young children).
d. Disabled access (accounting for varying levels of disability and visual impairment).
e. Public transport links serving the site.
f. Current facilities for cyclists.
2. The travel plan includes a package of measures to encourage the use of sustainable modes of transport and movement of people and goods during the building's operation and use.</td><td>1</td><td>1</td><td>Credit Targeted

Travel Plan to be produced by Transport assessor</td><td>Transport Assessor</td></tr>
</table>

<table>
<tr><td></td><td>3. If the occupier is known, they must be involved in the development of the travel plan and they must confirm that the travel plan will be implemented post refurbishment or fit-out and be supported by the building's management in operation.</td><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="6">Water</td></tr>
<tr><td rowspan="2">Wat 01 Water consumption</td><td>Up to five credits
1. An assessment of the efficiency of newly specified domestic water-consuming components and (where relevant) measures specific to retrofit existing devices is undertaken using the BREEAM Wat 01 calculator, including all fittings applicable to the project type as detailed in Table 42 of the BRE guidance. Where there are no fittings within the scope of refurbishment or fit-out works, or only minimal water-consuming fittings present or specified, refer to compliance notes 5 or 6 to determine how this issue should be assessed.
2. The water consumption (litres/person/day) for the assessed building is compared against a baseline performance and BREEAM credits awarded based upon Table below.

<table>
<tr><th>% Improvement</th><th>No. of BREEAM Credits</th></tr>
<tr><td>12.5</td><td>1</td></tr>
<tr><td>25</td><td>2</td></tr>
<tr><td>40</td><td>3</td></tr>
<tr><td>50</td><td>4</td></tr>
<tr><td>55</td><td>5</td></tr>
</table>

3. The efficiency of the following ‘domestic scale’ water-consuming components must be included in the assessment:
a. WCs
b. Urinals - 2
c. Taps (wash hand basins and where specified kitchen taps and waste disposal unit)
d. Showers
e. Baths
f. Dishwashers (domestic and commercial sized) -staff and crew kitchen- 3
g. Washing machine (domestic and commercial or industrial sized) - ~2

The BREEAM Wat 01 calculator defines the building types and activity areas for which the above components must be assessed.
4. Where a greywater and/or rainwater system is specified, its yield (l/person/day) is used to off-set non-potable water demand from components that would otherwise be supplied using potable water.
5. Any greywater systems must be specified and installed in compliance with BS8525-1:2010 Greywater Systems- Part 1 Code of Practice[1]. Any rainwater systems must be specified and installed in compliance with BS EN16941-1:2018 Onsite non-potable water systems. Systems for the use of rainwater[2].
6. Healthcare and prison buildings: refer to the relevant Compliance note for additional criteria regarding the specification of particular water-consuming component controls.</td><td>5</td><td>3 (+2)</td><td>4 Credits targeted.

One credit mandatory for BREEAM excellent

Client to confirm the newly fitted water-consuming components which will be specified for the project.

Product data and literature to be provided of the components being specified for the project including the quantity of components being purchased.</td><td>Architect, M&E consultant, Client, Project Manager / Client on behalf of Principal Contractor</td></tr>
<tr><td>Exemplary level criteria
For exemplary level criteria ensure a percentage improvement of 65% is achieved</td><td>1</td><td>0</td><td>Credit not targeted.

Should performance be confirmed as 65% following review of Wat 01 evidence credit will not be targeted.</td><td></td></tr>
<tr><td>Wat 02 Water monitoring</td><td>One credit
1. The specification of a water meter on the mains water supply to each building; this includes instances where water is supplied via a borehole or other private source.
2. Water-consuming plant or building areas, consuming 10% or more of the building’s total water demand, are either fitted with easily accessible sub-meters or have water</td><td>1</td><td>1</td><td>Credit targeted.

Part 2 criteria 1 mandatory for BREEAM excellent

M&E consultant to confirm criteria will be met.</td><td>M&E Consultant</td></tr>
</table>

	monitoring equipment integral to the plant or area. This applies to recycled water, such as rainwater, greywater, or process water, as well as mains water. 3. Each meter (main and sub) has a pulsed or other open protocol communication output to enable connection to an appropriate utility monitoring and management system, e.g. a building management system (BMS), for the monitoring of water consumption. 4. If the refurbishment zone is within a site that has an existing BMS, managed by the same occupier/owner (as the space undergoing refurbishment or fit-out), the pulsed/digital water meter(s)for the refurbishment or fit-out zone must be connected to the existing BMS. 5. If the refurbishment or fit-out zone is within a building that is leasehold, the pulsed/digital water meter(s)for the refurbishment or fit-out zone must be connected to the incoming water supply for water using equipment in tenanted areas.			Schematic to be provided marking up water meter on mains water supply and main and sub meter having connection to BMS system.	
Wat 03 Water leak detection	**One credit - Leak detection system** 1. A leak detection system which is capable of detecting a major water leak on the mains water supply within the building and between the building and the utilities water meter is installed. The leak detection system must be: a. A permanent automated water leak detection system that alerts the building occupants to the leak OR an inbuilt automated diagnostic procedure for detecting leaks is installed. b. Activated when the flow of water passing through the water meter/data logger is at a flowrate above a pre-set maximum for a pre-set period of time. c. Able to identify different flow and therefore leakage rates, e.g. continuous, high, and/or low level, over set time periods. d. Programmable to suit the owner/occupiers' water consumption criteria. e. Where applicable, designed to avoid false alarms caused by normal operation of large water-consuming plant such as chillers. **One credit - Flow control devices** 2. Flow control devices that regulate the supply of water to each WC area/facility according to demand are installed (and therefore minimise water leaks and wastage from sanitary fitting networks). See CN11.	2	2	Credit targeted. M&E consultant to confirm criteria will be met. Leak detection literature to be provided demonstrating compliance with the associated criteria. Supporting schematic to be provided demonstrating inclusion of leak detection system and flow control devices within building systems. *KBCN0688 - For the credit to be awarded, all the pipework in a development that the owner/occupier has responsibility for must meet the leak detection criteria. In situations where third party organisations place restrictions on the pipework that can be metered, the scope of works (and hence placement of a meter for the use of leak detection) will start immediately after this point. For instance, where the utility company's meter is placed midway between the boundary and the building, the scope of leak detection for BREEAM purposes will be between utility meter and the building, not to the boundary (as stated in the guidance).*	M&E Consultant
Wat 04 Water efficient equipment	**One credit** 1. The design team has identified all unregulated water demands that could be realistically mitigated or reduced. 2. System(s) or processes have been identified to reduce the unregulated water demand, and demonstrate, through either good practice design or specification, a meaningful reduction in the total water demand of the building.	1	1	Credit targeted. Design team members to confirm the unregulated water demands on site and report as to how these have been mitigated or reduced further.	M&E consultant
Materials					
Mat 01 Environmental impact of materials	**Up to six credits (option 1): Project lifecycle assessment study** 1. The project uses a life cycle assessment (LCA)tool or undertakes a building information model life cycle assessment (BIM LCA) to measure the life cycle environmental impact of the refurbishment or fit-out works. 2. The LCA covers new materials as relevant to the assessment parts listed in CN7 and indicated in the 'Materials assessment scope 'section of the BREEAM Refurbishment and Fit-out Mat 01 calculator (Part B of the tool). 3. The mandatory requirements identified in the 'Materials assessment tool, method, and data 'section of the BREEAM Refurbishment and Fit-out Mat 01 calculator have been met. 4. A member of the project team completes the BREEAM Refurbishment and Fit-out Mat 01 calculator using parts A and B and determines a score based on the robustness of the LCA	6	3	Credits targeted. LCA consultant to be appointed to complete Life Cycle Assessment.	LCA consultant, Architect, MEP, Client, Project Manager

<table>
<tr><td rowspan="2"></td><td>tool used (left side of the tool) and the scope of the assessment in terms of the materials specified that have been considered (right side of the tool)
5. Where the design team can demonstrate how the LCA has benefited the building in terms of measuring and reducing its environmental impact. See CN14
6. Where the design team submit the LCA tool output (e.g. Building Information Model (BIM)) for assessing the building to BRE Global Limited (via the project's appointed BREEAM assessor) to inform future potential LCA benchmarking for BREEAM
7. Credits are awarded in accordance with Table below:
<table><tr><th>Percentage of BREEAM Mat 01 Calculator points achieved</th><th>Credits</th></tr><tr><td>Option 1</td><td>Industrial</td></tr><tr><td>10</td><td>1</td></tr><tr><td>30</td><td>1</td></tr><tr><td>50</td><td>1</td></tr><tr><td>65</td><td>2</td></tr><tr><td>75</td><td>2</td></tr><tr><td>80</td><td>2</td></tr></table></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Exemplary level criteria
For exemplary level criteria ensure a percentage of 85 calculator points are achieved.</td><td>1</td><td>0</td><td>Credit not targeted</td><td></td></tr>
<tr><td rowspan="4">Mat 03 Responsible sourcing of materials</td><td>Pre-requisite
1. All timber and timber-based products used on the project is Legally harvested and traded timber.
Note:
a. It is a minimum requirement for achieving a BREEAM rating (for any rating level) that compliance with criterion 1 is confirmed.
b. For other materials there are no pre-requisite requirements at this stage.</td><td>✓</td><td>✓</td><td>Requirements targeted.

Pre requisite criteria 1 mandatory for BREEAM excellent

Contractor Prelims document to capture requirement and inform Principal Contractors tender package.</td><td>Project Manager / Client on behalf of Principal Contractor</td></tr>
<tr><td>One credit - Sustainable procurement plan
2. The Principal Contractor sources materials for the project in accordance with a documented Sustainable Procurement Plan.</td><td>1</td><td>1</td><td>Credit targeted.

Contractor Prelims document to capture requirement and inform Principal Contractors tender package.</td><td>Project Manager / Client on behalf of Principal Contractor</td></tr>
<tr><td>Up to 3 credits - Responsible sourcing of materials (RSM)
3. One credit can be awarded where at least three of the material types listed in Table 53 'Material categories 'has been responsibly sourced from one of the responsible sourcing schemes recognised by BREEAM as detailed Guidance Note 18.
4. Up to three of the available RSM credits can be awarded where the applicable building materials are responsibly sourced in accordance with the BREEAM methodology, as defined in steps 1 to 2 in the Methodology.
<table><tr><th>RSM Credits</th><th>% of available RSM points achieved</th></tr><tr><td>3</td><td>≥ 54%</td></tr><tr><td>2</td><td>≥ 36%</td></tr><tr><td>1</td><td>≥ 18%</td></tr></table></td><td>3</td><td>2</td><td>Credit targeted.

Design team to ensure all materials specified for the project are compliance with BREEAM methodology and GN18.

Contractor to ensure a minimum of ≥ 36% of the materials procured for the site are responsibly sourced in accordance with the BREEAM methodology.</td><td>Project Manager / Client on behalf of Principal Contractor</td></tr>
<tr><td>Exemplary level criteria
The following outlines the exemplary level criteria to achieve one innovation credit for this BREEAM issue:
➢ Where at least 70% of the available RSM points are achieved</td><td>1</td><td>0</td><td>Credit not targeted.

Should Responsible sourcing of materials criteria exceed 70% exemplary criteria will be targeted.</td><td></td></tr>
<tr><td>Mat 04 Insulation</td><td>One credit - Embodied impact
1. Any new insulation specified for use within the following building elements must be assessed:
a. External walls
b. Ground floor</td><td>1</td><td>1</td><td>Credit targeted.

Design team to confirm insulation specification which is being specified for the site.</td><td>Design team, Project Manager / Client on behalf of</td></tr>
</table>

	c. Roof d. Building services. 2. The Insulation Index for the building fabric and services insulation is the same as or greater than 2.5. See the Methodology section for a description of calculating the Insulation Index.			Contractor Prelims document to capture requirement and inform Principal Contractors tender package.	Principal Contractor
Mat 05 Designing for durability and resilience	**One credit** <u>Protecting vulnerable parts of the building from damage</u> 1. The building incorporates suitable durability and protection measures or designed features/solutions to prevent damage to vulnerable parts of the internal and external building and landscaping elements. This must include, but is not necessarily limited to: a. Protection from the effects of high pedestrian traffic in main entrances, public areas, and thoroughfares (corridors, lifts, stairs, doors etc.). b. Protection against any internal vehicular/trolley movement within 1m of the internal building fabric in storage, delivery, corridor, and kitchen areas. c. Protection against, or prevention from, any potential vehicular collision where vehicular parking and manoeuvring occurs within 1m of the building façade for all car parking areas and within 2m for all delivery areas. <u>Protecting exposed parts of the building from material degradation</u> 2. Environmental factors have been identified that are relevant to the site location (see Table 59) 3. Existing applicable building elements that are exposed to any relevant environmental factors have been identified. 4. Existing applicable building elements have been surveyed have been assessed to identify impacts of material degradation effects including an assessment to grade the severity of any degradation effects. Design and specification measures have been developed to repair and protect existing elements according to the severity of any degradation affects, to limit degradation. Where it is not feasible to implement measures to limit material degradation for existing elements, justification should be provided. 5. Newly specified materials or newly constructed elements (e.g. a new external wall) within the scope of refurbishment or fit-out works in corporate appropriate design and specification measures to limit material degradation due to environmental factors (See Methodology).	1	1	Credit targeted. Architect, Landscape Architect, Façade Consultant / Structural Engineer to provide marked up drawings stating the specified protection measures which have been included throughout the building.	Entire design team
Mat 06 Material efficiency	**One credit** 1. Opportunities have been identified, and appropriate measures investigated and implemented within the scope of refurbishment or fit-out works, to optimise the use of materials through building design, procurement, refurbishment, maintenance, and end of life. 2. The above is carried out by the design/construction team in consultation with the relevant parties at each of the following RIBA stages: a. Preparation and Brief b. Concept Design c. Developed Design d. Technical Design e. Construction.	1	1	Credit targeted. Design team to report on the ongoing project engagement which has been made regarding material efficiency. Supporting examples of evidence include: ➢ Reports (at Preparation and Brief stage) outlining the activity relating to material efficiency (ideas discussed, analysis and decisions taken) ➢ Drawings or building information model (BIM), calculations showing reduction of material use through design (Concept Design/Developed Design stages) ➢ Meeting notes, construction program, responsibilities schedule (indicating parties consulted). **STAGE 1-4 CREDIT**	Entire design team

Waste					
Wst 01 Project waste management	**One credit - Pre-refurbishment audit** 1. The client shall ensure that a pre-refurbishment audit of all existing buildings, structures, or hard surfaces within the scope of the refurbishment or fit-out zone is completed. The requirements for carrying out an appropriate pre-refurbishment audit are: a. The audit should be carried out at the Concept Design Stage (equivalent to RIBA stage 2) prior to strip-out or demolition work in order to use the audit results to guide the design, consideration of materials that can be reused, and to set targets for waste management and ensure all contractors are engaged in the process of maximising high grade reuse and recycling opportunities. b. The audit should be carried out by a competent person (see Relevant Definitions) who has appropriate knowledge of buildings, waste and options for the reuse and recycling of different waste streams. c. Actual waste arisings and waste management routes used should be compared with those forecasts from the audit and barriers to achieving targets should be investigated. The audit must be referenced in the Resource Management Plan (RMP) and cover: a. Identification and quantification of the key materials where present on the project b. Potential applications and any related issues for the reuse and recycling of the key materials in accordance with the waste hierarchy c. Identification of local reprocessors or recyclers for recycling of materials d. Identification of overall recycling rate for all key materials e. Identification of reuse targets where appropriate. f. Identification of overall landfill diversion rate for all key materials.	1	1	Credit targeted. Pre-refurbishment audit to be provided. **STAGE 2 CREDIT**	Principle Contractor
	Up to two credits - Reuse and direct recycling of materials 2. Where, from the waste generated by the refurbishment and fit-out works, waste material types detailed in Table 65 are either directly re-used on-site or off-site or are sent back to the manufacturer for closed loop recycling. 3. One credit is achieved where 50% of the total available points for the waste material types detailed in Table 65, that are present on the project have been achieved. 4. **Two credits are achieved where 75% of the total available points for the waste material types detailed in Table 65, that are present on the project have been achieved.** Please note that in most instances any materials specified in Table 65 that are sent to a Material Recovery Facility (MRF) for recovery does not qualify for this credit. See compliance note CN3, Wst 01 Project waste management for further details.	2	2	Credits targeted Design team to confirm whether process has / will be undertaken. Contractor Prelims document to capture requirement and inform Principal Contractors tender package. A minimum of 75% (two credits) targeted.	Principal Contractor Design team, Project Manager / Client on behalf of Principal Contractor
	Up to three credits - Resource efficiency 5. Develop and implement a compliant Resource Management Plan covering the waste arisings from the refurbishment or fit-out project with the aim of minimising waste (see Relevant definitions), recording and reporting accurate data on waste arisings, excluding strip-out works waste. 6. The non-hazardous waste relating to on-site refurbishment or fit-out and dedicated off-site manufacture or fabrication processes generated by the building's design and construction meets, or exceeds, the resource efficiency benchmarks set out in Table 62 and Table 63 as relevant to the project type. **BREEAM Credits** / **Amount of construction waste generated per 100m² (gross internal floor area)** **M³** / **Tonnes** One: ≤ 11.3 / ≤ 3.5 Two: ≤ 4.5 / ≤ 1.2 Three: ≤ 2.1 / ≤ 0.4	3	2	2 credits targeted. Contractor Prelims document to capture requirement and inform Principal Contractors tender package. **Reference Pre-refurbishment audit in RMP**	Project Manager / Client on behalf of Principal Contractor

	Exemplary level ≤ 1.4 ≤ 0.3				
Wst 02 Recycled aggregates	**One credit - Recycled aggregates** 1. The percentage of high-grade aggregate that is recycled or secondary aggregate, specified in each application (present) must meet the following minimum % levels (by weight or volume) to contribute to the total amount of recycled or secondary aggregate, as specified in Table 68. 2. The total amount of recycled or secondary aggregate specified, and meeting criterion 1, is greater than 25% (by weight or volume) of the total high-grade aggregate specified for the project. Where the minimum level in criterion 1 is not met for an application, all the aggregate in that application must be considered as primary aggregate when calculating the total high-grade aggregate specified. 3. The recycled or secondary aggregates are EITHER: a. Construction, demolition, and excavation waste obtained on-site or off-site, OR b. Secondary aggregates obtained from a non-construction post-consumer industrial by product source (see Relevant definitions section).	N/A	N/A	**Credit not applicable.** Principal Contractor to advise on feasibility of criteria. Contractor Prelims document to capture requirement and inform Principal Contractors tender package. CN8 - Where no high-grade aggregates will be used in a refurbished scheme project, this credit is not applicable and will be filtered out of the assessment. In the refurbishment and fit-out scheme, existing structural elements are generally retained, therefore it would not be appropriate to account for the aggregate within these.	
	Exemplary level criteria The following outlines the exemplary level criteria to achieve one innovation credit for this BREEAM issue. 4. The percentage of high-grade aggregate that is recycled or secondary aggregate, specified in each application (present) must meet the exemplary minimum levels (by weight or volume), as defined in Table 68. Where this minimum level is not met, all the aggregate in that application must be considered as primary aggregate when calculating the total high-grade aggregate specified. 5. Where the total amount of recycled or secondary aggregate specified is greater than 35% (by weight or volume) of the total high-grade aggregate specified for the project. Where the minimum level in criterion 1 is not met for an application, all the aggregate in that application must be considered as primary aggregate when calculating the total high-grade aggregate specified. 6. The contributing recycled or secondary aggregate must not be transported more than 30 km by road transport.	N/A	N/A	**Credit not applicable.** The criteria for exemplary credit are associated with WST 02.	
Wst 03 Operational waste	**One credit - Operational waste** 1. Dedicated space(s) is provided for the segregation and storage of operational recyclable waste volumes generated by the assessed building/unit, its occupant(s), and activities. This space must be: a. Clearly labelled, to assist with segregation, storage, and collection of the recyclable waste streams b. Accessible to building occupants or facilities operators for the deposit of materials and collections by waste management contractors. c. Of a capacity appropriate to the building type, size, number of units (if relevant) and predicted volumes of waste that will arise from daily/weekly operational activities and occupancy rates. 2. Where the consistent generation in volume of the appropriate operational waste streams is likely to exist, e.g. large amounts of packaging or compostable waste generated by the building's use and operation, the following facilities are provided: a. Static waste compactor(s) or baler(s); situated in a service area or dedicated waste management space. b. Vessel(s) for composting suitable organic waste resulting from the building's daily operation and use; OR adequate space(s)for storing segregated food waste and compostable organic material prior to collection and delivery to an alternative composting facility. c. Where organic waste is to be stored/composted on-site, a water outlet is provided adjacent to or within the facility for cleaning and hygiene purposes.	1	1	Credit targeted. **Credit mandatory for BREEAM excellent** BREEAM compliant Operational Waste Management Strategy to be provided reporting on associated requirements. The following guide for minimum storage space provision should be used: 1. At least 2m² per 1000m² of net floor area for buildings < 5000m² **2. A minimum of 10m² for buildings ≥ 5000m²** 3. An additional 2m² per 1000m² of net floor area where catering is provided (with an additional minimum of 10m² for buildings ≥ 5000m²). The net floor area should be rounded up to the nearest 1000m².	Architect, Project Manager, Client.

Wst 04 Speculative finishes	**One credit - Interior finishes for category A projects** **Office building types only** 1. For tenanted areas (where the future occupant is not known), prior to full fit-out works, new interior finishes (including carpets, other floor finishes, ceiling finishes and any other interior finishes) have been installed in a show area only. 2. In a building being refurbished or fitted out for a specific occupant, that occupant has selected (or agreed to) the specified interior finishes.	N/A	N/A	**Not applicable to building type.**	
Wst 05 Adaptation to climate change	**One credit - Structural and fabric resilience** 1. Conduct a climate change adaptation strategy appraisal for structural and fabric resilience by the end of Concept Design (RIBA Stage 2 or equivalent), in accordance with the following approach: a. Carry out a systematic (structural and fabric resilience specific) risk assessment to identify and evaluate the impact on the building over its projected life cycle from expected extreme weather conditions arising from climate change and, where feasible, mitigate against these impacts. The assessment should cover the following stages: i. Hazard identification ii. Hazard assessment iii. Risk estimation iv. Risk evaluation v. Risk management	1	1	Credit targeted. Project team to provide Stage 2 Adaptation Strategy Appraisal. **STAGE 2 CREDIT**	Architect, Structural consultant, Landscape Architect, M&E consultant, Client
	Exemplary level criteria – Responding to climate change. A holistic approach to the design and refurbishment or fit-out of the current building's life cycle, to mitigate against the impacts of climate change, is represented by the achievement of these criteria. The following outlines the exemplary level criteria to achieve one innovation credit for this BREEAM issue: 2. Achievement of criterion 1, the structural and fabric resilience criterion in this issue, and the following criteria points or credits (link to Wst 05): <u>Hea 04 Thermal comfort</u> (prevent increasing risks of overheating) ➢ Criterion 7 in the second credit of the Hea 04 issue has been achieved. <u>Ene 01 Reduction of energy use and carbon emissions</u> (maximise energy efficiency contributing to low carbon emissions resulting from increasing energy demands) ➢ At least eight credits in this issue have been achieved. <u>Ene 04 Low carbon design</u> (maximise opportunities to avoid unnecessary carbon emissions) ➢ The Passive design analysis credit in this issue has been achieved. <u>Wat 01 Water consumption</u> (minimise water demands in periods of drought) ➢ A minimum of three credits in this issue have been achieved. <u>Mat 05 Designing for durability and resilience</u> (avoid increased risks of deterioration and higher maintenance demands) ➢ Criterion 2 relating to material degradation in this issue has been achieved.	1	0	Credit not targeted. Credit requires Structural fabric and resilience to be targeted and achieved as well as the other associated credits as specified in list in left hand column.	

	Pol 03 Flood risk management and reducing surface water run-off (minimise the risks of increased flood risk and surface water run-off affecting the site or others) ➢ Flood risk - A minimum of one credit has been achieved. ➢ Surface water run-off – two credits have been achieved.				
Wst 06 Functional adaptability	**One credit - Functional adaptability** A building-specific functional adaptation strategy study has been undertaken by the client and design team by Concept Design (RIBA Stage 2 or equivalent), which includes recommendations for measures to be incorporated to facilitate future adaptation. 1. Functional adaptation measures (see examples in Table 69) have been adopted in the design by Technical Design stage (RIBA Stage 4 or equivalent) in accordance with the functional adaptation strategy recommendations, where practical and cost effective. Omissions have been justified in writing to the assessor.	1	1	Credit targeted. Early-stage Functional Adaptation Strategy Study to be provided. **STAGE 2 CREDIT** **STAGE 4 CREDIT**	Architect, Structural consultant, M&E consultant, Client.
Land Use and Ecology					
LE 02 Protection of ecological features	**One credit - Protection of ecological features** 1. All existing features of ecological value within and surrounding the refurbishment or fit-out zone and site boundary area are adequately protected from damage during clearance, site preparation and refurbishment or fit-out activities in line with BS42020:2013[1]. 2. In all cases, the principal contractor is required to construct ecological protection recommended by the Suitably Qualified Ecologist (SQE), prior to any preliminary site refurbishment or fit-out or preparation works (e.g. erection of temporary site facilities). KBCN0977 Aircraft safety – developments in the proximity of airports Where it can be demonstrated that an assessed development, within or adjacent to an airport or similar must restrict the ecological value of the site for reasons of aircraft safety (mitigating the risk of bird-strikes to meet ICAO/EASA/CAA or equivalent regulations), the approach for some issues in the Land Use and Ecology category can be adjusted. If in these circumstances, the client wishes to enhance ecological value on an external site, outside of the main development site, this can be considered in the following way for each issue: **Ecological value of site and protection of ecological features:** The development site only must be assessed, but the recommendations may be tailored to suit the requirements of the relevant legislation.	1	1	Credit targeted. Contractor Prelims document to capture requirement and inform Principal Contractors tender package. Ecology report to be provided informing on preparation of site and recommendations.	Suitably Qualified Ecologist (SQE), Project Manager / Client on behalf of Principal Contractor
LE 04 Enhancing site ecology	**One credit - Ecologist's report and recommendations** 1. A suitably qualified ecologist (SQE) has been appointed by the client or their project representative by the end of the Preparation and Brief stage (RIBA Stage 1 or equivalent) to advise on enhancing the ecology of the site at an early stage. 2. The SQE has provided an Ecology Report with appropriate recommendations for the enhancement of the site's ecology at Concept Design stage (RIBA Stage 2 or equivalent). The report is based on a site visit/survey by the SQE (see also CN6). 3. The early-stage advice and recommendations of the Ecology Report for the enhancement of site ecology have been, or will be, implemented in the refurbishment or fit-out. KBCN0977 Aircraft safety – developments in the proximity of airports **Enhancing site ecology:** The development site and the external site must be included in the SQE's report and recommendations, albeit that, for the development site, the approach may to be to restrict biodiversity. Enhancements implemented in-line with the recommendations of the SQE are likely to apply to the external site.	1	0 (+1)	Credit potentially targeted dependent on whether ecologist was signed on FB identified as potential issue due to early-stage requirements. Design team to advise whether SQE has been appointed within the early stages of the project programme. Supporting Ecology report to be provided including recommendations for enhancement of site ecology at Concept Design. Recommendations to be captured in Landscaping strategy. Contractor Prelims document to capture requirement and inform Principal Contractors tender package. **STAGE 1 CREDIT** **STAGE 2 CREDIT**	Suitably Qualified Ecologist (SQE), Project Manager / Client on behalf of Principal Contractor

<table>
<tr><td>LE 05 Long term impact on biodiversity</td><td>

Up to two credits

1. Where a Suitably Qualified Ecologist (SQE) is appointed prior to commencement of activities on-site and they confirm that all relevant UK and EU legislation relating to the protection and enhancement of ecology has been complied with during the refurbishment or fit-out process.
2. Where a landscape and habitat management plan, appropriate to the site, is produced covering at least the first five years after project completion in accordance with BS42020:2013[1] Section 11.[1]. This is to be handed over to the building owner/occupants for use by the ground's maintenance staff.
3. Where additional measures to improve the assessed site's long-term biodiversity are adopted, according to Table 70.

Where criteria 1 to 3 are met credits can be awarded as follows:

<table>
<tr><th>No. of credits</th><th>No. of additional measures</th></tr>
<tr><td>1</td><td>2</td></tr>
<tr><td>2</td><td>4</td></tr>
</table>

<table>
<tr><td rowspan="3">Credits</td><td colspan="5">Applicable additional measures</td></tr>
<tr><td>All</td><td>4</td><td>3</td><td>2</td><td>1</td></tr>
<tr><td colspan="5">Number of additional measures to assess</td></tr>
<tr><td>1</td><td>2</td><td>2</td><td>2</td><td>N/A</td><td>N/A</td></tr>
<tr><td>2</td><td>4</td><td>4</td><td>3</td><td>2</td><td>1</td></tr>
</table>

KBCN0977 Aircraft safety – developments in the proximity of airports
Long term impact on biodiversity: Both sites must be considered in the SQE's report, albeit that, for the development site, the approach may to be to restrict biodiversity. Credits for additional measures to improve the site's long-term biodiversity can be awarded on the basis of adopting these for the external site only, in line with the guidance.

</td><td>2</td><td>2</td><td>2 credits Targeted

Client to confirm whether SQE has been appointed to provide LHMP.

BREEAM Compliant Ecology report and Landscape and Habitat Management Plan to be provided by SQE.

Anticipated 4 additional measures will be included on site to improve the assessed sites long term biodiversity (2 credits)</td><td>Suitably Qualified Ecologist (SQE).</td></tr>
<tr><td colspan="6">Pollution</td></tr>
<tr><td rowspan="3">Pol 01 Impact of refrigerants</td><td>

Three credits - No refrigerant use

1. Where the building does not require the use of refrigerants in existing and new systems within its installed plant/systems.

OR where the building uses refrigerants, in existing or new installed systems and plant:

</td><td>3</td><td>0</td><td>No credits targeted as scheme is including refrigerants.

M&E consultant to confirm whether site will include any refrigerants or not.</td><td>M&E Consultant</td></tr>
<tr><td>

Pre-requisite

2. All systems (with electric compressors) must comply with the requirements of EN378:2016 and EN378-2:2016[1] and where refrigeration systems containing ammonia are installed, the Institute of Refrigeration Ammonia Refrigeration Systems Code of Practice.

</td><td>✓</td><td>✓</td><td>Requirements targeted.

M&E consultant to confirm criteria will be included into M&E specifications.</td><td>M&E Consultant</td></tr>
<tr><td>

Two credits - Impact of refrigerant

3. Where the systems using refrigerants have Direct Effect Life Cycle CO_2 equivalent emissions (DELC CO_2e) of ≤ 100 kgCO_2e/kW cooling/heating capacity. To calculate the DELC CO_{2e} please refer to the Relevant definitions in the Additional information section and the Methodology section.

OR

4. Where air-conditioning or refrigeration systems are installed, the refrigerants used have a Global Warming Potential (GWP) ≤ 10.

OR

One credit - Impact of refrigerant

5. Where the systems using refrigerants have Direct Effect Life Cycle CO_2 equivalent emissions (DELC CO_2e) of ≤ 1000 kgCO2e/kW cooling/heating capacity.

</td><td>2</td><td>2</td><td>2 Credits targeted

M&E consultant to confirm where refrigerants are being specified the criteria which will be met.</td><td>M&E Consultant</td></tr>
</table>

<table>
<tr><td></td><td>One credit - Leak detection
6. Where systems using refrigerants have a permanent automated refrigerant leak detection system installed; OR where
an inbuilt automated diagnostic procedure for detecting leakage is installed. In all instances a robust and tested refrigerant leak detection system must be installed and must be capable of continuously monitoring for leaks.
6. The system must be capable of automatically isolating and containing the remaining refrigerant(s) charge in response to a leak detection incident (see Other information).</td><td>1</td><td>1</td><td>Credit targeted

M&E consultant to confirm whether relevant leak detection system installed</td><td>M & E Consultant</td></tr>
<tr><td>Pol 02 NOx emissions</td><td>Two credits (Industrial building types only)
1. Where the plant installed to meet the building's delivered heating and hot water demand has, under normal operating conditions, a NO_x emission level (measured on a dry basis at 0% excessO_2) as follows:
<table><tr><th>NOx emissions levels for heating and hot water (mg/kWh)</th><th>Credits</th></tr><tr><td>Office and associated areas ≤ 70 mg/kWh</td><td>1 credit (1st)</td></tr><tr><td>Operational areas ≤ 70 mg/kWh</td><td>1 credit (2nd)</td></tr></table>2. Report via the BREEAM scoring and reporting tool the direct and indirect Nox emissions in mg/kWh and energy consumption in kWh/m²/yr arising from systems installed to meet the building's space heating, cooling and hot water demands.</td><td>2</td><td>1</td><td>1 Credit Targeted

M&E consultant to confirm the anticipated NOx emissions level which are to be achieved for the development.

CN10 - Where grid electricity is used to supply a heating system, the NOx emissions should be assumed to be 617 mg/kWh for the purpose of BREEAM. This is to reflect the likely NOx emissions from grid electricity over the next 10 years based on the predicted generation mix in the UK.

KBCN0151 - The Grid NOx emission factors should be compliant and relevant to the scheme of the development under assessment i.e. BREEAM NC 2011/ 2014 or BREEAM 2008.</td><td>M&E Consultant</td></tr>
<tr><td>Pol 03 Flood risk management and reducing surface water run-off</td><td>Two credits - Flood risk management Low flood risk
1. Where flood maps from the appropriate statutory body (see Relevant definitions) confirm the refurbishment or fit-out is situated in a flood zone that is defined as having a low annual probability of flooding.
OR
2. The project meets the requirements for avoidance of flooding in accordance with Checklist 1, e.g. where the refurbishment or fit-out zone is of a floor level that is 0.3m higher than the obtained/estimated flood level and safe access/escape routes are available/present OR Medium/high flood risk.
3. Where criterion 4.and either criterion 5 or 6 have been met
4. Where flood maps from the appropriate statutory body (see Relevant definitions) confirm the site have a medium or high flood risk and a site-specific Flood Risk Assessment (FRA) has been undertaken (as relevant to size of project in accordance with CN7). The FRA must take all current and future sources of flooding into consideration in accordance with compliance note.
5. Where the refurbishment or fit-out zone achieves avoidance from flooding through either:
a. The refurbishment and fit-out zone are located entirely on the first floor or above and a flood emergency plan has been developed in accordance with 'Would your business stay afloat? A Guide to preparing your business for flooding', Environment Agency, 2011 OR
b. As a result of the building's floor level or measures to keep water away, the building is defined as achieving avoidance from flooding by following Checklist 1, Checklists, and tables.
6. Where avoidance is not possible, two credits are achieved where a full flood resilience/resistance strategy is implemented for the building scope of works in accordance with recommendations made by a Suitably Qualified Building Professional (see Relevant definitions). The following aspects of the design should be addressed for the relevant parts, in accordance with best practice guidance (see compliance note CN9): a.</td><td>2</td><td>2</td><td>Credits targeted.

FRA consultant to provide Flood risk report detailing the risk of flooding from all sources.</td><td>Flood Risk Assessor and Civils Consultant, Client, Project Manager</td></tr>
</table>

	a. Part 1: Fabric – using flood resilient materials and flood protection measures for the building fabric, e.g. waterproof materials, impermeable membranes, flood barriers, safe access/exit points in the event of a flood etc. b. Part 2: Core services – core services and associated infrastructure (including equipment and vulnerable pipes/ducts/cables etc.) should be located/specified so as to protect services from flooding damage, e.g. location/routing/height, protection of building apertures (such as intakes/extracts/ventilation), non-return valves etc. c. Part 3: Local services – the location/height of local services such as sockets, vents etc. and the location of the wiring/pipework/ductwork in relation to the flood level and other measures to protect local services. d. Part 4: Interior – the proposed function of spaces that are below the flood level (e.g. sacrificial spaces)should be limited to those which are not susceptible to flood damage, and the resilience of materials used for partitions, walls, floors, ceiling finishes, furniture and fittings and the location of equipment in relation to the flood level, e.g. avoid storing flood sensitive materials and functions in spaces that are below the flood level.				
	Two credits - Surface water run-off **One credit - neutral impact on surface water** 7. There is no increase in the impermeable surfaces as a result of the refurbishment works, OR 8. If there is an increase in the impermeable surface as a result of the refurbishment works, then the following must be met: a. Hard standing areas- where there is an extension or increase in the hardstanding areas and hence an increase in the total impermeable area as a result of the refurbishment works, the hardstanding area must be permeable or be provided with on-site SuDS to allow full infiltration of the additional volume, to achieve the same end result. The permeable hardstanding must include all pavements and public rights of way, car parks, driveways, and non adoptable roads, but exclude footpaths that cross soft landscaped areas which will drain onto a naturally permeable surface. b. Building extension - where there is an increase in building footprint, extending onto any previously permeable surfaces, the additional run-off caused by the area of the new extension must be managed on-site using an appropriate SuDS technique for rainfall depths up to 5mm. OR **Two credits - reducing run-off.** 9. An Appropriate Consultant (see Relevant definitions) has been used to design an appropriate drainage strategy for the site. 10. Either of the following criteria are met: a. There is a decrease in the impermeable area by 50% or more, from the pre-existing impermeable hard surfaces, OR b. Where run-off as a result of the refurbishment is managed on-site using source control achieving the following requirements: i. The peak rate of run-off as a result of the refurbishment for the 1 in 100-year event has been reduced by 50% from the existing site. ii. The total volume of run-off discharged into the watercourses and sewers as a result of the refurbishment, for a 1 in 100-year event of 6-hour duration has been reduced by 50%. iii. An allowance for climate change must be included for all of the above calculations; this should be made in accordance with current best practice planning guidance.	2	1	Credit targeted. Drainage calculations / report to be provided by An Appropriate Consultant detailing the surface water run-off calculations for the site.	Civils consultant / Drainage consultant, Client, Project Manager
	Minimising water course pollution **One credit**	1	1	Credit targeted.	Civils consultant /

	11. There is no discharge from the developed site (includes new and existing hard landscaping and buildings) for rainfall up to 5mm (confirmed by the Appropriate Consultant). 12. Where suitable pollution prevention measures are put in place (or already exist) for the different sources of pollution present on the assessed site, in accordance with compliance note CN20. 13. A comprehensive and up to date drainage plan of the site will be made available for the building/site occupiers. 14. Relevant agreements for the ownership, long term operation and maintenance of all installed Sustainable Drainage Systems (SuDS) are in place, or for speculative projects, made available for the future occupier.			Appropriate consultant to confirm no discharge from site where rainfall is up to 5mm.	Drainage consultant
	Exemplary level requirements The following outlines the exemplary level requirements to achieve an innovation credit for surface water run-off: 15. Where all run-off from the developed site is managed on-site using source control, the following must be achieved to confirm compliance: a. The peak rate of run-off as a result of the refurbishment for the 1 in 1 year event is reduced to zero. b. The peak rate of run-off as a result of the refurbishment for the 1 in 100-year event is reduced to zero. c. There is no volume of run-off discharged into the watercourses and sewers as a result of the refurbishment, for a 1 in 100-year event of 6-hour duration. d. An allowance for climate change must be included for all of the above calculations, in accordance with current best practice national planning guidance. e. Where an appropriately qualified professional has been employed to provide the above calculations and design an appropriate drainage strategy for the site, ensuring all above criteria are achieved.	1	0 (+1)	Credit potentially targeted. Due to uncertainty on the associated credits above exemplary criteria this exemplary credit is subject to later confirmation	
Pol 04 Reduction of nighttime light pollution	**One credit** 1. Where external lighting pollution has been eliminated through effective design that removes the need for external lighting without adversely affecting the safety and security of the site and its users. OR alternatively, where the building does have external lighting, one credit can be awarded as follows: 2. The external lighting strategy has been designed in compliance with Table 2 (and its accompanying notes) of the ILP Guidance notes for the reduction of obtrusive light, 2011[1]. Buildings located in Scotland must comply with the light pollution criteria in the guidance note 'Controlling Light Pollution and Reducing Lighting Energy Consumption'[2]. This can be demonstrated via completion of the checklists in Annexes B and C of the guidance note by a relevant member of the design team. 3. All external lighting (except for safety and security lighting) can be automatically switched off between 23:00 and 07:00. 4. If safety or security lighting is provided and will be used between 23:00 and 07:00, this part of the lighting system complies with the lower levels of lighting recommended during these hours in Table 2 of the ILP's Guidance notes. 5. Illuminated advertisements, where specified, must be designed in compliance with ILP PLG05 – The Brightness of Illuminated Advertisements.	1	1	Credit targeted. M&E specifications to capture requirements. Lighting designed to be specified in line with criteria.	M&E Consultant, Lighting consultant
Pol 05 Reduction of noise pollution	**One credit** 1. Where there are, or will be, no noise-sensitive areas or buildings within 800m radius of the assessed site. OR 2. Alternatively, where the building does have noise-sensitive areas or buildings within 800m radius of the site, one credit can be awarded as follows:	1	1	Credit targeted. Acoustician to provide BREEAM compliant noise assessment report.	Acoustician / Client, Project Manager

	a. Where a noise impact assessment in compliance with BS7445[1] has been carried out and the following noise levels measured/determined: i. Existing background noise levels at the nearest or most exposed noise-sensitive development to the proposed development or at a location where background conditions can be argued to be similar. The existing background noise levels shall not include existing plant associated with the assessed building (see CNs on Part applicability for exceptions). ii. The rating noise level resulting from the new noise source (see CN7). 3. The noise impact assessment must be carried out by a suitably qualified acoustic consultant holding a recognised acoustic qualification and membership of an appropriate professional body (see Relevant Definitions in the Additional information section) 4. The noise level from the proposed site/building, as measured in the locality of the nearest or most exposed noise sensitive development, is a difference no greater than+5dB during the day (07:00 to 23:00) and +3dB at night (23:00 to 07:00) compared to the background noise level. 5. Where the noise source(s)from the proposed site/building is greater than the levels described in criterion 4, measures have been installed to attenuate the noise at its source to a level where it will comply with criterion 4.				

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