Seaforth Land

20-23 Greville Street

BREEAM
Pre-assessment Tracker & Action List for Retail Refurbishment

MLM. Group

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Contents

1 Introduction

This report has been prepared by MLM Consulting Engineers Ltd Sustainability Group and provides guidance to the design team in relation to the BREEAM UK Non-Domestic Refurbishment SD 216: 1.1 - 2014 requirements for the refurbishment at 20-23 Greville Street, London, EC1N 8SS. The report is based upon information obtained at the design team meeting held on 16 October 2017.

Part 1 and Part 2 of the scheme are only applicable to the build.

The proposals involve the retention and refurbishment of an existing office building comprising 3,643 sqm (gia) of floorspace to provide a new mixed use building comprising:
Change of use of existing Class B1 at ground floor, basement and first floor levels to Class A1/A3 use; demolition of existing fifth floor plant room and construction of rooftop extension at fifth and mezzanine floor level for Class B1 use, rear infill extension to all floors for Class B1 use, external alterations including new façade and glazing, and associated works.

The building is not noted as historic.
Heating and cooling systems for the Retail units are via a VRF system and natural ventilation is proposed. DHW is point of use and a gas boiler is only specified for the restaurant unit.

There is no associated landscaping and it is to be confirmed if planting is feasible on the roof areas.

Note the refubished A1/A3 units are assessed under this assessment.

1.1 What is BREEAM?

This guidance report is based on the issued by the BRE. As with all schemes under the BREEAM umbrella the assessment seeks to minimise the adverse effects of new and existing buildings on the environment at global and local scales, whilst promoting healthy indoor conditions for the occupants. The environmental implications of any building are assessed at the design stage, and compared with good practice by independent assessors.

BREEAM establishes a set of categories under which specific credit requirements are grouped. These are:

- Management
- Health and Wellbeing
- Energy
- Transport
- Water
- Materials
- Waste
- Land Use and Ecology
- Pollution

Within each category there are a number of credits which the design team can choose from to achieve the desired rating. It should be noted that there will be certain minimum requirements that must be achieved depending on the BREEAM rating required. Building designs are compared against the credit criteria by registered assessors and credits awarded where the criteria have been met. An overall rating of the building's performance is given using the terms; Pass, Good, Very Good, Excellent or Outstanding. The rating is determined from the number of credits achieved in each of the categories, which are then weighted (i.e. credits multiplied by environmental weighting factor) to provide an overall score.

This report is for advice only. This report outlines the overall performance of the development and provides a written and tabulated summary that should be used as a quick reference guide. For full details of the credit criteria refer to the BRE website www.breeam.org where copies of the assessor manuals are available for download. The final rating achieved in a certified assessment will be dependent on the provision of acceptable information as evidence that the compliance requirements of the credits have been met. Such evidence could be in the form of marked-up drawings, specification clauses, manufacturers' literature and project specific documents or reports.

1.2 Scoring and Rating Assessed Buildings

The BREEAM rating benchmarks for new construction projects assessed using the 2014 version of BREEAM are as follows:

BREEAM Rating	Score
Outstanding	≥ 85%
Excellent	≥ 70%
Very Good	≥ 55%
Good	≥ 45%
Pass	≥ 30%
Unclassified	< 30%

1.3 Minimum Standards

The BREEAM categories contain a number of environmental issues which reflect the choices available when procuring, designing and constructing a building.

Each category has a set number of 'credits' available and these credits are awarded where the building demonstrates that it complies with the requirements set by BREEAM.

1.4 Assessment Scope

The BREEAM UK Refurbishment and Fit-out scheme provides a modular framework split up into four separate parts, that are assessed according to the scope of work of the project, with each part defining a set of individual measures and associated criteria that each project is assessed against. This allows projects to be assessed against the parts that are within the scope of influence of the project, while also ensuring that similar project types are assessed against a comparable set of criteria.

The following assessment scope provides details of when it may be appropriate to conduct an assessment against each part, depending on the nature of the refurbishment or fit-out works that are being carried out. It should be noted that currently, a client can choose which parts they wish to gain certification against and this choice is not limited by the scope of a project. This is to provide flexibility recognising that a project may be doing work that is within the scope of an assessment part (e.g. upgrading part of the core services), but due to economic, technical or other factors may not be at a level that is compliant with BREEAM. In these situations, clients can choose to omit certain assessment parts, however the certificate will clearly highlight the parts that a project has been certificated against and clients and others must make the scope of the assessment clear in any published material or claims made which reference BREEAM e.g. a BREEAM Refurbishment and Fit-out 'Excellent' rating against Part 4.

Part 1: Fabric and Structure

A Part 1 assessment may be appropriate where a refurbishment project includes one or more of the following alterations to the building fabric and where the area to be renovated is greater than 50 per cent of the surface of the individual element or 25 per cent of the total building envelope:

• Building façade: where the external façade of the buildings is being upgraded/refurbished such as new cladding, rendering, façade system, internal dry lining etc.
• Roof: where a new roof is being installed or where significant changes are being made to the roof structure or the replacement/refurbishment of roof coverings.
• Windows: where changes are being made to the windows such as replacement, upgrade/refurbishment of existing windows with new glazing or the specification of secondary glazing.

Note: A minor change to the building fabric (e.g. local upgrading of an external wall) below the above thresholds would not require a Part 1 assessment to be included, although it may be carried out in order to assess the overall performance of the building fabric.

Part 2: Core Services

A Part 2 assessment may be appropriate where at least two of the following are being installed or upgraded to a level that requires compliance with the Building Regulations Compliance Guide:

• Central air handling unit
• Heating boiler
• More than 50% of heat distribution
• Chiller plant
• More than 50% of chiller distribution
• Water services (sanitary fittings in core)
• Building management system
• Community heating system (e.g. CCHP)
• Low and zero carbon technologies.

Note: Where works comprise of 'like for like' component replacements e.g. a fan motor of an air handling unit a Part 2 assessment may not be appropriate although it may still be carried out in order to assess the performance of the core services.

Definition of core services
Core services are defined as services that supply multiple areas and/or tenants and will generally be centralised plant.

Part 3: Local Services

A Part 3 assessment may be appropriate where at least two of the following fixed local building services are being installed or upgraded e.g. a replacement or new installation of local heating/cooling units.

- Replacement of more than 50% of light fittings, system and controls
- Upgrade of zone controls
- Local ventilation
- Local heating units (including sources not connected to core services)
- Local cooling units (including sources not connected to core services)
- Point of use water heaters.

Note: If there is a requirement to replace a component of a local service as part of the refurbishment or fit-out and that component is a direct replacement then a Part 3 assessment may not be appropriate, though may still be carried out in order to assess the performance of local services. Examples of component replacements include new lamps within existing fittings, circulation pumps or individual heat emitters and valves.

Definition of local services
Local services are defined as services that supply a specific area and may connect into the distribution systems from the core services within the tenanted area.

Part 4: Interior Design

A Part 4 assessment may be appropriate where the refurbishment or fit-out works involve changes to the layout and/or redecoration of the refurbishment or fit-out area. including:

Remodelling/changes to interior spaces including two or more of the following:
• Wall coverings (alterations to at least 50% by area)
• Floor coverings (alterations to at least 50% by area)
• Ceiling covering or systems (alterations to at least 50% by area)
• Partitions (alterations to at least 50% by area)
• Raised floor system (alterations to at least 50% by area)
• Furniture and fittings e.g. office furniture, retail display furniture and fittings etc. (alterations to at least 50% by area)

AND at least one of the following:
• Sanitary fittings e.g. tea/coffee points, kitchenette and washrooms (alterations to at least 50% of fittings)
• Equipment e.g. Office equipment, display lighting, display chillers/freezers (alterations to at least 50% of equipment)
• Local electrical installations e.g. sub-metering

Part 4 is broadly in line with a Category B fit-out and where the fit-out works also include changes or additions to local services, a Part 3 assessment may also be relevant.

1.5 Minimum Standards and BREEAM Ratings

The following outlines the minimum standards to meet specific ratings:

BREEAM Issue	BREEAM Rating / Minimum no. of credits				
	Pass	Good	Very Good	Excellent	Outstanding
Man 03: Responsible construction practices	None	None	None	One credit (Considerate Construction)	Two credits (Considerate Construction)
Man 04: Commissioning and handover	None	None	None	Criterion 9 (Building User Guide)	Criterion 9 (Building User Guide)
Man 05:Aftercare	None	None	None	Part 2 and 3 only: One credit (Seasonal commissioning)	Part 2 and 3 only: One credit (Seasonal commissioning)
Ene 01: Reduction of energy use and carbon emissions	None	None	None	Parts 1,2,3 and 4 (Full assessments): Six credits, varies for other assessment types	Parts 1,2,3 and 4 (Full assessments): Ten credits, varies for other assessment types
Ene 02: Energy monitoring	None	None	Part 2, 3 and 4: One credit (First sub-metering credit)	Part 2, 3 and 4: One credit (First sub-metering credit)	Part 2, 3 and 4: One credit (First sub-metering credit)
Wat 01: Water consumption	None	One credit (Where applicable)	One credit (Where applicable)	One credit (Where applicable)	Two credits (Where applicable)
Wat 02: Water monitoring	None	Part 2: Criterion 1 only	Part 2: Criterion 1 only	Part 2: Criterion 1 only	Part 2: Criterion 1 only
Mat 03: Responsible sourcing of materials	Criterion 1 only	Criterion 1 only	Criterion 1 only	Criterion 1 only	Criterion 1 only
Wst 01: Construction waste management	None	None	None	None	One credit
Wst 03: Operational waste	None	None	None	One credit	One credit

1.6 Innovation Credits

Innovation credits provide recognition for designs which innovate in the field on sustainable performance, above and beyond the level that is currently recognised and rewarded by standard BREEAM issues. There are two ways in which BREEAM awards 'Innovation Credits':

The first is by meeting Exemplary Performance criteria defined within an existing BREEAM issue i.e. going beyond the standard BREEAM assessment criteria and therefore best practice.

The second is where an application is made to BRE Global by the registered project's BREEAM Assessor to have a particular building technology or feature, design or construction method or process recognised as 'innovative'.

All Innovation credits have a fixed environmental weighting of 1% towards the final score, and there is a maximum of innovation credits (totalling 10%) which may be awarded to any scheme.

1.7 Environmental Weightings, Final Score and BREEAM Rating

Once each BREEAM credit has been assessed the category percentage scores are determined (based on the number of credits achieved over those available within a category) and an environmental weighting applied. The weighted category scores are then totalled to give an overall score and any additional score for innovation is added to give the final BREEAM score which is used to determine the BREEAM rating.

2 Project Status

2.1 BREEAM Workshops:

The design team meeting held at Groupwork's offices, Clerkenwell on the 16 October 2017 was attended by:

Name of Attendee	Company	Role in Project
Fred Samaha	Quantem Consulting LLP	Partner
Alex Cotterill	Amin Taha Architects	Architect
Paul Downie	Webb Yates	Building Services Engineer
Andrew Lerpiniere	Webb Yates	Director
Clare Hardy	MLM Consulting Engineers	BREEAM assessor

2.2 Summary

The project currently targets a score of 62.60% which equates to a VERY GOOD rating.

To ensure that a Very Good rating is achieved/maintained and achieved, it is vital that all design team members read through the action list of credits required and ensure that the credit criteria are incorporated in the developing design and that suitable evidence is provided to validate achievement.

Where information could be provided to support the achievement of a credit this should be provided to the assessor at the earliest opportunity. The assessor should also be informed of any credit criteria, which cannot be met. Changes to existing specifications and tender package documents to address the criteria contained in this report would enable the design team to deliver the necessary rating.

This document should be used as a 'live' tool throughout the project and the BREEAM options and requirements should be considered at every stage of development.

Any changes made to the document from the last issue will be shown in red ink for tracking purposes.

The table below shows the progress of the score of the project based on the development of the scheme:

Score History Table

Revision	Report	Achieved Score (ACH)	Currently Targeted Score (CTS)	Potentially Achievable Score (TBC)
0	Pre-assessment	0.00%	62.60%	64.00%
1	Pre-assessment Progress	0.00%	62.60%	64.00%

The initial score targeted at the Pre-assessment meeting will allow for the required BREEAM rating to be achieved provided sufficient and compliant evidence is received by MLM.

The Pre-assessment meeting held for this project on the date above details the credits targeted, who is responsible for providing evidence for each credit, and the evidence that must be provided to the BREEAM assessor in order to secure credits and achieve the required BREEAM rating. Any changes to the targeted credits and/or changes to the score are detailed below for reference. Where any changes to the score have occurred, this is reflected in the current targeted score on the Summary page of this document.

The current projected score will allow for the required BREEAM rating to be achieved once sufficient and compliant evidence is received by MLM.

2.3 Tracker

Management

Total credits in Management:		Action By	Credit Status	AVL 18	ACH 0	CTS 10	TBC 2
Man01 Project Brief and Design C1-4: Stakeholder Consultation (Project Delivery)	**RIBA Stage 2(C): Consultations**	Project Manager	Targeted	1	0	1	0
		Architect	Targeted				
Man01 Project Brief and Design C5-7, 8: Stakeholder Consultation (Third Party)	**RIBA Stage 2(C): Consultations.** **RIBA Stage 4(EF): Feedback.**	Project Manager	Targeted	1	0	1	0
		Architect	Targeted				
Man01 Stakeholder Consultation C9-11: Sustainability Champion (Design)	**RIBA Stage 1(A-B): Appointment**	BREEAM AP	Targeted	1	0	1	0
		Project Manager	Targeted				
Man01 Stakeholder Consultation C12-13: Sustainability Champion (Monitoring Progress)	**RIBA Stage 1(A-B): Appointment.** **RIBA Stage 2(C): BREEAM target confirmed**	BREEAM AP	Targeted	1	0	1	0
		Project Manager	Targeted				
Man02 Life Cycle Cost and Service Life Planning C1-2: Elemental Life Cycle Cost (LCC)	**RIBA Stage 2(C): Elemental LCC**	N/A	Not targeted	2	0	0	0
		N/A	N/A				
Man02 Life Cycle Cost and Service Life Planning C3: Component Level LCC Option Appraisal	**RIBA Stage 4(E-F): Component Level LCC Plan.**	N/A	Not targeted	1	0	0	0
		N/A	N/A				
Man02 Life Cycle Cost and Service Life Planning C4: Capital Cost Reporting	RIBA Stage 6(J-K): Recommended action	Project Manager	TBC	1	0	0	1
		Client	TBC				
Man03 Environmental Management Minimum standards for this credit with the currently targeted Very Good ≥ 55% BREEAM rating: None							
Man03 Responsible Construction Practices C1: Pre-requisite	RIBA Stage 4(E-F): Recommended action	Principal Contractor	Targeted	Pre-requisite for this credit.			
		Client	Targeted				
Man03 Responsible Construction Practices C2-3: Environmental Management	RIBA Stage 4(E-F)/Stage 5: Recommended action	Principal Contractor	Targeted	1	0	1	0
		Client	Targeted				

Man03 Responsible Construction Practices C4-6: Sustainability Champion (construction)	RIBA Stage 4(E-F): Recommended action	N/A	Not targeted	1	0	0	0
		N/A	N/A				
Man03 Responsible Construction Practices C7-8: Considerate Construction	RIBA Stage 4(E-F)/Stage 5: Recommended action	Principal Contractor	Targeted	2	0	1	1
		Client	Targeted				
Man03 Responsible Construction Practices C9: Monitoring of refurbishment or fit-out-site impacts	RIBA Stage 4(E-F): Recommended action	Principal Contractor	Targeted	Pre-requisite for criteria 10 to 18			
		Client	Targeted				
Man03 Responsible Construction Practices C10-15: Monitoring of refurbishment or fit-out-site impacts- Utility Consumption	RIBA Stage 4(E-F)/Stage 5: Recommended action	Principal Contractor	Targeted	1	0	1	0
		Client	Targeted				
Man03 Responsible Construction Practices C16-18: Monitoring of refurbishment or fit-out-site impacts - Transport of construction materials and waste	RIBA Stage 4(E-F)/Stage 5: Recommended action	N/A	Not targeted	1	0	0	0
		N/A	N/A				
Man03 Responsible Construction Practices C19: Exemplary Level Criteria	RIBA Stage 4(E-F): Recommended action	N/A	Not targeted	1	0	0	0
		N/A	N/A				
Man04 Commissioning and Handover Minimum standards for this credit with the currently targeted Very Good ≥ 55% BREEAM rating: None							
Man04 Commissioning and Handover C1-4: Commissioning and testing schedule and responsibilities	**RIBA Stage 4(E-F): Appointment** RIBA Stage 4(E-F): Recommended action	M&E	Targeted	1	0	1	0
		Client	Targeted				
Man04 Commissioning and Handover C5-6: Commissioning Building Services	RIBA Stage 4(E-F): Recommended action	M&E	Targeted	1	0	1	0
		Client	Targeted				
Man04 Commissioning and Handover C7-8: Testing and inspecting building fabric	RIBA Stage 4(E-F): Recommended action	N/A	Not targeted	1	0	0	0
		N/A	N/A				
Man04 Commissioning and Handover C9-10: Handover	RIBA Stage 4(E-F): Recommended action	Principal Contractor	Targeted	1	0	1	0
		Client	Targeted				

Health and Wellbeing

Total credits in Health and Wellbeing:		Action By	Credit Status	AVL 14	ACH 0	CTS 3	TBC 0
Hea01 Visual Comfort C3-5: Daylighting (building type dependent)	RIBA Stage 4(E-F): Recommended action	N/A	Not targeted	3	0	0	0
		N/A	N/A				
Hea01 Visual Comfort C6-9: View Out	RIBA Stage 4(E-F): Recommended action	N/A	Not targeted	2	0	0	0
		N/A	N/A				
Hea02 Indoor Air Quality C1: Indoor air quality (IAQ) plan	RIBA Stage 4(E-F): Recommended action	N/A	Not targeted	1	0	0	0
		N/A	N/A				
Hea02 Indoor Air Quality C2-5: Ventilation	RIBA Stage 4(E-F): Recommended action	N/A	Not targeted	1	0	0	0
		N/A	N/A				
Hea02 Indoor Air Quality C13-14: Adaptability - Potential for Natural Ventilation	RIBA Stage 4(E-F): Recommended action	N/A	Not targeted	1	0	0	0
		N/A	N/A				
Hea04 Thermal Comfort C1-5: Thermal modelling	RIBA Stage 4(E-F): Recommended action	N/A	Not targeted	1	0	0	0
		N/A	N/A				
Hea04 Thermal Comfort C6-9: Adaptability - For a Projected Climate Change Scenario	RIBA Stage 4(E-F): Recommended action	N/A	Not targeted	1	0	0	0
		N/A	N/A				
Hea04 Thermal Comfort C10-12: Thermal Zoning and Controls	RIBA Stage 4(E-F): Recommended action	N/A	Not targeted	1	0	0	0
		N/A	N/A				
Hea05 Acoustic Performance C4-6: (for Industrial, Retail, Prisons and 'Other' building types)	RIBA Stage 4(E-F): Recommended action	Acoustician	Targeted	2	0	2	0
		Principal Contractor	Targeted				
Hea06 Safety and Security C1-3: Security of Site and Building	**RIBA Stage 2(C): Crime Impact Assessment** RIBA Stage 4(E-F): Recommended action	Principal Contractor	Targeted	1	0	1	0
		Client	Targeted				

Energy

Total credits in Energy:	Action By	Credit Status	AVL 24	ACH 0	CTS 18	TBC 0

Ene01 Reduction of Energy Use and Carbon Emissions

Minimum standards for this credit with the currently targeted Very Good ≥ 55% BREEAM rating:
None

Ene01 Reduction of Energy Use and Carbon Emissions C1: Whole building energy model (option 1)	RIBA Stage 4(E-F): Recommended action	Energy Consultant	Targeted	15	0	15	0
		Client	Targeted				
Ene01 Reduction of Energy Use and Carbon Emissions C8: Exemplary Level Criteria - two credits - Zero regulated carbon	RIBA Stage 4(E-F): Recommended action	N/A	Not targeted	2	0	0	0
		N/A	N/A				

Ene02 Sub-Metering of Major Energy Consuming Systems

Minimum standards for this credit with the currently targeted Very Good ≥ 55% BREEAM rating:
Part 2, 3 and 4:One credit (First sub-metering credit)

Ene02 Energy Monitoring C1-4: Sub-Metering of Major Energy Consuming Systems	RIBA Stage 4(E-F): Recommended action	Principal Contractor	Targeted	1	0	1	0
		M&E	Targeted				
Ene02 Energy Monitoring C5: Sub-Metering of High Energy Load and Tenancy Areas	RIBA Stage 4(E-F): Recommended action	Principal Contractor	Targeted	1	0	1	0
		M&E	Targeted				
Ene03 External Lighting C1-3: One Credit	RIBA Stage 4(E-F): Recommended action	Principal Contractor	Targeted	1	0	1	0
		M&E	Targeted				
Ene04 Low Carbon Design C1-3: Passive Design Analysis	**RIBA Stage 2(C): Passive Design Analysis** RIBA Stage 4(E-F): Recommended action	N/A	Not targeted	1	0	0	0
		N/A	N/A				
Ene04 Low Carbon Design C4-6: Free Cooling	**RIBA Stage 2(C): Passive Design Analysis** RIBA Stage 4(E-F): Recommended action	N/A	Not targeted	1	0	0	0
		N/A	N/A				
Ene04 Low Carbon Design C7-8: Low Zero Carbon (LZC) Feasibility Study	**RIBA Stage 2(C): Feasibility Study** RIBA Stage 4(E-F): Recommended action	Energy Consultant	Not targeted	1	0	0	0
		N/A	N/A				

Ene06 Energy Efficient Transportation Systems C1: Energy Consumption	RIBA Stage 4(E-F): Recommended action	N/A	Not targeted	1	0	0	0
		N/A	N/A				
Ene06 Energy Efficient Transportation Systems C2-6: Energy Efficient Features	RIBA Stage 4(E-F): Recommended action	N/A	Not targeted	2	0	0	0
		N/A	N/A				

Transport

Total credits in Transport:		Action By	Credit Status	AVL 9	ACH 0	CTS 9	TBC 0
Tra01 Public Transport Accessibility C1-2: Accessibility Index C3: Alternative transport measures	RIBA Stage 3(D): Recommended action	Transport Consultant	Targeted	5	0	5	0
		Architect	Targeted				
Tra02 Proximity to Amenities C1: Proximity to Local Amenities	RIBA Stage 3(D): Recommended action	Architect	Targeted	1	0	1	0
		N/A	N/A				
Tra03 Cyclist Facilities C1-4: Cycle Storage, Cyclist Facilities, Cycle storage and cyclist facilities	RIBA Stage 3(D): Recommended action	Architect	Targeted	2	0	2	0
		Client	Targeted				
Tra05 Travel Plan C1-4: One Credit	RIBA Stage 3(D): Recommended action	Transport Consultant	Targeted	1	0	1	0
		Principal Contractor	Targeted				

Water

Total credits in Water:		Action By	Credit Status	AVL 8	ACH 0	CTS 6	TBC 0
Wat01 Water Consumption Minimum standards for this credit with the currently targeted Very Good ≥ 55% BREEAM rating: One credit (Where applicable)							
Wat01 Water Consumption C1-6: Up to Five Credits (Building Dependant)	RIBA Stage 3(D): Recommended action	Client	Targeted	5	0	3	0
		Principal Contractor	Targeted				
Wat02 Water Monitoring Minimum standards for this credit with the currently targeted Very Good ≥ 55% BREEAM rating: Part 2: Criterion 1 only							
Wat02 Water Monitoring C1-5: One Credit	RIBA Stage 4(E-F): Recommended action	M&E	Targeted	1	0	1	0
		Principal Contractor	Targeted				
Wat03 Water Leak Detection C1: Leak Detection System	RIBA Stage 3(D): Recommended action	M&E	Targeted	1	0	1	0
		Principal Contractor	Targeted				
Wat03 Water Leak Detection C2: Flow Control Devices	RIBA Stage 3(D): Recommended action	M&E	Targeted	1	0	1	0
		Principal Contractor	Targeted				

Materials

Total credits in Materials:		Action By	Credit Status	AVL 13	ACH 0	CTS 7	TBC 0
Mat 01 Environmental Impact of Materials C8-10: Up to 4 Credits	RIBA Stage 3(D): Recommended action	Architect	Targeted	6	0	2	0
		N/A	N/A				
Mat 01 Environmental Impact of Materials Exemplary Level		N/A	Not targeted	1	0	0	0
Mat03 Responsible Sourcing of Materials Minimum standards for this credit with the currently targeted Excellent ≥ 70% BREEAM rating: Criterion 1 only							
Mat03 Responsible Sourcing of Materials C1: Pre-requisite	RIBA Stage 3(D): Recommended action	Principal Contractor	Targeted	Pre-requisite to achieve credit			
		Client	Targeted				
Mat03 Responsible Sourcing of Materials C2: Sustainable Procurement Plan	RIBA Stage 3(D): Recommended action	Principal Contractor	Targeted	1	0	1	0
		Client	Targeted				
Mat03 Responsible Sourcing of Materials C3-4: Responsible Sourcing of Materials (RSM)	RIBA Stage 3(D): Recommended action	Principal Contractor	Targeted	3	0	1	0
		Client	Targeted				
Mat03 Responsible Sourcing of Materials C5: Exemplary Level Criteria	RIBA Stage 3(D): Recommended action	N/A	Not targeted	1	0	0	0
		N/A	N/A				
Mat04 Insulation C1-2: Embodied impact	Recommended action by: RIBA Stage 3(D)	Architect	Targeted	1	0	1	0
		M&E	Targeted				
Mat05 Designing for Durability and Resilience C1:Protecting vulnerable parts of the building from damage C2-5: Protecting exposed parts of the building from material degradation	RIBA Stage 3(D): Recommended action	Architect	Targeted	1	0	1	0
		Project Manager	Targeted				
Mat06 Material Efficiency C1-2: One Credit	**RIBA Stages 1,2,3 and 4: Material Use Review** RIBA Stage 3(D): Recommended action	Project Manager	Targeted	1	0	1	0
		Architect	Targeted				

Waste

Total credits in Waste:		Action By	Credit Status	AVL	ACH	CTS	TBC
				11	0	7	0

Wst01 Construction Waste Management

Minimum standards for this credit with the currently targeted Very Good ≥ 55% BREEAM rating:

None

Wst01 Construction Waste Management C1: Pre-refurbishment audit	RIBA Stage 3(D): Recommended action	Principal Contractor	Targeted	1	0	1	0
		Client	Targeted				
Wst01 Construction Waste Management C2-4: Reuse and direct recycling of materials	RIBA Stage 3(D): Recommended action	N/A	Not targeted	2	0	0	0
		N/A	N/A				
Wst01 Construction Waste Management C5-6: Resource Efficiency	RIBA Stage 3(D): Recommended action	Principal Contractor	Targeted	3	0	2	0
		Client	Targeted				
Wst01 Construction Waste Management C7: Diversion of resources from landfill	RIBA Stage 3(D): Recommended action	Principal Contractor	Targeted	1	0	1	0
		Client	Targeted				
Wst01 Construction Waste Management C8-11: Exemplary level criteria	RIBA Stage 3(D): Recommended action	N/A	Not targeted	1	0	0	0
		N/A	N/A				
Wst02 Recycled Aggregates C1-3: One Credit	RIBA Stage 3(D): Recommended action	N/A	Not targeted	1	0	0	0
		N/A	N/A				
Wst02 Recycled Aggregates C4-6: Exemplary Level Criteria	RIBA Stage 3(D): Recommended action	N/A	Not targeted	1	0	0	0
		N/A	N/A				

Wst03 Operational Waste Minimum standards for this credit with the currently targeted Very Good ≥ 55% BREEAM rating: None							
Wst03 Operational Waste C1-7: One Credit	RIBA Stage 3(D): Recommended action	Architect	Targeted	1	0	1	0
		Client	Targeted				
Wst05 Adaptation to Climate Change C1: Structural and Fabric Resilience **Part 1 Major Refurbishment Only**	**RIBA Stage 1(A-B):** **Climate Adaptation Strategy Appraisal** RIBA Stage 3(D): Recommended action	Client	Targeted	1	0	1	0
		Architect	Targeted				
Wst05 Adaptation to Climate Change C2: Exemplary Level Criteria - Responding to adaptation to climate change	**RIBA Stage 1(A-B):** **Climate Adaptation Strategy Appraisal** RIBA Stage 3(D): Recommended action	N/A	Not targeted	1	0	0	0
		N/A	Not targeted				
Wst06 Functional Adaptability C1-2: One Credit	**RIBA Stage 1(A-B):** **Functional Adaptation Strategy Appraisal** RIBA Stage 3(D): Recommended action	Architect	Targeted	1	0	1	0
		Client	Targeted				

Land Use and Ecology

			AVL	ACH	CTS	TBC
Total credits in Land Use and Ecology	**Action By**	**Credit Status**	**3**	**0**	**3**	**0**

LE04 Enhancing Site Ecology C1-3: Ecologist's Report and Recommendations	**RIBA Stage 1(A-B):** **Ecologist Appointment** RIBA Stage 4(E-F) Recommended action	Ecologist	Targeted	1	0	1	0
		Principal Contractor	Targeted				
LE05 Long Term Impact on Biodiversity C1-3: Up to Two Credits	RIBA Stage 4(E-F): Recommended action	Ecologist	Targeted	2	0	2	0
		Principal Contractor	Targeted				

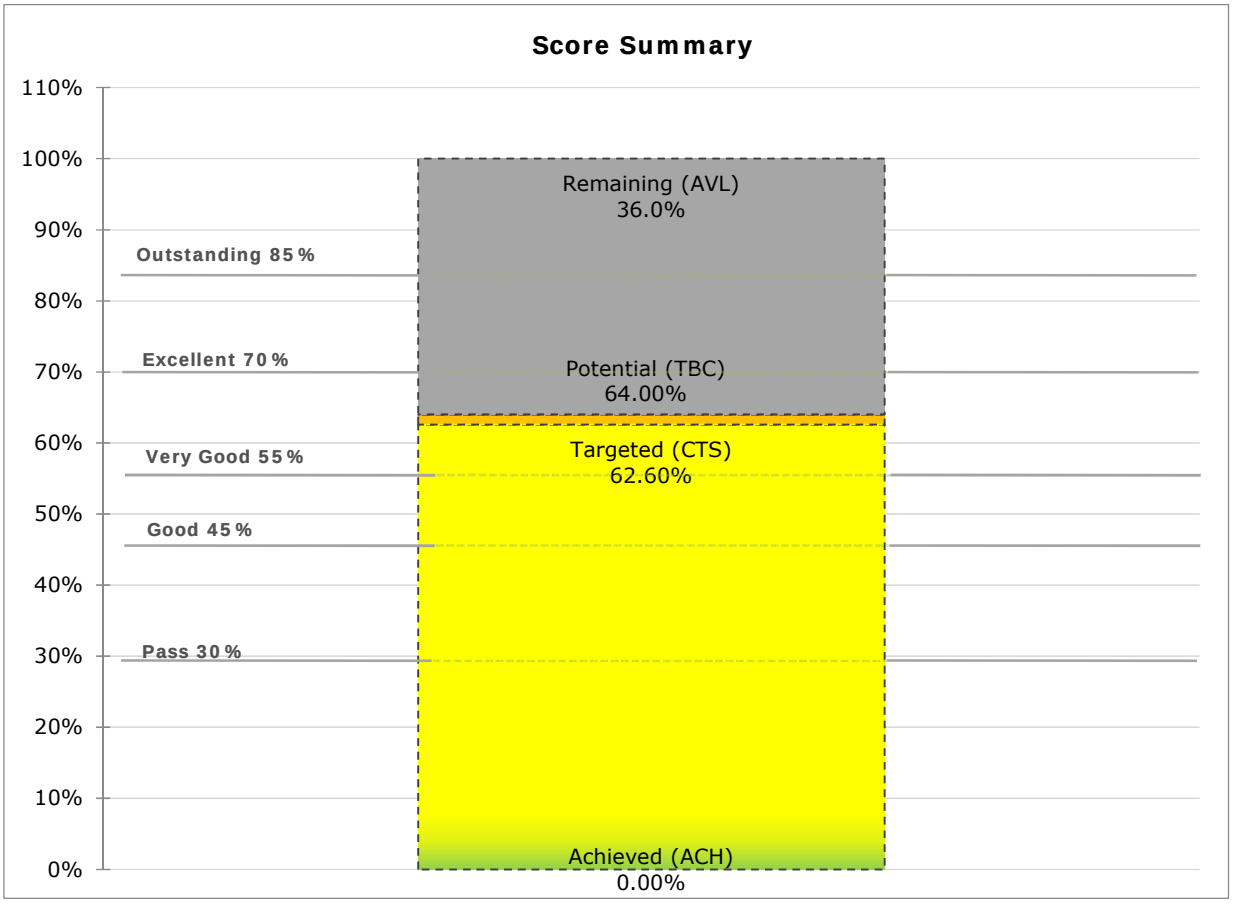
Pollution

Total credits in Pollution:		Action By	Credit Status	AVL 12	ACH 0	CTS 6	TBC 0
Pol01 Impact of Refrigerants C2: Pre-requisite to Achieve C3-7	RIBA Stage 3(D): Recommended action	M&E	Targeted	Pre-requisite to achieve credit			
		N/A	N/A				
Pol01 Impact of Refrigerants C3-5: Impact of Refrigerant	RIBA Stage 3(D): Recommended action	M&E	Targeted	2	0	1	0
		Principal Contractor	Targeted				
Pol01 Impact of Refrigerants C6-7: Leak Detection	RIBA Stage 3(D): Recommended action	M&E	Targeted	1	0	1	0
		Principal Contractor	Targeted				
Pol02 NO_x Emissions C1-2: Up to Three Credits (All Building Types except Industrial)	RIBA Stage 3(D): Recommended action	N/A	Not targeted	3	0	0	0
		N/A	N/A				
Pol03 Flood Risk Management and Reducing Surface Water Run-off C1-6: Flood Risk Management	RIBA Stage 3(D): Recommended action	Drainage Consultant	Targeted	2	0	2	0
		N/A	N/A				
Pol03 Flood Risk Management and Reducing Surface Water Run-off C7-10: Surface Water Run-off	RIBA Stage 3(D): Recommended action	Drainage Consultant	Targeted	2	0	1	0
		N/A	N/A				
Pol03 Flood Risk Management and Reducing Surface Water Run-off C11-14: Minimising Water Course Pollution	RIBA Stage 3(D): Recommended action	N/A	Not targeted	1	0	0	0
		N/A	N/A				
Pol03 Flood Risk Management and Reducing Surface Water Run-off C15: Exemplary level requirements	RIBA Stage 3(D): Recommended action	N/A	Not targeted	1	0	0	0
		N/A	N/A				
Pol04 Reduction of Night Time Light Pollution C:1-5 One credit	RIBA Stage 3(D): Recommended action	M&E	Targeted	1	0	1	0
		Principal Contractor	Targeted				

3 Score Summary

BREEAM UK Refurbishment and Fit-Out Non-Domestic SD216: 1.1 - 2014
Pre-assessment date: 16 October 2017
Updated: 16 January 2018

BREEAM Reference: TBC
Internal Reference: CTN/7134062/CH
BREEAM Requirement: Very Good ≥ 55%
Minimum standards level achieved: Very Good
Current Targeted Score: 62.6%
Achieved Score: 0.0%



5 Credit Status

This report provides an overview of the current position of the project in terms of the BREEAM assessment and the progress in achieving the required rating.

The 'Targeted' credits are detailed in the following pages and it is the responsibility of the design team to provide the evidence, as required by BREEAM, to the Assessor as soon as it becomes available.

All the BREEAM Credits have a recommended time period where they should be completed within to help ensure they are carried out at the most appropriate time. Some credits and specific criteria have madatory RIBA stages where they must be completed within and these are marked out in bold in the credit summary bar. Below are the RIBA stages which is used in the report.

Strategic Definition	Preparation and Brief	Concept Design	Developed Design	Technical Design	Construction	Handover and Close Out
0 (A.)	1 (B.)	2 (C.)	3(D)	4 (E-F)	5	6 (J-K)

Each credit has been assigned to a responsible party. It is their responsibility to refer to the relevant section of the Credit Status in this document and BREEAM manual.

Please note that it is not possible to achieve 100% in a BREEAM assessment, therefore there will always be credits that are 'Not Sought' due to the nature of the assessment.
The credits detailed below were agreed at the pre-assessment meeting for the and the status of each credit reflects the information provided by the Design Team following all meetings and correspondence to date with the BREEAM Assessor.

All actions and evidence must be submitted to the BREEAM Assessor as soon as possible for review to and inclusion in the BREEAM report.

Where text is struck through, evidence has been received, reviewed and signed off.

Changes to the document following the report issued prior to this issue (where applicable) are shown in red text.

5.1 Scoring Abbreviations:

AVL = Available credits
ACH = Achieved credits out of the total credits available
CTS = Credits which form part of the Current Targeted Score
TBC = Credits which are To Be Confirmed. These include the CTS credits and additional credits that are potentially achievable but not formally confirmed as targeted.

Management

Total credits in Management:		Action By	Credit Status	AVL 18	ACH 0	CTS 10	TBC 2
Man01 Project Brief and Design C1-4: Stakeholder Consultation (Project Delivery)	**RIBA Stage 2(C): Consultations**	Project Manager	Targeted	1	0	1	0
		Architect	Targeted				

Assessor's Notes

It was confirmed in the pre-assessment meeting that stakeholder consultation in relation to project delivery will be carried out by the team throughout the key phases of project delivery and a sustainability brief will be provided. It was advised that all key meetings be documented to provide evidence for this credit.
The Team noted the site is currently at Riba Stage 2.

Evidence/Action Required

1. Provide a clear sustainability brief which is developed prior to Concept Design and sets out the following:
   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. Provide documentation (meeting minutes, construction programme, responsibilities and/or specification clauses) confirming that collaboration began prior to Concept Design stage (RIBA Stage 2 or equivalent). All project delivery stakeholders i.e. the client, the building occupier (where known), the design team and the principal contractor must meet to identify and define their roles, responsibilities and contributions for each of the following key phases of project delivery;
   • Design;
   • Construction;
   • Commissioning and handover;
   • Occupation (up to and including stage L).

3. Provide an outline of the roles and responsibilities of the design team showing the following have been considered at each of the key phases of project delivery:
   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. Where the stakeholder contributions and the consultation process have resulted in changes to the Initial Project Brief, provide documentary evidence in the form of feedback forms, client ER's, specification addendums, drawings, Design Stage Reports, Execution Plan, Communication Strategy, etc, as confirmation.

Man01 Project Brief and Design C5-7, 8: Stakeholder Consultation (Third Party)	**RIBA Stage 2(C): Consultations.** **RIBA Stage 4(EF): Feedback.**	Project Manager	Targeted	1	0	1	0
		Architect	Targeted				

Assessor's Notes
It was advised at the pre-assessment meeting that consultation with relevant third party stakeholders will be undertaken.

Evidence/Action Required

5. Provide documentary evidence (meeting minutes, consultation plan, consultee feedback) confirming that, prior to completion of the Concept Design stage, all relevant third party stakeholders (see definition below) have been consulted by the design team and this covers the following minimum consultation content dependent on the building type:
   1. Functionality, build quality and impact (including aesthetics)
   2. Provision of appropriate internal and external facilities (for future building occupants and visitors/users)
   3. Management and operational implications
   4. Maintenance resources implications
   5. Impacts on the local community, e.g. local traffic/transport impact
   6. Opportunities for shared use of facilities and infrastructure with the community/appropriate stakeholders, if relevant/appropriate to building type.
   7. Compliance with statutory (national/local) consultation requirements.
   8. Inclusive and accessible design.
   9. Where services are taken from outside of the refurbishment area that affect the suitability of the service, e.g. domestic hot water services and legionella prevention.

   Relevant third parties include:
   1. Actual/intended building users (if known) including facilities management (FM) staff or those responsible for the day-to-day operation of the building and grounds.
   2. Existing partnerships and networks that have knowledge of and experience working on existing buildings of the same type.
   3. Potential users of any shared facilities, e.g. operators of clubs and community groups.
6. Provide documentary evidence in the form of feedback forms, amended design drawings, and specification addendums to demonstrate how the stakeholder contributions and outcomes of the consultation exercise have influenced or changed the Initial Project Brief and Concept Design.
7. Provide documentary evidence confirming 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 regarding suggestions made, including how the results of the consultation process have influenced, or resulted in modifications to, the proposed design and building operation/use.

   Feedback must cover:
   1. What was proposed during the consultation exercise;
   2. How these proposals were considered;
   3. The outcome, e.g. implementation of the suggestion or a description of why options have not been deemed feasible;
   4. Implications for management and operation of the building.

   The consultation feedback must be summarised within a design intent document which has been approved by each of the main parties/stakeholders.

Man01 Stakeholder Consultation C9-11: Sustainability Champion (Design)	**RIBA Stage 1(A-B): Appointment**	BREEAM AP	Targeted	1	0	1	0
		Project Manager	Targeted				

Assessor's Notes
It was advised at the pre-assessment meeting that BREEAM performance targets be formally agreed between the Client and the design team. At the meeting a Very Good target was set.

Evidence/Action Required

9. Provide an appointment letter, specification clause, project programme, meeting minutes confirming that a Sustainability Champion (BREEAM Accredited Professional) has been appointed to facilitate the setting and achievement of BREEAM performance target(s) 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).

10. The defined BREEAM performance target(s) has been formally agreed between the client and design/project team no later than the Concept Design stage (RIBA Stage 2 or equivalent). This formal agreement must be in the form of a letter of appointment or contract and provided to the Assessor as evidence.

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

Man01 Stakeholder Consultation C12-13: Sustainability Champion (Monitoring Progress)	**RIBA Stage 1(A-B): Appointment.** **RIBA Stage 2(C): BREEAM target confirmed**	BREEAM AP	Targeted	1	0	1	0
		Project Manager	Targeted				

Assessor's Notes
At the pre-assessment meeting this credit was considered uncertain, because a BREEAM compliant individual is currently not appointed for the relevant stages. However, the team decided to target this credit and the design process and appointed is to be agreed.

Evidence/Action Required

12. The Sustainability Champion criteria 9, 10 and 11 have been achieved.

13. Provide an appointment letter, specification clause, project programme, meeting minutes and the BREEAM assessor's progress report confirming:
    • The Sustainability Champion (BREEAM AP) will monitor and report progress against BREEAM targets by attending key project / design team meetings during the Concept Design, Developed Design and Technical Design stages, as defined by the RIBA Plan of Work 2013;
    • Updated BREEAM progress reports will be provided during, and prior to, completion of each stage, as a minimum, to formally report progress to the client and design team.

Man02 Life Cycle Cost and Service Life Planning C1-2: Elemental Life Cycle Cost (LCC)	**RIBA Stage 2(C): Elemental LCC**	N/A	Not targeted	2	0	0	0
		N/A	N/A				

Assessor's Notes

At the pre-assessment meeting this credit was considered unachievable because a compliant report will not be produced within the required BREEAM timescale. Additionally the client does not normally undertake a LCC for this type of development.

Evidence/Action Required

1. Provide a copy of an outline, entire asset Elemental Life Cycle Cost (LCC) plan that 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 156865:2008.

   The LCC must be an economic evaluation of the life cycle costs of the assets over a defined period of analysis. The costs are expressed as cost per square metre of gross internal floor area (GIFA) and presented for elemental analysis, aligned to the level of capital cost plans.

   The capital cost for the building must include the expenses related to the initial construction of the building:
   a. Construction, including preparatory works, materials, equipment and labour;
   b. Site management;
   c. Construction financing;
   d. Insurance and taxes during construction;
   e. Inspection and testing.
2. The elemental LCC plan shows:

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'.

Man02 Life Cycle Cost and Service Life Planning C3: Component Level LCC Option Appraisal	**RIBA Stage 4(E-F): Component Level LCC Plan.**	N/A	Not targeted	1	0	0	0
		N/A	N/A				

Assessor's Notes
At the pre-assessment meeting this credit was considered unachievable because a compliant report will not be produced within the required BREEAM timescale. Additionally the client does not normally undertake a LCC for this type of development.

Evidence/Action Required

3. Provide a copy of a component level LCC option appraisal, developed by the end of Process Stage 4 (equivalent to Technical Design – RIBA Stage 4) in line with PD 156865:2008. The component level LCC appraisal for service life planning at the feasibility stage requires the environment of the building and other local conditions to be identified, and the fundamental requirements to be met in planning the service life of the building.

   Decisions should be made on:
   a. The likely design life of the building (rather than the contractual design life);
   b. The minimum functional performance criteria for each component over the building's design life;
   c. The components that must be repairable, maintainable or replaceable within the design life of the building. Only the key differentiators between components and systems need to be comparatively modelled.

   The LCC must include the following component types (where present):

Applicability	Building components
Part 1 assessments, including components within scope of works.	Envelope, e.g. cladding, windows, and/or roofing
Part 2 & 3 assessments including newly specified local and core services.	Newly specified local and/or core service equipment, e.g. boiler, air-conditioning, air handling unit, and/or controls etc.
Parts 1 – 4, where finishes are within scope of works.	Finishes, e.g. walls, partitions, floors and/or ceilings etc.
Where external spaces are within scope of works.	External spaces, e.g. alternative hard landscaping, boundary protection.

   Where carrying out a major refurbishment covering all parts of the scheme, a component level LCC plan shall be developed as above.

Man02 Life Cycle Cost and Service Life Planning C4: Capital Cost Reporting	RIBA Stage 6(J-K): Recommended action	Project Manager	TBC	1	0	0	1
		Client	TBC				

Assessor's Notes
At the pre-assessment meeting this credit was considered uncertain, because It is to be confirmed if the capital cost can be reported for the project.

Evidence/Action Required

4. Provide written confirmation to the BREEAM Assessor of the capital cost for the building in pounds per square metre (£k/m^2).

Man03 Environmental Management Minimum standards for this credit with the currently targeted Very Good ≥ 55% BREEAM rating: None							
Man03 Responsible Construction Practices C1: Pre-requisite	RIBA Stage 4(E-F): Recommended action	Principal Contractor	Targeted	Pre-requisite for this credit.			
		Client	Targeted				

Assessor's Notes
It was advised at the pre-assessment meeting that all timber and timber products used on the project be legally harvested and traded timber. The design team noted at present a contractor has not been appointed but they will be required to comply.

Evidence/Action Required

1. Provide written confirmation that all timber and timber based products used on the project is 'Legally harvested and traded timber' (see Relevant definitions below). This can be in the form of a letter, specification clauses or contract requirements confirming that all site timber used on the project is sourced in accordance with the UK Government's Timber Procurement Policy.

   BREEAM follows the UK government's definition of legally sourced timber, as outlined in the Central Point of Expertise on Timber (CPET) 5th Edition report on the UK Government Timber Procurement Policy, which states that legal timber and wood-derived products are those that originate from a forest where the following criteria are met:

   1. The forest owner/manager holds legal use rights to the forest.
   2. There is compliance by both the forest management organisation and any contractors with local and national legal criteria including those relevant to:
   a. Forest management
   b. Environment
   c. Labour and welfare
   d. Health and safety
   e. Other parties' tenure and use rights
   f. All relevant royalties and taxes are paid.
   3. There is full compliance with the criteria of CITES.

Man03 Responsible Construction Practices C2-3: Environmental Management	RIBA Stage 4(E-F)/Stage 5: Recommended action	Principal Contractor	Targeted	1	0	1	0
		Client	Targeted				

Assessor's Notes
It was advised at the pre-assessment meeting that a Contractor has not be appointed yet, but whoever is appointed will be required operate an EMS system.

Evidence/Action Required

2. Provide a copy of the EMS certificate as confirmation that the principal contractor operates an environmental management system (EMS) covering their main operations. The EMS must be either:
   a. be third party certified, to ISO 14001/EMAS or equivalent standard; OR
   b. have a structure that is in compliance with BS 8555 2003 and has reached phase four of the implementation stage, 'implementation and operation of the environmental management system', and has completed phase audits one to four, as defined in BS 8555.

3. Provide site log books, pollution prevention procedures, etc confirming that 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: PPG6.

Man03 Responsible Construction Practices C4-6: Sustainability Champion (construction)	RIBA Stage 4(E-F): Recommended action	N/A	Not targeted	1	0	0	0
		N/A	N/A				

Assessor's Notes
At the pre-assessment meeting this credit was considered uncertain because until the contractor is appointed, it is unknown whether they will appoint a BREEAM compliant individual.

Evidence/Action Required

4. Provide a contract letter confirming the appointment of a Sustainability Champion (BREEAM AP) 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).

   The following roles and responsibilities should be detailed in full within the documentary evidence:
   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 require action to be taken to address shortcomings in compliance.
   The Sustainability Champion will monitor site activities at key stages of construction 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.

5. The defined BREEAM performance target must form a requirement of the principal contractor's contract and be formally agreed between the client and design/project team no later than the Concept Design stage (RIBA Stage 2 or equivalent). This formal agreement must be in the form of a letter of appointment or contract and provided to the Assessor as evidence.

6. 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 certification report.

Man03 Responsible Construction Practices C7-8: Considerate Construction	RIBA Stage 4(E-F)/Stage 5: Recommended action	Principal Contractor	Targeted	2	0	1	1
		Client	Targeted				

Assessor's Notes
It was advised at the pre-assessment meeting that a CCS score between 25-34 should be targeted by the Contractor.
It is to be confirmed if the second credit can be targeted for going beyond best practice.

Evidence/Action Required

8. Where the refurbishment or fit-out project does not meet the definition of a small scale or low value project provide specification clauses or a formal letter of commitment from the client/developer confirming that the site has been registered with the Considerate Constructors Scheme or other compliant organisation.

   The BREEAM credits can be awarded as follows:
   To achieve BREEAM credits using the Considerate Constructors Scheme (CCS) and its Code of Considerate Practice, the principal contractor must achieve scheme certification and a CCS score as follows:
   1. One credit: a CCS score between 25 and 34*
   2. Two credits: a CCS score between 35 and 39**
   3. Exemplary level performance: a CCS score of 40 or more**.
   * A score of at least 5 in each of the five sections must be achieved.
   ** A score of at least 7 in each of the five sections must be achieved.

   Small scale or low value refurbishment or fit-out projects
   Projects up to 500m² total floor area or a contract value of up to £1m for education, industrial, institutions, leisure, retail and multi-residential buildings or up to £2m for health, mixed use, residential institutions and other buildings.

Man03 Responsible Construction Practices C9: Monitoring of refurbishment or fit-out-site impacts	RIBA Stage 4(E-F): Recommended action	Principal Contractor	Targeted	Pre-requisite for criteria 10 to 18			
		Client	Targeted				

Assessor's Notes
At the pre-assessment meeting, this credit was considered achievable and all credits related to monitoring of construction site impacts be targeted by the Contractor.

Evidence/Action Required

9. Provide a letter of confirmation or specification clause detailing that 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.

Man03 Responsible Construction Practices C10-15: Monitoring of refurbishment or fit-out-site impacts- Utility Consumption	RIBA Stage 4(E-F)/Stage 5: Recommended action	Principal Contractor	Targeted	1	0	1	0
		Client	Targeted				

Assessor's Notes
At the pre-assessment meeting, this credit was considered achievable and both energy and water consumption be monitored on site by the Contractor.

Evidence/Action Required

Energy Consumption 10-12

10. Criterion 9 is achieved
11. Monitor and record data on principal contractor's and sub-contractors' energy consumption in kWh (and where relevant, litres of fuel used) as a result of the use of construction plant, equipment (mobile and fixed) and site accommodation.
12. Using the collated data report the total carbon dioxide emissions (total $kgCO_2$/project value) from the construction process to the BREEAM Assessor.

Water Consumption 13-15

13. Criterion 9 is achieved.
14. Monitor and record data on principal contractor's and sub-contractors' potable water consumption (m^3) arising from the use of construction plant, equipment (mobile and fixed) and site accommodation.
15. Using the collated data report the total net water consumption (m^3), i.e. consumption minus any recycled water use, from the construction process to the BREEAM Assessor.

Man03 Responsible Construction Practices C16-18: Monitoring of refurbishment or fit-out-site impacts - Transport of construction materials and waste	RIBA Stage 4(E-F)/Stage 5: Recommended action	N/A	Not targeted	1	0	0	0
		N/A	N/A				

Assessor's Notes

At the pre-assessment meeting this credit was considered uncertain because a contarctor has not yet been appointed. Until a contractor is appointed and confirms if this credit can be targeted, the site is not seeking this credit.

Evidence/Action Required

16. Criterion 9 is achieved.
17. Monitor and record data on transport movements and impacts resulting from delivery of the majority of refurbishment or fit-out materials to site and refurbishment, fit-out and demolition or strip-out waste from site. As a minimum this must cover:

    a. Transport of materials from the factory gate to the building site, including any transport, intermediate storage and distribution.

    For the purposes of this issue, the factory gate is defined as being the product manufacturer gate (i.e. where manufacture and pre-assembly finishes and the material is in its final product form). Examples might include:
    1. Steel/concrete/glass manufacturers for cladding, windows and beams etc.
    2. Quarry gate for aggregate and sand
    3. Concrete plant for concrete
    4. Saw mill and timber processing plant for timber.

    b. Scope of this monitoring must cover the following as a minimum:
    i. Where Part 1 is being assessed, materials used in major building elements, including insulation materials
    ii. Where Part 2 is being assessed, materials used for core services
    iii. Where undertaking a comprehensive refurbishment including fit-out with a combination of Parts 1 - 4, materials used for major building elements, services and interior fit-out
    iv. Where within scope, ground works and landscaping materials

    c. Transport of construction waste from the construction gate to waste disposal processing/recovery centre gate. Scope of this monitoring must cover the construction waste groups outlined in the project's waste management plan.
18. Using the collated data, report separately for materials and waste, the total fuel consumption (litres) and total carbon dioxide emissions ($kgCO_2$ eq), plus total distance travelled (km) to the BREEAM Assessor.

Man03 Responsible Construction Practices C19: Exemplary Level Criteria	RIBA Stage 4(E-F): Recommended action	N/A	Not targeted	1	0	0	0
		N/A	N/A				

Assessor's Notes

At the pre-assessment meeting this credit was considered unachievable. This credit is to be reviewed once a contractor has been appointed.

Evidence/Action Required

19. Provide specification clauses or a formal letter of commitment from the client/developer confirming that the site has been registered with the Considerate Constructors Scheme or other compliant organisation.

    The Exemplary credit can be awarded as follows:
    Exemplary level performance: a CCS score of 40 or more**.
    ** A score of at least 7 in each of the five sections must be achieved.

Man04 Commissioning and Handover Minimum standards for this credit with the currently targeted Very Good ≥ 55% BREEAM rating: None							
Man04 Commissioning and Handover C1-4: Commissioning and testing schedule and responsibilities	**RIBA Stage 4(E-F): Appointment** RIBA Stage 4(E-F): Recommended action	M&E	Targeted	1	0	1	0
		Client	Targeted				

Assessor's Notes

At the pre-assessment meeting, this credit was considered achievable and commissioning of the building services will be carried out and an appropriate schedule of commissioning and testing will be prepared.

Evidence/Action Required

1. Provide 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, BSRIA and CIBSE guidelines and/or other appropriate standards, where applicable. Where a building management system (BMS) is specified, the following commissioning procedures must be carried out and detailed in the appointment letter/s:
   1. Commissioning of air and water systems is carried out when all control devices are installed, wired and functional
   2. In addition to air and water flow results, commissioning results include physical measurements of room temperatures, off-coil temperatures and other key parameters as appropriate
   3. The BMS/controls installation should be running in auto with satisfactory internal conditions prior to handover
   4. All BMS schematics and graphics (if BMS is present) are fully installed and functional to user interface before handover
   5. The occupier or facilities team is fully trained in the operation of the system.
3. Provide a copy of the appointment letter detailing the commissioning responsibilities or specification clause confirming that 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. Provide a copy of the specification clause or a letter confirming that 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.

Man04 Commissioning and Handover C5-6: Commissioning Building Services	RIBA Stage 4(E-F): Recommended action	M&E	Targeted	1	0	1	0
		Client	Targeted				

Assessor's Notes
At the pre-assessment meeting, this credit was considered achievable and that commissioning of the building services will be carried out by a specialist commissioning manager.

Evidence/Action Required

5. The commissioning and testing schedule and responsibilities credit is achieved.
6. Provide a letter of appointment for the specialist commissioning engineer for buildings with complex building services and systems. The letter must confirm that the specialist commissioning manager is appointed during the design stage (by either the client or the principal contractor) with responsibility for:

   a. Undertaking design reviews and giving advice on suitability for ease of commissioning.

   b. Providing commissioning management input to construction programming and during installation stages.

   c. Management of commissioning, performance testing and handover/post hand-over stages.

   Where there are simple building services, this role can be carried out by an appropriate project team member, provided they are not involved in the general installation works for the building services system(s).

Man04 Commissioning and Handover C7-8: Testing and inspecting building fabric	RIBA Stage 4(E-F): Recommended action	N/A	Not targeted	1	0	0	0
		N/A	N/A				

Assessor's Notes
As the building is part refurbishment and part new build, it was noted that there maybe poor performing elements. It was viewed that there maybe a lot of defects requiring remediation and as such the credit is not sought.

Evidence/Action Required

7. Provide a copy of the programme of works, specification clause and/or the project budget confirming that the integrity of the building fabric, including continuity of insulation, avoidance of thermal bridging and air leakage paths will be quality assured through completion of a thermographic survey as well as airtightness testing and visual inspection at appropriate times during the refurbishment.

   Dependent on building type or construction, this can be demonstrated through the completion of a thermographic survey as well as an airtightness test and inspection. The survey and testing must be undertaken by a Suitably Qualified Professional (a professional holding a valid level 2 certificate in thermography) in accordance with the appropriate standard.

   The thermographic survey must cover 100% of the treated spaces, unless it is a large complex building, and ensure that all elements of the building fabric that enclose an internal heated and/or conditioned (treated) zone of the building will be tested. This includes internal walls separating treated and untreated zones.

   In the case of large and complex buildings, it may be impractical for the thermographic survey and air-tightness testing to cover 100% of the building. Where a complete thermographic survey is deemed impractical by a Level 2 qualified thermographic surveyor, the guidance in air tightness standard TSL2 should be followed on the extent of the survey and testing. This could include airports, large hospitals and high-rise buildings.

8. Provide documentary evidence such as commitment letter confirming that any defects identified in the thermographic survey and/or airtightness testing report will be rectified prior to building handover and closed out. Any remedial work must meet the required performance characteristics for the building/element.

Man04 Commissioning and Handover C9-10: Handover	RIBA Stage 4(E-F): Recommended action	Principal Contractor	Targeted	1	0	1	0
		Client	Targeted				

Assessor's Notes
At the pre-assessment meeting, this credit was considered achievable and a Building User Guide and a training schedule for the building manager would be developed prior to handover.

Evidence/Action Required

9. Provide a formal letter of commitment from the design team or relevant section clauses of the specification confirming that a Building User Guide (BUG) will be developed or (where present) an existing Building User Guide is updated, prior to handover for distribution to the building occupiers and premises managers, 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.

   The Building User Guide (BUG) must cover all functions and uses of the building, ensuring building users are able to access and use the building effectively. Where relevant, the documents must describe the facilities to be shared and how access to them will be arranged for potential users.

   A Building User Guide should be written in plain English and will provide easily accessible and understandable information relevant to the following stakeholders:
   The building's staff (or where relevant residents)
   The non technical facilities management team/building manager
   Other building users e.g. visitors / community users

   The content of the guide must be specific to the building type and end users, but broadly include information on the following:
   - Overview of the building and its environmental strategy, e.g. energy/water/waste efficiency policy/strategy and how users should engage with/deliver the policy/strategy.
   - Building services overview and access to controls, e.g. where to find them, what they control, how to operate effectively and efficiently etc.
   - Pre-arrival information for visitors, e.g. access and security procedures/provisions
   - Provision of, and access to, shared facilities
   - Safety and emergency information/instructions
   - Building related operational procedures specific to building type/operation, e.g. laboratories.
   - Building related incident reporting/feedback arrangements
   - Building related training information/links
   - Provision of, and access to, transport facilities, e.g. public transport, cyclist facilities, pedestrian routes etc.
   - Provision of, and access to, local amenities
   - Provide details and copies of risk assessments carried out including a legionella risk assessment
   - Re-fit, refurbishment and maintenance arrangements/considerations
   - Links, references and relevant contact details

10. Provide a formal letter of commitment from the design team or relevant section clauses of the specification confirming that a training schedule will be 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, log book etc.

    e. Maintenance requirements, including any maintenance contracts and regimes in place.

Health and Wellbeing

Total credits in Health and Wellbeing:		Action By	Credit Status	AVL 14	ACH 0	CTS 3	TBC 0
Hea01 Visual Comfort C3-5: Daylighting (building type dependent)	RIBA Stage 4(E-F): Recommended action	N/A	Not targeted	3	0	0	0
		N/A	N/A				

Assessor's Notes
At the pre-assessment meeting, this credit was considered unachievable as although the refurbishment will have large windows. However, some units/areas are located in on lower ground floors. Therefore it is not assumed the daylight levels can be improved and the credit has not been sought.

Evidence/Action Required

3. Provide daylight calculations and detailed floor plans confirming daylighting criteria have been met using either of the following options:

   a. The areas within the building where good daylighting is considered to be of benefit to the building users (typically those areas occupied continuously for 30 minutes or more) meet good practice daylight factor(s) and other criterion as outlined in Table - 12 and daylighting uniformity criteria below.

   OR

   b. The areas within the building where good daylighting is considered to be of benefit to the building users (typically those areas occupied continuously for 30 minutes or more) meet good practice average and minimum point daylight illuminance criteria as outlined in Table - 14.

Table - 12: Minimum values of average daylight factor required

Building/area type	Average daylight factor required	Minimum area (m^2) to comply			Other requirement
		1 Credit	2 Credits	3 Credits	
Retail buildings					
Sales areas	-	17.5%	25%	35%	Point daylight factors of 2% or more
Other occupied areas	2%	40%	60%	80%	EITHER (a) OR {(b) and (c)} as per below text

Daylighting uniformity criteria:

(a) A uniformity ratio of at least 0.3 or a minimum point daylight factor of at least 0.3 times the relevant average daylight factor value in Table - 12. Spaces with glazed roofs, such as atria, must achieve a uniformity ratio of at least 0.7 or a minimum point daylight factor of at least 0.7 times the relevant average daylight factor value in Table - 12.

(b) At least 80% of the room has a view of sky from desk or table top height (0.85m in multi-residential buildings, 0.7m in other buildings).

(c) The room depth criterion d/w +d/HW < 2/(1-RB) is satisfied.
Where:
d = room depth,
w = room width,
HW = window head height from floor level,
RB = average reflectance of surfaces in the rear half of the room

Table - 14: Space type and illuminance requirements - both criteria (average illuminance and minimum point illuminance) should be met.

Area type	Minimum area to comply			Average daylight illuminance (averaged over entire space)	Minimum daylight illuminance at worst lit point
	1 Credit	2 Credits	3 Credits		
Retail buildings					
Sales areas	17.5%	25%	35%	At least 200 lux point daylight illuminances for 2650 hours per year or more	
Other occupied areas	40%	60%	80%	At least 200 lux for 2650 hours per year or more	At least 60 lux for 2650 hours per year or more

4. For Two Credits - Provide daylight calculations, detailed floor plans and elevations and area calculations confirming 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:
   a. 5% glass to floor area ratio for side windows; OR
   b. 2.5% glass to floor area ratio for roof lights;

   Note: The improvement in daylighting provision is calculated using the BREEAM Hea 01 Calculator tool based upon either the increase in glazing area, transmittance, illuminance or percentage daylight factor.
5. For One Credit - Provide daylight calculations, detailed floor plans and elevations and area calculations confirming 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:
   a. 5% glass to floor area ratio for side windows; OR
   b. 2.5% glass to floor area ratio for roof lights;

   Note: The improvement in daylighting provision is calculated using the BREEAM Hea 01 Calculator tool based upon either the increase in glazing area, transmittance, illuminance or percentage daylight factor.

Hea01 Visual Comfort C6-9: View Out	RIBA Stage 4(E-F): Recommended action	N/A	Not targeted	2	0	0	0
		N/A	N/A				

Assessor's Notes
At the pre-assessment meeting, this credit was considered unachievable as some units/areas are located in on lower ground floors. Therefore it is not assumed the view out requirements can be achieved and the credit has not been sought.

Evidence/Action Required

6. Where seeking two credits provide scaled floor plans and calculations confirming that 95% of relevant floor areas are within 7m of a wall with a window or permenant opening that provides an adequate view out. The floor plans must detail all rooms/ spaces names. Relevant areas are where there are or will be workstations/ benches or desks for building users. Also where close work will be undertaken or visual aids used.

7. Where seeking one credit provide scaled floor plans and calculations confirming that 80% of relevant floor areas are within 7m of a wall with a window or permenant opening that provides an adequate view out. The floor plans must detail all rooms/ spaces names. Relevant areas are where there are or will be workstations/ benches or desks for building users. Also where close work will be undertaken or visual aids used.

8. Provide calculations confirming that the window/ opening is ≥20% of the surrounding wall area (in m^2) of the internal wall in which the window/opening is located, including the area of the window/opening itself). 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 BS 8206.

Hea02 Indoor Air Quality C1: Indoor air quality (IAQ) plan	RIBA Stage 4(E-F): Recommended action	N/A	Not targeted	1	0	0	0
		N/A	N/A				

Assessor's Notes
At the pre-assessment meeting, this credit was not targeted.

Evidence/Action Required

1. Provide a copy of the indoor air quality plan which has been produced and implemented or specification clause , 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.

Hea02 Indoor Air Quality C2-5: Ventilation	RIBA Stage 4(E-F): Recommended action	N/A	Not targeted	1	0	0	0
		N/A	N/A				

Assessor's Notes
At the pre-assessment meeting this credit was considered unachievable as air intakes and exhausts might will not meet the required BREEAM distance criteria.

Evidence/Action Required

Provide design drawings, models and/or specification clauses confirming that 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 BS EN 13779:20071 Annex A2.

   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 BS EN 13779:2007 Annex A3.

5. Areas of the building subject to large and unpredictable or variable occupancy patterns must have CO_2 or air quality sensors specified and:

   a. In mechanically ventilated buildings/spaces: sensor(s) are linked to the mechanical ventilation system and provide demand-controlled ventilation to the space.

Hea02 Indoor Air Quality C13-14: Adaptability - Potential for Natural Ventilation	RIBA Stage 4(E-F): Recommended action	N/A	Not targeted	1	0	0	0
		N/A	N/A				

Assessor's Notes

At the pre-assessment meeting this credit was considered unachievable because the building has depths greater than 15m. Therefore it cannot be designed to be capable of providing fresh air entirely via a natural ventilation strategy.

Evidence/Action Required

13. Provide specification details, drawings and calculations confirming 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 with CIBSE AM10 (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 CIBSE AM10 (or for education buildings by using the ClassVent tool).

    For a strategy which does not rely on openable windows, or which has occupied spaces with a plan depth greater than 15m, the design must demonstrate (in accordance with criterion 13 a- i above) that the ventilation strategy can provide adequate cross flow of air to maintain the required thermal comfort conditions and ventilation rates.

14. Provide specification details or written confirmation that 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. The two levels of ventilation must be able to achieve the following:
    - Higher level: higher rates of ventilation achievable to remove short term odours and/or prevent summertime overheating
    - Lower level: adequate levels of draught-free fresh air to meet the need for good indoor air quality throughout the year, sufficient for the occupancy load and the internal pollution loads of the space.

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

Hea04 Thermal Comfort C1-5: Thermal modelling	RIBA Stage 4(E-F): Recommended action	N/A	Not targeted	1	0	0	0
		N/A	N/A				

Assessor's Notes
At the pre-assessment meeting this credit was not targeted.

Evidence/Action Required

Provide relevant specification clauses and correspondence and a copy of the thermal comfort modelling report confirming the following:

1. Thermal modelling has been carried out using software in accordance with CIBSE AM11 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 less complex means of analysis may be appropriate (such methodologies must still be in accordance with CIBSE AM11).

3. The model must demonstrate 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).

   The model must also demonstrate the Predicted Mean Vote (PMV) and Predicted Percentage of Dissatisfied (PPD) indices.

5. For air conditioned buildings, provide to the Assessor the PMV (predicted mean vote) and PPD (predicted percentage of dissatisfied) indices based on the above modelling.

Hea04 Thermal Comfort C6-9: Adaptability - For a Projected Climate Change Scenario	RIBA Stage 4(E-F): Recommended action	N/A	Not targeted	1	0	0	0
		N/A	N/A				

Assessor's Notes
At the pre-assessment meeting It was discussed that the building design will not be adapted for a projected climate change scenario and hence this credit is not achievable.

Evidence/Action Required

6. Criteria 1-4 must be achieved.
7. The thermal modelling must demonstrate that the relevant requirements set out in criteria 3 are achieved for a projected climate change environment.

   Note:
   Dynamic thermal simulation software packages currently provide the facility for building designs to be assessed under external climatic conditions specific to geographic location. Industry standard weather data for the UK is available in the form of Test Reference Years (TRYs) and Design Summer Years (DSYs) provided by CIBSE. This weather data enables thermal analysis of building designs under current climatic conditions, yet no account is taken of the projected variations in weather data that will occur during the building's life cycle as a result of climate change. The following probabilistic DSY weather data files should be used to establish the projected climate change environment against which the design is evaluated.

   Free Running Buildings
   - Time period: 2050s
   - Emissions scenario: Medium (A1B)
   Mechanically Ventilated or Mixed Mode Buildings
   - Time period: 2030s
   - Emissions scenario: Medium (A1B).

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

8. Where thermal comfort criteria are not met for the projected climate change environment, provide updated specifications, drawings and calculations demonstrating how the building has been adapted, or designed to be easily adapted in future using passive design solutions in order to subsequently meet the requirements under criterion 7.

9. For air conditioned buildings, the PMV (predicted mean vote) and PPD (predicted percentage of dissatisfied) indices based on the above modelling are to be provided to the Assessor for reporting via the BREEAM assessment scoring and reporting tool.

Hea04 Thermal Comfort C10-12: Thermal Zoning and Controls	RIBA Stage 4(E-F): Recommended action	N/A	Not targeted	1	0	0	0
		N/A	N/A				

Assessor's Notes
At the pre-assessment meeting this credit was not targeted.

Evidence/Action Required

10. Criteria 1 to 4 are achieved.
11. Provide copies of relevant section/clauses of the building specifications and drawings confirming that the thermal modelling analysis (undertaken for compliance with criteria 1 to 4) have informed the temperature control strategy for the building and its users.
12. Provide drawings and a copy of the thermal comfort strategy highlighting the points considered and decisions taken for the heating/cooling system for the building. The strategy for the proposed heating/cooling system(s) must demonstrate 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.

    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 drafts).

    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.

    Note: Responsive heating or cooling controls for a particular area/zone of the building must be accessed and operated by the individual(s) occupying that area or zone. Such controls must be located in, or within the vicinity of, the zone or area they control.

Hea05 Acoustic Performance C4-6: (for Industrial, Retail, Prisons and 'Other' building types)	RIBA Stage 4(E-F): Recommended action	Acoustician	Targeted	2	0	2	0
		Principal Contractor	Targeted				

Assessor's Notes
At the pre-assessment meeting, this credit was considered achievable and an acoustician will be appointed and all the criteria will be met.

Evidence/Action Required

1. Provide a professional report and calculations from the appointed suitably qualified Acoustician and drawings confirming that the building meets the appropriate acoustic performance standards and testing requirements defined in the checklists and tables section which defines criteria for the acoustic principles of:

   a. Sound insulation

   b. Indoor ambient noise level

   c. Reverberation times
2. 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
3. Where undertaking a partial refurbishment or fit-out, the following acoustic performance standards and testing requirements apply:

   Part 1:

   All criteria relevant to the building type are applicable.
   Where a Part 1 only assessment is being undertaken and it is not possible to demonstrate full compliance with the criteria defined in the relevant tables, up to three credits (as applicable to building type, note four credits are available for multi-residential) are available where:
   A suitably qualified acoustician (SQA) carries out a quantifiable assessment of the specification of the built form and any external factors that are likely to affect the building acoustics criteria relevant to the building type and function.
   From the assessment, the SQA should demonstrate the capability of the building to be able to meet the required levels to demonstrate compliance with the BREEAM criteria and highlight any significant issues.
   Where the specific room functions and areas within the building are yet to be defined, the acoustician must base their assessment on the most sensitive room type likely to be present in the building, as a worst case.
   The assessment demonstrates that the works are considering future acoustic issues and criteria.
   Where deficiencies are highlighted that will make future compliance impracticable or incredibly costly, then the credits for the affected criteria should not be awarded.

   Part 2: Core services

   One credit is available for indoor ambient noise only as relevant to the building type and function:
   Where an SQA confirms that it is not feasible to meet the indoor ambient noise criteria in full in accordance with the relevant tables due to the scope of works, in order to demonstrate compliance; measurements and/or quantitative assessment by an SQA is required to demonstrate that the installed core services either:
   • do not change the indoor ambient noise levels where local services or break in noise dominate; or
   • reduce the indoor ambient noise levels.

   Part 3: Local services

   Two credits are available for indoor ambient noise and sound insulation, as relevant to the building type and function:
   Where an SQA confirms that it is not possible to meet the indoor ambient noise and sound insulation criteria in accordance with the relevant tables in full due to the scope of works, in order to demonstrate compliance; measurement and assessment by an SQA are required to demonstrate that the local services either:
   • do not change the indoor ambient noise levels where noise break-in through the building envelope is dominant and maintain sound insulation between noise-sensitive spaces; or
   • reduce the indoor ambient noise levels and maintain sound insulation between noise-sensitive spaces.

Table - 25: BREEAM acoustic criteria for Industrial, Retail, Prisons and Other building types

Industrial, Retail, Prisons and Other building types (two credits)	
First credit - Sound insulation and internal indoor ambient noise levels	
Room function	**All room functions**
Criteria	Internal indoor ambient noise levels: Indoor ambient noise levels comply with the design ranges given in BS 8233: 2014 (see Additional information section in the manual) 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.
Testing requirement	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 (refer to the manual).
Room function	**Acoustically sensitive rooms**
Criteria	Sound insulation: The sound insulation between acoustically sensitive rooms and other occupied areas complies with the example matrix relating to internal sound insulation within Section 7.5 of BS 8233:2014 which takes into consideration the likely level of activity noise, the degree of privacy required and the sensitivity of the adjacent space. It may be considered appropriate to adapt the levels of sound insulation presented within the table according to a specific building's use and any modification to the criteria should be justified by an SQA. Examples of rooms with a 'confidential' privacy requirement may include human resources meeting rooms, or rooms where private conversations may be taking place, however their 'activity noise' is likely to be only 'typical' and then the level of sound insulation would be determined based on the sensitivity of the receiving space. Factory spaces are likely to be considered less sensitive as a receiving space than an adjacent office area, however the activity noise level may be anticipated to be higher.
Testing requirement	Sound insulation: A programme of pre-completion acoustic testing is carried out by a compliant test body in accordance with the acoustic testing and measurement procedures in the Methodology section.
Notes	Acoustically sensitive rooms refers to any room/space the design team or client deems to be acoustically sensitive for the purposes of privacy which may include the following types of space/rooms (where specified); 1. Cellular offices 2. Meeting or interview or consulting or treatment rooms. In addition: 1. Court buildings: witness/consultation rooms and judges' or magistrates' chambers and jury retiring rooms 2. Prison buildings: care or listener suites, official visit rooms, 'closed visits' rooms 3. Educational buildings/spaces: rooms for teaching and learning i.e. classrooms, lecture theatres 4. Rooms used for public speaking or seminars 5. Any other room or space the design team or client deems to be acoustically sensitive for the purposes of privacy. To increase the ambient noise level, where privacy is required or the ambient targets include a minimum as well as maximum limit, an artificial sound source or sound masking system may be required. Any artificial sound source or sound masking system should be installed and in operation at the time of the acoustic testing to demonstrate compliance.

Second credit – Reverberation	
Room function	**Rooms/areas used for speech or performance, including public speaking**
Criteria	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.
Testing requirement	**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 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.

Hea06 Safety and Security C1-3: Security of Site and Building	**RIBA Stage 2(C): Crime Impact Assessment** RIBA Stage 4(E-F): Recommended action	Principal Contractor	Targeted	1	0	1	0
		Client	Targeted				

Assessor's Notes

At the pre-assessment meeting, this credit was considered achievable and suitably qualified security specialist will be consulted and their recommendations incoporated. The team noted the site is currently at Riba stage 2.

Evidence/Action Required

1. Provide written confirmation that a suitably qualified security specialist (SQSS) will be appointed to conduct an evidence-based Security Needs Assessment (SNA) during or prior to Concept Design (RIBA Stage 2 or equivalent).

   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), Counter Terrorism Security Advisor (CTSA); Design Out Crime Officer (DOCO); 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
   ii. Ongoing membership is subject to peer review.
2. Provide a copy of the recommendations or solutions set out by the suitably qualified security specialist (SQSS). These recommendations or solutions must 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 Security Needs Assessment (SNA).

   The Security Needs Assessment (SNA) is the project and site specific assessment of security needs, and must include (where applicable):
   1. A visual audit of the site and surroundings, identifying environmental cues and features pertinent to the security of the proposed development.
   2. Formal consultation with relevant stakeholders, including the local SQSS, in order to obtain a summary of crime and disorder issues in the immediate vicinity of the proposed development.
   3. Identify risks specific to the proposed, likely or potential use of the building(s).
   4. Identify risks specific to the proposed, likely or potential user groups of the building(s).
   5. Identify any detrimental effects the development may have on the existing community. The purpose of the assessment is
3. Provide drawings to confirm that the recommendations or solutions proposed by the suitably qualified security specialist (SQSS) are implemented. Any deviation from those recommendations or solutions will need to be justified, documented and agreed in advance with a suitably qualified security specialist.

Energy

Total credits in Energy:	Action By	Credit Status	AVL	ACH	CTS	TBC
			24	0	18	0

Ene01 Reduction of Energy Use and Carbon Emissions

Minimum standards for this credit with the currently targeted Very Good ≥ 55% BREEAM rating:
None

Ene01 Reduction of Energy Use and Carbon Emissions C1: Whole building energy model (option 1)	RIBA Stage 4(E-F): Recommended action	Energy Consultant	Targeted	15	0	15	0
		Client	Targeted				

Assessor's Notes

At the pre-assessment meeting, this credit was considered achievable and is being targeted for the project.
Based on the proposed energy strategy and initial SBEMS, 15 credits are currently assumed for an EPRNDR of 0.97.

Evidence/Action Required

1. To calculate the Energy Performance Ratio for Non Domestic Refurbishment (EPR_{NDR}) and compare with the benchmarks in Table 27 to determine the corresponding number of BREEAM credits, provide the following information detailed in each step of methodology below:

   Methodology

   Step 1: Model the existing building energy performance

   Input file of the EPC Calculation with '_epc.inp' file extension for the existing building (this is different from the '_brukl.inp' file extension)

   A copy of the "As Designed" EPC certificate from a compliant energy modelling software used to model the existing building to confirm the following figures to inform the calculation of the Ene 01 score:

   a. Reference building energy demand (DemRef), kWh/m²
   b. Actual (existing) building energy demand (DemEx), kWh/m²
   c. Reference building primary energy consumption (PERef), kWh/m²
   d. Actual (existing) building primary energy consumption (PEEx), kWh/m²
   e. Reference building CO_2 emissions (SER), $KgCO_2/m^2$
   f. Actual (existing) building CO_2 emissions (BEREx), $KgCO_2/m^2$

   The above information is obtained by uploading the EPC input file (for the existing building) to the BREEAM Non Domestic Refurbishment Ene 01 website. (This will be done by the assessor)

Step 2: Model the refurbished building performance

Input file of the EPC Calculation with '_epc.inp' file extension for the proposed / refurbished building (this is different from the '_brukl.inp' file extension)

The refurbished building performance should be modelled using the proposed building specification, as opposed to the existing building specification that is used in Step 1.

A copy of the "As Designed" EPC certificate from a compliant energy modelling software used to model the refurbished building to confirm the following building energy performance information to inform the calculation of the Ene 01 score:

a. Actual (proposed) building energy demand (DemProp), kWh/m²
b. Actual (proposed) building primary energy consumption (PEProp), kWh/m²
c. Actual (proposed) building CO_2 emissions (BERProp), $kgCO_2/m^2$

The above information is obtained by uploading the EPC input file (for the proposed / refurbished building) to the BREEAM Non Domestic Refurbishment Ene 01 website. (This will be done by the assessor)

Step 3: Enter the reference, existing and proposed/refurbished building performance into the BREEAM Non Domestic Refurbishment Scoring and Reporting tool

The above data, generated from the two building models, should be entered into the BREEAM Non Domestic Refurbishment Scoring and Reporting tool in order to determine the Ene 01 score. (This is done by the assessor)

Table - 27: Ene 01 EPR_{NDR} benchmark scale

BREEAM Credits	EPR_{NDR}	Rating	Minimum requirements
1	≥0.06	Pass Good Very Good	None
2	≥0.12		
3	≥0.18		
4	≥0.24		
5	≥0.30		
6	≥0.36	Excellent	Requires a minimum of 6 credits to be achieved (equivalent to an EPR_{NDR} of ≥ 0.36).
7	≥0.42		
8	≥0.48		
9	≥0.54		

10	≥0.60	Outstanding	Requires a minimum of 10 credits to be achieved (equivalent to an EPR_{NDR} of ≥ 0.60).
11	≥0.66		
12	≥0.72		
13	≥0.78		
14	≥0.84		
15	≥0.90		

Table - 30: Assessment parts and applicable performance components and sub-components

Assessment part	Applicable components	Applicable sub-components
Part 1: Fabric and Structure	Thermal conductance and infiltration	• Fabric (U-value) • Infiltration rate (against heating and cooling) • Glazing area
Part 2: Core Services	Heating	• % heat recovery • Efficiency of heat generation • Heating control factor • Efficiency of heating distribution • Heating pipework insulation
	Cooling	• Efficiency of cooling generation • Cooling control factor • Efficiency of cooling distribution • Cooling pipework insulation
	Ventilation	• Fan efficiency • Duct and AHU leakage • Ventilation control factor
	Hot water	• Efficiency of hot water generation • Hot water control factor
Part 3: Local Services	Lighting	• Lighting efficiency • Lighting control factor
	Local heating, cooling, ventilation and hot water	• As above for core services, depending on scope of local provision for local cooling, heating, ventilation and hot water

Ene01 Reduction of Energy Use and Carbon Emissions C8: Exemplary Level Criteria - two credits - Zero regulated carbon	RIBA Stage 4(E-F): Recommended action	N/A	Not targeted	2	0	0	0
		N/A	N/A				

Assessor's Notes
It was confirmed that exemplary credit for Ene 01 is not being targeted.

Evidence/Action Required

8. Provide a copy of the Building Regulations Output Document and EPC INP. file from the approved software. The output documents must be based on the design stage of analysis.

   Also provide evidence confirming:
   - The total carbon neutral energy generation (kWh/yr)
   - The source of the carbon neutral energy
   - Calculated estimate of energy consumption from unregulated systems/process (kWh/yr) (only required if confirming zero regulated carbon or carbon negative exemplary credits).
   - Calculated estimate of exported energy surplus (only required if confirming carbon negative status).

   The building achieves an $EPR_{NDR} \geq 0.9$ and zero net regulated CO_2 emissions.

   The annual building net regulated CO_2 emissions ($kgCO_2/m^2yr$) arising as a result of annual energy consumption from fixed building services, i.e. space heating and cooling, domestic hot water, ventilation and lighting, also referred to as controlled services and fittings, as a result of requirements imposed on such systems by the Building Regulations. In aiming to achieve a zero regulated carbon status, the building energy modelling can take account of contributions of energy generated from on-site and near-site renewable and low carbon installations. Energy generated and supplied from off-site renewable and low carbon installations cannot be used to meet this definition.

Ene02 Sub-Metering of Major Energy Consuming Systems

Minimum standards for this credit with the currently targeted Very Good ≥ 55% BREEAM rating:
Part 2, 3 and 4:One credit (First sub-metering credit)

Ene02 Energy Monitoring C1-4: Sub-Metering of Major Energy Consuming Systems	RIBA Stage 4(E-F): Recommended action	Principal Contractor	Targeted	1	0	1	0
		M&E	Targeted				

Assessor's Notes
At the pre-assessment meeting, this credit was considered achievable and major energy consuming systems will be sub-metered with pulsed outputs and a BMS will be specified for monitoring.

Evidence/Action Required

1. Provide specification clauses and design drawings confirming that the energy metering systems are installed with pulsed outputs 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 as per the guidance in CIBSE TM39 Building energy metering (see Methodology in the BREEAM manual).

   Energy Consuming Systems are systems that consume energy to perform the following functions within a building:

   a. Space heating
   b. Domestic hot water heating
   c. Humidification*
   d. Cooling*
   e. Ventilation i.e. fans (major)*
   f. Pumps
   g. Lighting
   h. Small power
   i. Renewable or low carbon systems (separately)
   j. Controls
   k. Other major energy-consuming systems/plant, where appropriate. Depending on the building type, this might include for example: plant used for swimming or hydrotherapy pools; other sports and leisure facilities; kitchen plant/catering equipment; cold storage plan;, laboratory plant; sterile services equipment; transportation systems (e.g. lifts and escalators); drama studios and theatres with large lighting rigs; telecommunications; dedicated computer room or suite; dealing rooms; covered car parks; ovens/furnaces; and floodlighting. See also CIBSE TM39: Building energy metering for further information.

   Note: The systems succeeded by * must not be present where a BREEAM New Construction Simple Buildings assessment is being carried out.

2. The energy consuming systems in buildings with a total useful floor area greater than 1,000m^2 must be metered using an appropriate energy monitoring and management system.

4. Provide written confirmation that the end energy consuming uses are identifiable to the building users, for example through labelling or data outputs.

Ene02 Energy Monitoring C5: Sub-Metering of High Energy Load and Tenancy Areas	RIBA Stage 4(E-F): Recommended action	Principal Contractor	Targeted	1	0	1	0
		M&E	Targeted				

Assessor's Notes
At the pre-assessment meeting, this credit was considered achievable and accessible energy sub-meters with pulsed output will be provided, to enable future connection to an energy monitoring and management system, covering a significant majority of the energy supply to tenanted areas.

Evidence/Action Required

5. Provide speciifcations and design drawings confirming that 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 or departments within the building/unit.

Ene03 External Lighting C1-3: One Credit	RIBA Stage 4(E-F): Recommended action	Principal Contractor	Targeted	1	0	1	0
		M&E	Targeted				

Assessor's Notes
At the pre-assessment meeting, this credit was considered achievable and external lighting will be specified for the development which will be designed according to the relevant criteria.

Evidence/Action Required

Provide specification clauses and lighting drawings which confirm:

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.
3. All external light fittings are automatically controlled for prevention of operation during daylight hours and presence detection in areas of intermittent pedestrian traffic.

   An automatic external lighting control system that prevents operation during daylight hours through either time switch or daylight sensor (a manually switched lighting circuit with daylight sensor or time switch override is also acceptable) in addition to providing presence detection in areas of intermittent traffic.
   Note: for external lighting not fitted with presence detectors, time switches must provide automatic switch off of lighting after a specified curfew hour - except in cases where there is a specific requirement for lighting to be left on all night.

Ene04 Low Carbon Design C1-3: Passive Design Analysis	**RIBA Stage 2(C): Passive Design Analysis** RIBA Stage 4(E-F): Recommended action	N/A	Not targeted	1	0	0	0
		N/A	N/A				

Assessor's Notes

At the pre-assessment meeting this credit was considered unachievable because passive design analysis will not be carried out for the project

Evidence/Action Required

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. Provide an analysis of the existing building fabric, form, site location and outline scheme design by Concept Design stage (RIBA Stage 2 or equivalent) to identify opportunities for the implementation of passive design solutions that reduce demands for energy consuming building services. As a minimum, the passive design analysis should cover:
    1. Site location
    2. Site weather
    3. Microclimate
    4. Building layout
    5. Building orientation
    6. Building form
    7. Building fabric
    8. Thermal mass or other fabric thermal storage
    9. Building occupancy type
    10. Daylighting strategy
    11. Ventilation strategy
    12. Adaptation to climate change.
3. The building must use 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. The installation should contribute at least 5% of overall building energy demand and/or CO_2 emissions.

Ene04 Low Carbon Design C4-6: Free Cooling	**RIBA Stage 2(C): Passive Design Analysis** RIBA Stage 4(E-F): Recommended action	N/A	Not targeted	1	0	0	0
		N/A	N/A				

Assessor's Notes
At the pre-assessment meeting this credit was considered unachievable because no free cooling technology will be specified for the development.

Evidence/Action Required

4. The passive design analysis credit must be achieved.
5. The passive design analysis carried out under criterion 2 above must include an analysis of free cooling and identifies opportunities for the implementation of free cooling solutions. Provide results from a dynamic simulation model demonstrating the feasibility of the free cooling strategy and meeting the first credit for Hea 04.

   The free cooling should apply to all occupied spaces in the building. Small IT rooms and lift motor rooms are excluded. Mechanical ventilation may only be used for small areas, e.g. for kitchenettes and toilets.

6. Provide written confirmation that the building uses ANY of the free cooling strategies listed below to reduce the cooling energy demand, i.e. it does not use active cooling. The free cooling analysis should demonstrate consideration of appropriate technologies from the following:
   1. Night-time cooling (requires fabric to have a high exposed thermal mass)
   2. Ground coupled air cooling
   3. Displacement ventilation (not linked to any active cooling system)
   4. Ground water cooling
   5. Surface water cooling
   6. Evaporative cooling, direct or indirect
   7. Desiccant dehumidification and evaporative cooling, using waste heat
   8. Absorption cooling, using waste heat.
   9. The building does not require any significant form of active cooling or mechanical ventilation (i.e. naturally ventilated).

Ene04 Low Carbon Design C7-8: Low Zero Carbon (LZC) Feasibility Study	**RIBA Stage 2(C): Feasibility Study** RIBA Stage 4(E-F): Recommended action	Energy Consultant	Not targeted	1	0	0	0
		N/A	N/A				

Assessor's Notes
At the pre-assessment meeting, it was confirmed a compliant LZC feasibility study will be produced.
Photvolatics are proposed for the scheme but these are to be connected to the office units. Therefore the credit is not targeted.

Evidence/Action Required

7. Provide a copy of a BREEAM compliant LZC feasibility study carried out by an energy specialist (Planning reports are generally not compliant). The feasibility study must establish the most appropriate recognised local (onsite or near-site) low or zero carbon (LZC) energy source(s) for the building/development, and be carried out by the completion of the Concept Design stage (RIBA Stage 2 or equivalent). The LZC study should cover as a minimum:
   1. Energy generated from LZC energy source per year
   2. Carbon dioxide savings from LZC energy source per year
   3. Life cycle cost of the potential specification, accounting for payback
   4. Local planning criteria, including land use and noise
   5. Feasibility of exporting heat/electricity from the system
   6. Any available grants
   7. All technologies appropriate to the site and energy demand of the development.
   8. Reasons for excluding other technologies
   9. Where appropriate to the building type, connecting the proposed building to an existing local community CHP system or source of waste heat or power OR specifying a building/site CHP system or source of waste heat or power with the potential to export excess heat or power via a local community energy scheme.

8. A local LZC technology/technologies must be specified and installed in 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 (CO_2) emissions. The installation should contribute at least 5% of overall building energy demand and/or CO_2 emissions.

Ene06 Energy Efficient Transportation Systems C1: Energy Consumption	RIBA Stage 4(E-F): Recommended action	N/A	Not targeted	1	0	0	0
		N/A	N/A				

Assessor's Notes

At the pre-assessment meeting, it was confirmed this credit could not be achieved. There is an existing lift which is to be reused and therefore the criteria will not be achieved.

Evidence/Action Required

1. Where new lifts, escalators and/or moving walks (transportation types) are specified within refurbishment works, provide design drawings showing the lift location/s in the building and provide a copy of the professional report/transportation study and calculations confirming:

   a. An analysis of the transportation demand and usage patterns for the building must be 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 EN ISO 25745 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 for 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 where it produces an energy saving greater than the additional standby energy used to support the drives. Regenerative drives will typically be appropriate for lifts with high travel and high intensity use.

   d. The transportation system with the lowest energy consumption is specified.

Ene06 Energy Efficient Transportation Systems C2-6: Energy Efficient Features	RIBA Stage 4(E-F): Recommended action	N/A	Not targeted	2	0	0	0
		N/A	N/A				

Assessor's Notes

At the pre-assessment meeting, it was confirmed this credit could not be achieved. There is an existing lift which is to be reused and therefore the criteria will not be achieved.

Evidence/Action Required

2. Criterion 1 must be achieved for newly specified lifts.

   Provide relevant specification clauses and either manufacturers' product details or a formal letter of commitment from the system manufacturer/supplier confirming:

   Lifts

3. For each newly specified lift, the following three energy-efficient features must be specified and for existing lifts, at least two of the following energy efficient features are specified:

   a. The lifts operate in a stand-by condition during off-peak periods. For example the power side of the lift controller and other operating equipment such as lift car lighting, user displays and ventilation fans switch off when the lift has been idle for a prescribed length of time.

   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.

Transport

Total credits in Transport:	Action By	Credit Status	AVL 9	ACH 0	CTS 9	TBC 0
Tra01 Public Transport Accessibility C1-2: Accessibility Index C3: Alternative transport measures	RIBA Stage 3(D): Recommended action	Transport Consultant	Targeted	5	0	5	0
		Architect	Targeted				

Assessor's Notes
At the pre-assessment meeting, this credit was considered achievable and a check of TFL PTAL calculator shows an accessibility index of 55 and hence the project can target all 5 credits.

Evidence/Action Required

Up to five credits - Accessibility Index

1-2. To determine the Accessibility Index (AI), provide scaled drawing/s highlighting the location of the building and all public transport nodes in proximity of the building and the distance (in m) from the building entrance to the transport node (via safe pedestrian route/s, not as the crow flies). Provide timetables for all services at each public transport node considered.

AND/OR

In the case of a large phased refurbishment/regeneration of a site where new transport facilities will be provided, but at a later stage a commitment has been made to provide transport facilities within the shortest of the following periods, demonstrated either within the General Contract Specification or in the form of a Section 106 Agreement:
1. The transport facilities will be available for use by the time 25% of all phases have been completed and are ready for occupation. OR
2. The transport facilities will be available for use within 25% of the total build time for the phase in which the assessed building forms a part, measured from the completion date of that phase.
The most appropriate rule for the development in question must be used, ensuring that the time building users have to wait before having use of the transport facilities is as short as possible.

Where the transport facilities will not be available for use within a period of five years from occupation of the building, they

1. The public transport Accessibility Index (AI) for the assessed building is calculated and BREEAM credits awarded in accordance with the table of building types, AI benchmarks and BREEAM credits in Table - 34.

2. The Accessibility Index is determined by entering the following information in to the BREEAM Tra 01 calculator:

a. The distance (m) from the main building entrance to each compliant public transport node

b. The public transport type(s) serving the compliant node e.g. bus or rail

c. The average number of services stopping per hour at each compliant node during the operating hours of the building for a typical day (see compliance notes and Table - 36 in the Additional Information section of the BREEAM manual).

Table 34: Credits available for each building type relating to the public transport Accessibility Index (AI) score.

Accessibility Index	≥2	≥4	≥8	≥10	≥12	≥18
Building Type	**BREEAM Credits Available**					
Retail, Law Court, Further Education College, Higher Education type 1, Other building type2	1	2	3	3	4	5

Tra02 Proximity to Amenities C1: Proximity to Local Amenities	RIBA Stage 3(D): Recommended action	Architect	Targeted	1	0	1	0
		N/A	N/A				

Assessor's Notes
At the pre-assessment meeting, this credit was considered achievable and the development is located near or has within all the amenities required for this credit.

Evidence/Action Required

1. Provide a marked up scaled plan highlighting the location and distance (in m) of all relevant amentities, as listed in Table - 37 below, from the proposed project/ development.

   AND

   In the case of a large phased refurbishment/regeneration of a site where new amenities will be provided, but at a later stage a commitment has been made to provide transport facilities within the shortest of the following periods, demonstrated either within the General Contract Specification or in the form of a Section 106 Agreement:
   1. The transport facilities will be available for use by the time 25% of all phases have been completed and are ready for occupation. OR
   2. The transport facilities will be available for use within 25% of the total build time for the phase in which the assessed building forms a part, measured from the completion date of that phase.
   The most appropriate rule for the development in question must be used, ensuring that the time building users have to wait before having use of the transport facilities is as short as possible.

   Where the transport facilities will not be available for use within a period of five years from occupation of the building, they cannot be considered for determining compliance with the BREEAM criteria.

   Table - 37: Credits available for Tra02 for different building types

Criteria	Building Types						
	Type 1	Type 2	Type 3	Type 4	Type 5		Type 6
No. of BREEAM Credits	1	1	1	1	1	1	1
No. of Amenities	2	2	2	2	2	4	2
Proximity (metres)	500	500	500	500	500	1000	500
Appropriate food outlet	✓	✓	✓	✓	✓	✓	✓
Access to cash	✓	✓	✓	✓	✓	✓	✓
Access to an outdoor open space (public or private, provided suitably sized and accessible to building users				✓	✓	✓	✓
Access to a recreation/leisure facility for fitness/sports	✓	✓	✓		✓	✓	✓

Key:
✓ - Amenity relevant to building type

Building Types:
Type 1: Offices, Retail, Industrial, Courts
Type 2: Pre-school, Schools, Sixth Form
Type 3: Higher Education and Further Education
Type 4: Healthcare
Type 5: Multi-residential (there are two credits available and each can be awarded independently of the other).
Type 6: Other Building types
This issue is not applicable to prison buildings/developments.

Tra03 Cyclist Facilities C1-4: Cycle Storage, Cyclist Facilities, Cycle storage and cyclist facilities	RIBA Stage 3(D): Recommended action	Architect	Targeted	2	0	2	0
		Client	Targeted				

Assessor's Notes
At the pre-assessment meeting, this credit was considered achievable and a compliant number of cycle storage spaces are to be provided along with showers and changing facilities. The team needs to confirm the number of building users for the development.

Evidence/Action Required

1 credit available for the provision of adequate cycle storage

1. Provide design drawings, relevant specification clauses and manufacturers' literature confirming compliant cycle storage spaces that meet the minimum levels set out in Table - 38 are specified.

   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 hard-standing). 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/overlooked from either an occupied building or a main access to a building.

   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.

   1 credit available for the provision of adequate cyclist facilities

2. Criterion 1 must be achieved.

3. Provide design drawings, relevant specification clauses and manufacturers' literature confirming that at least two of the following types of compliant cyclist facilities must be provided for all building users (including pupils where appropriate to the building type):

   a. Showers

   b. Changing facilities

   c. Lockers

   d. Drying spaces

   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 development 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 changing facilities are defined as those that meet the following:
   1. Appropriately sized for the likely/required number of users. The assessor should use their judgement to determine whether the changing area is appropriately sized given the number of cycle storage spaces or
   2. Changing areas must include adequate space and facilities to hang or store clothing and equipment while changing or showering, e.g. bench seat and/or hooks.
   3. Toilet/shower cubicles cannot be counted as changing facilities.

   Compliant lockers are defined as those that meet the following:
   1. The number of lockers is at least equal to the number of cycle spaces required.
   2. Lockers are either in or adjacent to compliant changing rooms, where provided.
   3. The lockers are sized appropriately for the storage of a cyclist's equipment.

   A compliant drying space is defined as a space that is specifically designed and designated with adequate heating/ventilation for the drying of wet clothes. A plant room for example is not a compliant drying space.

Table - 38: Cycle storage criteria for each building type

Building type	No. spaces per unit of measure	Unit of measure	Notes
Retail			
Large Retail	1	10 staff	The number of staff should be the maximum number using the building at any time/shift. The staff spaces must be provided in addition to customer spaces. Whilst they do not need to be separate from customer spaces, this is encouraged. This is subject to providing a minimum of 10 cycle customer spaces. Any retail development that provides at least 50 customer cycle storage spaces will comply regardless of the number of parking spaces.
	1	20 public car parking spaces	
Small Retail	10	Total	The spaces must be publicly accessible within proximity of a main building entrance. Compliant cyclist facilities are intended for staff only i.e. it is not a requirement of compliance to provide facilities for customers.
Note: Where the number of building users (based upon the unit of measure) exceeds 200 the sliding scale of compliance can be used to identify the appropriate number of cycle spaces required (see Methodology section of the BREEAM Manual).			

* Other Building - type 1: A building predominantly occupied by staff/employees with occasional business related visitors.

Other Building - type 2: A building occupied by a number of core staff/employees with a larger number of consistently frequent visitors/users (either resident or non-resident).

Other Building - type 3: As type 2, but building types specifically required to be located rurally as a result of its function, i.e. a building which would never be located within an urban area, e.g. a National Park visitor centre (see definition of rural location and rural location sensitive buildings).

Tra05 Travel Plan C1-4: One Credit	RIBA Stage 3(D): Recommended action	Transport Consultant	Targeted	1	0	1	0
		Principal Contractor	Targeted				

Assessor's Notes

At the pre-assessment meeting, this credit was considered achievable and a travel plan will be commissioned for the project and it will be BREEAM compliant.

Evidence/Action Required

1. Provide a copy of a compliant travel plan developed as part of the feasibility and design stages.

   A travel plan should be a strategy for managing all travel and transport within an organisation, principally to increase choice and reduce reliance on the car by seeking to improve access to a site or development by sustainable modes of transport. A travel plan contains both physical and behavioural measures to increase travel choices and reduce reliance on single-occupancy car travel.
2. Provide a site specific travel assessment/statement 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

3. The travel plan must include a package of measures to encourage the use of sustainable modes of transport and movement of people and goods during the buildings operation and use. Provide design drawings demonstrating examples of design measures implemented, these may include:
   - Providing priority parking spaces for car sharers
   - Providing dedicated and convenient cycle storage and changing facilities or improving existing facilities such as through improved security, lighting, provision and access
   - Restricting and/or charging for car parking
   - Financial incentives and benefits for walking, cycling or car sharing
   - Providing information in lobby areas about public transport or car sharing made available.
   - Improved safe access for pedestrians and cyclists as feasible and within the scope for the existing site (for all types of user regardless of the level of mobility or visual impairment) via improved lighting, way-marking and signage for cyclist and pedestrian routes to adjoining routes, transport nodes and amenities, and provision of new or improved crossing points for pedestrians and cyclists.
   - Providing suitable taxi drop-off/waiting areas.
   - Improved lighting, landscaping and shelter to make pedestrian and public transport waiting areas pleasant
   - Negotiating improved bus services, i.e. altering bus routes or offering discounts.
4. If the occupier is known, they must be involved in the development of the travel plan and they must confirm in the form of a formal letter of commitment or, in the case of a speculative development, the developer must confirm that the travel plan will be implemented post refurbishment or fit-out and supported by the buildings management in operation.

Water

Total credits in Water:	Action By	Credit Status	AVL	ACH	CTS	TBC
			8	0	6	0

Wat01 Water Consumption

Minimum standards for this credit with the currently targeted Very Good ≥ 55% BREEAM rating:
One credit (Where applicable)

Wat01 Water Consumption C1-6: Up to Five Credits (Building Dependant)	RIBA Stage 3(D): Recommended action	Client	Targeted	5	0	3	0
		Principal Contractor	Targeted				

Assessor's Notes

At the pre-assessment meeting, this credit was considered achievable and the site will achieve a 40% reduction and 3 credits are targeted at this stage. It was confirmed that the sanitary fittings have not yet been specified for the project and rainwater harvesting is not proposed.

Evidence/Action Required

1. An assessment of the efficiency of newly specified building's domestic water consuming components and (where relevant) measures specified 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.
2. The water consumption (litres/person/day) for the assessed building is compared against a baseline performance and BREEAM credits awarded based upon Table - 41.
3. Provide relevant specification clauses, manufacturers' literature and design drawings confirming the efficiency of the following water-consuming components specified in the proposed building/development:
   a. WC's - flush volume in litres;
   b. Urinals - flush volume in litres and flush control;
   c. Taps - flow rate in litres/min, water pressure (high pressure 0.3+0.02 MPa or low pressure 0.01 $\pm$ 0.002 MPa) (wash hand basins and where specified kitchen taps and waste disposal unit);
   d. Showers - flow rate in litres/min, water pressure (high pressure 0.3+0.02 MPa or low pressure 0.01 $\pm$ 0.002 MPa) and temperature;
   e. Baths - capacity in litres;
   f. Dishwashers - domestic in litres/cycle and commercial sized in litres/rack;
   g. Washing machines - domestic in litres/use and commercial or industrial sized in litres/kg.

Table - 41: BREEAM Credits available for percentage improvement over baseline building water consumption.

% Improvement	No. of BREEAM credits
12.50%	1
25%	2
40%	3
50%	4
55%	5
65%	Exemplary performance

Note: for some building types an alternative approach to compliance must be used to award credits (for further information please refer to the Methodology section within the BREEAM manual, below, and the BREEAM Wat01 calculator)

Table - 42: Applicability of Wat01 according to building and project type

Building type	Project type	Applicable fittings to be assessed
Leasehold properties and speculative refurbishment or fit-out projects including retail, offices and industrial	Fabric and structure (Part 1)	Wat 01 is not applicable
	Core services only (Part 2)	Wat 01 is applicable to all water fittings in washrooms and changing facilities in common and core areas
Owner occupier properties including healthcare, education, multi-residential, commercial and other building types covered by the scope of the scheme	Fabric and structure (Part 1)	Wat 01 is not applicable
	Upgrade of core building services only (Part 2)	Wat 01 is not applicable

Wat02 Water Monitoring							
Minimum standards for this credit with the currently targeted Very Good ≥ 55% BREEAM rating: Part 2: Criterion 1 only							
Wat02 Water Monitoring C1-5: One Credit	RIBA Stage 4(E-F): Recommended action	M&E	Targeted	1	0	1	0
		Principal Contractor	Targeted				

Assessor's Notes

At the pre-assessment meeting, this credit was considered achievable and a pulsed water meter will be specified on the mains water supply to the building.

Evidence/Action Required

1. Provide specification clauses and drawings confirming 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.

3. Each meter (main and sub) must have 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. Examples also include automatic meter reading systems (AMR) and building energy management systems (BEMS). Automatic monitoring and targeting (aM&T) is an example of a management tool that includes automatic meter reading and data management.

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.

Wat03 Water Leak Detection C1: Leak Detection System	RIBA Stage 3(D): Recommended action	M&E	Targeted	1	0	1	0
		Principal Contractor	Targeted				

Assessor's Notes
At the pre-assessment meeting, this credit was considered achievable and a leak detection system will be specified for the mains water supply within the building and between the building and the utilities water meter

Evidence/Action Required

1. Provide specification clauses, drawings and manufacturers' literature confirming the specification of a leak detetcion 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 specified. The leak detection specification must confirm the inclusion of the following:

   a. A permanent automated water leak detection system that alerts the building occupants to the leak OR an in-built 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 flow rate 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.

Wat03 Water Leak Detection C2: Flow Control Devices	RIBA Stage 3(D): Recommended action	M&E	Targeted	1	0	1	0
		Principal Contractor	Targeted				

Assessor's Notes
At the pre-assessment meeting, this credit was considered achievable and flow control devices in the form of solenoid valves connected to PIR will be specified to regulate the supply of water to each WC area/facility (WCs, wash hand basin taps and urinals) according to the demand.

Evidence/Action Required

2. Provide relevant specification clauses and design drawings confirming the specification of flow control devices that regulate the supply of water to each WC area/facility (WCs, wash hand basin taps and urinals) according to demand are installed (and therefore minimise water leaks and wastage from sanitary fittings).

   Provide confirmation as to which of the following flow control devices is specified:
   - A time controller, i.e. an automatic time switch device to switch off the water supply after a predetermined interval.
   - A programmed time controller, i.e. an automatic time switch device to switch water on and/or off at predetermined times.
   - A volume controller, i.e. an automatic control device to turn off the water supply once the maximum pre-set volume is reached.
   - A presence detector and controller, i.e. an automatic device detecting occupancy or movement in an area to switch water on and turn it off when the presence is removed.
   - A central control unit, i.e. a dedicated computer-based control unit for an overall managed water control system, utilising some or all of the types of control elements listed above.

Materials

Total credits in Materials:		Action By	Credit Status	AVL 13	ACH 0	CTS 7	TBC 0
Mat 01 Environmental Impact of Materials C8-10: Up to 4 Credits	RIBA Stage 3(D): Recommended action	Architect	Targeted	6	0	2	0
		N/A	N/A				
Mat 01 Environmental Impact of Materials Exemplary Level		N/A	Not targeted	1	0	0	0

Assessor's Notes
At the pre-assessment meeting, this credit was considered achievable and based on intial review and the fact that a lot of materials are being used in-site the project can achieve 2 credits under Option 2.

Evidence/Action Required

Up to four credits (option 2): Elemental assessment of environmental performance information

8. Provide robust environmental performance information (Table 48) for newly specified materials or where materials are retained in situ, for elements listed below.

   Part 1 includes elements of the fabric and structure including:
   a. External walls (envelope, structure and finishes)
   b. External windows and roof lights
   c. Structural frame
   d. Basements/retaining walls (including excavations)
   e. Upper floors (including horizontal structure)
   f. Roof (including coverings)
   g. Stairs and ramps
   h. External solar shading devices, access structures etc.
   i. Ground/lowest floor
   j. Foundations (including excavation)

   Part 2 and 3 includes elements used for core and local services including:
   a. Heat source, space heating, air-conditioning and ventilation
   b. Communication, security and control systems
   c. Electrical installations
   d. Fire and lightning protection
   e. Lift and conveyor installations/systems
   f. Water and waste installations
   g. Sanitary installations
9. Provide completed copy of the Part B of the BREEAM Mat 01 calculator to calculate the total number of points achieved. The number of points scored is based on the percentage of each element that has been:
   a. reused in situ
   b. reused in situ with minor repairs
   c. specified with robust environmental performance information.
10. Credits are awarded based upon the percentage of available points achieved as set out in Table 47

Table - 47: Percentage of BREEAM Mat 01 calculator points achieved and credits awarded (Option 2)

Percentage of BREEAM Mat 01 calculator points achieved (%) (Option 2)	Credits	
	Industrial	All other buildings
10	1	1
40	1	2
60	1	3
75	1	4
85	1 + 1 exemplary	4 + 1 exemplary

Table - 48: Allocation of points awarded

Type of claim	Compliant environmental claim	Points:
Environmental product declaration	Where at least one product per element type has a third party certificated environmental product declaration that conforms to one of the following standards: ISO 15804 Type 3 EPD ISO 14025 Type 3 EPD ISO 14024 Type 1 EPD.	5
Self declared recycled content	Where newly specified materials have recycled content to ISO 14021 that meets good practice levels of recycled content set out in Choosing construction products, Guide to the recycled content of mainstream construction products, WRAP.	5
Reused in-situ	Where a whole element or part of an element has been reused in situ and confirmation has been provided that the element complies with current statutory requirements and is fit for purpose (i.e. a minimum design life of at least 5 years)	5
Reused in situ with minor repairs	Where the whole or part of an element has been reused in situ with minor repairs	5

Mat03 Responsible Sourcing of Materials

Minimum standards for this credit with the currently targeted Excellent ≥ 70% BREEAM rating:
Criterion 1 only

Mat03 Responsible Sourcing of Materials C1: Pre-requisite	RIBA Stage 3(D): Recommended action	Principal Contractor	Targeted	Pre-requisite to achieve credit			
		Client	Targeted				

Assessor's Notes
At the pre-assessment meeting, this credit was considered achievable and all timber used on the project will be legally harvested and traded timber.

Evidence/Action Required

1. Provide written confirmation that all timber used on the project is 'Legally harvested and traded timber'.

   This must come from either the supplier – confirming their timber is sourced in compliance with the UK Government's Timber Procurement Policy for legal and sustainable sourcing
   OR
   Copies of the actual chain of custody evidence in accordance with CPET requirements
   OR
   A specification or letter of intent from the design team confirming that all timber will be procured in accordance with the policy.

   Note:
   a. It is a minimum requirement for achieving a certified BREEAM rating certification (for any rating level) that compliance with criterion 1 is confirmed.

   b. For other materials there are no pre-requisite requirements at this stage.

Mat03 Responsible Sourcing of Materials C2: Sustainable Procurement Plan	RIBA Stage 3(D): Recommended action	Principal Contractor	Targeted	1	0	1	0
		Client	Targeted				

Assessor's Notes
At the pre-assessment meeting, this credit was considered achievable and the appointed contractor should source materials for the project in accordance with a documented sustainable procurement plan.

Evidence/Action Required

2. The principle contractor must provide a sustainable procurement plan setting out the framework for responsible sourcing of materials. The aim being to guide procurement throughout the project.

   The plan may be prepared and adopted at an organisational level or be site/project specific and for the purposes of BREEAM compliance, will cover the following as a minimum:

   1. Risks and opportunities are identified against a broad range of social, environmental and economic issues. BS 8902:2009 Responsible sourcing sector certification schemes for construction products-Specification can be used as a guide to identify these issues.

   2. Aims, objectives and targets to guide sustainable procurement activities.

   3. Strategic assessment of sustainably sourced materials available locally and nationally. There should be a policy to procure materials locally where possible.

   4. Procedures are in place to check and verify that the sustainable procurement plan is being implemented/adhered to on individual projects. These could include setting out measurement criteria, methodology and performance indicators to assess progress and demonstrate success

Mat03 Responsible Sourcing of Materials C3-4: Responsible Sourcing of Materials (RSM)	RIBA Stage 3(D): Recommended action	Principal Contractor	Targeted	3	0	1	0
		Client	Targeted				

Assessor's Notes
At the pre-assessment meeting, this credit was considered achievable and the building materials be responsibly sourced by the contractor.

Evidence/Action Required

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.

   Provide a full list of manufacturers and extractors of the materials in the following building elements OR provide a letter of intent confirming that all materials will be responsibly sourced.

   Provide design drawings showing the building elements and written confirmation of the breakdown of each material in m^3 or %.

   Please complete the MAT 03 evidence template.

   Procure all major materials from suppliers that have ISO 14001, EMAS, BS 8555 or BES 6001 policies and systems in place covering the extraction and process stages of manufacture. Provide copies of the compliant certificates for the materials used within the assessed building elements;

   OR

   A letter of intent or specification clause detailing the specific requirements with regards to the responsible sourcing of the materials used within the building.
4. Up to three of the available RSM credits (refer to Table 51) can be awarded where the applicable building materials (refer to Table 53) are responsibly sourced in accordance with the BREEAM methodology

   Provide a full list of manufacturers and extractors of the materials in the following building elements OR provide a letter of intent confirming that all materials will be responsibly sourced.

   Provide design drawings showing the building elements and written confirmation of the breakdown of each material in m^3 or %.

   Please complete the MAT 03 evidence template.

   Procure all major materials from suppliers that have ISO 14001, EMAS, BS 8555 or BES 6001 policies and systems in place covering the extraction and process stages of manufacture. Provide copies of the compliant certificates for the materials used within the assessed building elements;

   OR

   A letter of intent or specification clause detailing the specific requirements with regards to the responsible sourcing of the materials used within the building.

Table 53 - Location/use and material categories

Location/use categories
1. External wall (e.g. bricks, blocks) 2. External wall finishes (plastering, cladding, render, internal dry lining, wall coverings etc.) 3. Insulation 4. Roof (structure) 5. Roof finishes (e.g. tiles, cladding systems, etc.) 6. Upper floors (mezzanines) 7. Floor (structure) 8. Flooring finishes (including coatings) 9. Internal partitions/internal walls (structure) 10. Internal partitions/internal walls (finishes, wall coverings) 11. Ceiling (structure) 12. Ceiling finishes (including coatings) 13. External/internal doors/ windows 14. Staircases/ramps 15. Fittings (shop fittings, railings, screens, gutters, vents, air grilles) 16. Furniture (desks, chairs, display cabinets, shelving) 17. Building services (equipment, distribution systems) 18. Hard landscaping 19. Other
Material categories
1. Timber/ timber-based products (TBP) 2. Concrete/ cementitious (plaster, mortar, screed etc.) 3. Metal 4. Stone/ aggregate 5. Clay-based (pavers, blocks, bricks, roof tiles, etc.) 6. Gypsum 7. Glass 8. Plastic, polymer, resin, paint, chemicals and bituminous 9. Animal fibre/skin, cellulose fibre 10. Other

Credits awarded where the applicable building materials (refer to Table 44) are responsibly sourced in accordance with the BREEAM methodology, as defined in steps 1 to 2 in the Methodology section (refer to the manual).

Table - 51: The number of BREEAM credits achieved is determined as follows

RSM credits	% of available RSM points achieved
3	≥ 54%
2	≥ 36%
1	≥ 18%

Mat03 Responsible Sourcing of Materials C5: Exemplary Level Criteria	RIBA Stage 3(D): Recommended action	N/A N/A	Not targeted N/A	1	0	0	0

Assessor's Notes
The exemplary credit for responsible sourcing has not been targeted at this stage.

Evidence/Action Required

4. Where at least 70% of the available RSM points are achieved.

Mat04 Insulation C1-2: Embodied impact	Recommended action by: RIBA Stage 3(D)	Architect	Targeted	1	0	1	0
		M&E	Targeted				

Assessor's Notes

At the pre-assessment meeting, this credit was considered achievable and all insulation being proposed for the applicable building elements would aim to achieve the insulation index as or greater that 2.5. The scope of new insulation is to be confirmed.

Evidence/Action Required

1. Provide a full list and manufacturers' literature for any new insulation specified for use within the following building elements:
   a. External walls
   b. Ground floor
   c. Roof
   d. Building services

   For each newly specified insulation material in the building fabric, provide manufacturers' literature or written confirmation direct from the manufacturer confirming all of the following:
   • Area of insulation (m^2);
   • Thickness (mm);
   • Density (kg/m^3);
   • Thermal conductivity (W/mK).

   For each newly specified insulation material in the building services, provide manufacturers' literature or written confirmation direct from the manufacturer confirming all of the following:
   • Volume of insulation (m^3);
   • Density (kg/m^3);
   • Thermal conductivity (W/mK).

   Please complete the MAT 04 evidence template.

   Provide marked up drawings showing the location of each insulation type.
2. The Insulation index for the building fabric and services insulation must be the same as or greater than 2.5. See the Methodology section in the manual for a description of calculating the Insulation Index.

Mat05 Designing for Durability and Resilience C1:Protecting vulnerable parts of the building from damage C2-5: Protecting exposed parts of the building from material degradation	RIBA Stage 3(D): Recommended action	Architect	Targeted	1	0	1	0
		Project Manager	Targeted				

Assessor's Notes
At the pre-assessment meeting, this credit was considered achievable and is being targeted for the project.

Evidence/Action Required

Protecting vulnerable parts of the building from damage

1. Provide drawings, specifications, written confirmation and manufacturers' literature (where applicable) that 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 external building façade for all car parking areas and within 2m for all delivery areas.

   Suitable durability and protection measures to vulnerable parts of the building can include:
   1. Bollards/barriers/raised kerbs to delivery and vehicle drop-off areas
   2. Robust external wall construction, up to 2m high
   3. Corridor walls specified to Severe Duty (SD) as per BS 5234-2 and, for Healthcare buildings, Health Technical Memorandum 56 - Partitions
   4. Protection rails to walls of corridors
   5. Kick plates/impact protection (from trolleys etc) on doors
   6. Hard-wearing and easily washable floor finishes in heavily used circulation areas (i.e. main entrance, corridors, public areas etc)
   7. Designing out the risk without the need for additional materials specification to protect vulnerable areas.

Protecting exposed parts of the building from material degradation

2. Provide documentation to confirm that environmental factors have been identified that are relevant to the site location. Design drawings, specifications and manufacturers' literature may also serve as evidence.

   See Table - 58 for list of applicable elements, environmental factors and material degradation effects to consider.
3. Provide drawings and/or specification to confirm that existing applicable building elements that are exposed to any relevant environmental factors have been identified.

   See Table - 58 for list of applicable elements, environmental factors and material degradation effects to consider.
4. Provide an analysis that the existing applicable building elements (see Table 58) have been surveyed and 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. Design drawings, specifications and manufacturers' literature may also serve as evidence.

   See Table - 50 for list of applicable elements, environmental factors and material degradation effects to consider.
5. Provide drawings and/or specification to confirm that newly specified materials or newly constructed elements (e.g. a new external wall) within the scope of refurbishment or fit-out works incorporate appropriate design and specification measures to limit material degradation due to environmental factors.

Methodology

The following outlines the process to assess criterion 2.
1. Identify from the list of 'applicable building elements' under Table-58 the elements that are appropriate to the building being assessed.
2. Obtain survey from design team of existing applicable building elements to identify elements where material degradation effects are evident, the severity of any affects, and appropriate design and specification measures that have been considered to protect and limit environmental degradation.
3. Where existing elements with signs of environmental degradation are outside of the scope of refurbishment works, check that confirmation has been provided from design team that the severity of any degradation is low or that justification has been provided by the design team regarding the feasibility of any measures.

4. Establish from the 'environmental factors' list those factors that are likely to cause material degradation effects in the identified newly specified applicable building elements.
5. Confirm the design and specification measures in place to limit these degradation effects.
6. The assessor should use their professional judgement in determining whether the design team have adequately demonstrated that they have designed and specified materials and/or measures which will be effective in preventing unnecessary deterioration, so reducing frequent replacements, repairs and maintenance through the life cycle of the building.
7. At post construction stage, where the design and specification measures installed differ from that proposed at design stage, the assessor must ensure that these measures still meet the aims of the criterion as detailed in point 6 above.

Table - 58: Applicable building elements, environmental factors and material degradations effects to consider.

Applicable building elements, environmental factors and material degradation effects
Applicable building elements
1. Foundation/substructure/lowest floor/retaining walls 2. External walls 3. Roof/balconies 4. Glazing: windows, skylight 5. External doors 6. Railings/Balusters (where exposed to external environment) 7. Cladding (where exposed to external environment) 8. Staircase/ramps (where exposed to external environment) 9. Hard landscaping
Environmental factors
1. Environmental agents, including: a. Solar radiation b. Temperature variation c. Water/Moisture d. Wind e. Precipitation e.g rain and snow f. Extreme weather conditions: High wind speeds, flooding, driving rain, snow 2. Biological Agents, including: a. Vegetation b. Pests, insects 3. Pollutants, including: a. Air contaminants b. Ground contaminants
Material degradation effects (includes, but not necessarily limited to the following)
1. Corrosion 2. Dimensional change, e.g. swelling or shrinkage 3. Fading/discolouration 4. Rotting 5. Leaching 6. Blistering 7. Melting 8. Salt crystallisation 9. Abrasion

Mat06 Material Efficiency C1-2: One Credit	**RIBA Stages 1,2,3 and 4: Material Use Review** RIBA Stage 3(D): Recommended action	Project Manager	Targeted	1	0	1	0
		Architect	Targeted				

Assessor's Notes

At the pre-assessment meeting this credit was considered achievable and efforts would be made to optimise the use of materials in building design, procurement, construction, maintenance and end of life. It was confirmed that the requirements of this credit are achievable.

Evidence/Action Required

1. Provide documentary evidence in the form of a report, drawings, meeting notes, etc, confirming that 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 (see examples in Table 59)

   Material efficiency is the process of undertaking a building project to enable the most efficient use of materials over the lifecycle of the building and its component. This includes using fewer materials, reusing existing demolition/ strip-out materials and, where appropriate, procuring materials with higher levels of recycled content. It may also include the adoption of alternative means of design/construction that result in lower materials usage and lower wastage levels including offsite manufacture and use of pre-assembled service pods.

2. The above must be carried out in consultation with the relevant parties who are involved in the design, specification and/or construction of the building at each of the following RIBA stages:
   a. Preparation and Brief
   b. Concept Design
   c. Development Design
   d. Technical Design
   e. Construction

   Table - 59: examples of material efficiency actions are as follows

BREEAM Refurbishment and Fit-out assessment parts	Example material efficiency considerations
All assessment parts	• Can existing elements be reused, preferably on-site? • Can materials with a high recycled content be used? • Consider the waste hierarchy for waste materials removed as part of the refurbishment
Part 1: Fabric and structure	• Windows: can existing windows be repaired? If not, consider the materials for the replacement windows (see Mat 01) • Insulation: can existing insulation be 'topped up' without removal of material? If not consider use of materials that comply with Mat 04) • Cladding: consider whether cladding can be repaired or reused.
Parts 2 and 3: Core and local services	• Pipework: use of materials with a high recycled content • Ventilation systems and ductwork: consider changes to design to minimise the need for ventilation systems, position of air handling units closer to ventilated spaces to minimise length in ductwork, consider use of fabric ductwork to replace galvanised steel.

Waste

Total credits in Waste:	Action By	Credit Status	AVL	ACH	CTS	TBC
			11	0	7	0

Wst01 Construction Waste Management

Minimum standards for this credit with the currently targeted Very Good ≥ 55% BREEAM rating:
None

Wst01 Construction Waste Management C1: Pre-refurbishment audit	RIBA Stage 3(D): Recommended action	Principal Contractor	Targeted	1	0	1	0
		Client	Targeted				

Assessor's Notes

At the pre-assessment meeting, this credit was considered achievable and a pre-refurbishment audit will be carried out for the project.

Evidence/Action Required

1. Provide a copy of the pre-refurbishment audit of all existing buildings, structures or hard surfaces within the scope of the refurbishment or fit-out zone.

   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 works 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 who is independent of the project, 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 forecast from the audit and barriers to achieving targets should be investigated.

   The audit must be referenced in the resource management plan and cover:
   d. Identification and quantification of the key materials where present on the project (see Table 66 in the BREEAM manual)
   e. Potential applications and any related issues for the reuse and recycling of the key materials in accordance with the waste hierarchy.
   f. Identification of local reprocessors or recyclers for recycling of materials
   g. Identification of overall recycling rate for all key materials
   h. Identification of reuse targets where appropriate.

Wst01 Construction Waste Management C2-4: Reuse and direct recycling of materials	RIBA Stage 3(D): Recommended action	N/A	Not targeted	2	0	0	0
		N/A	N/A				

Assessor's Notes
At the pre-assessment meeting, this credit was unkown and that some demolition will occur but it will be minimal. Until the deomlition audit is completed the materials available for reuse if unknown and as such the credit is not sougth.

Evidence/Action Required

Please complete a copy of the Wst 01 calculator tool confirming the material types on site along with the proposed reuse or direct recycling proposed from the drop down menu within the tool provided.

2. Where waste material types detailed in Table 64 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 64, that are present on the project have been achieved (using the Wst 01 calculator tool)

   Please note that in most instances any materials specified in Table 64 that are sent to a Material Recovery Facility (MRF) for recovery do not qualify for this credit.

4. Two credits are achieved where 75% of the total available points for the waste material types detailed in Table 64, that are present on the project have been achieved (using the Wst 01 calculator tool)

   Please note that in most instances any materials specified in Table 64 that are sent to a Material Recovery Facility (MRF) for recovery does not qualify for this credit.

Table - 64: Options for direct re-use and recycling

Material	Options for reuse or direct recycling
Inert materials (excluding soil)	On-site reuse in original form e.g. bricks, roof tiles, paving slabs, kerbs, cills
	Off-site reuse in original form e.g. bricks, roof tiles, paving slabs, kerbs, cills
New and used metal materials	On-site reuse of metal material in original form
	Off-site reuse of metal material in original form
Composite materials (materials which include more than one material type often bonded together)	On-site reuse in original form
	Off-site reuse in original form
New and used plasterboard (offcuts/unused/undamaged boards)	On-site reuse in original form
	Off-site reuse of unused/undamaged plasterboard on other construction or refurbishment projects
	Off-site reuse options for unused or undamaged plasterboard – e.g. local community scheme, surplus construction material trading, charities
	Plasterboard manufacturer take-back schemes e.g. collection of bagged offcuts or unused boards
Furniture	On-site reuse in original form
	Off-site reuse options – e.g. local community schemes, local charities, schools, etc
Timber products (All sawn soft/hard wood only – no board products e.g. MDF/chipboard etc.)	On-site reuse of timber on the project
	Off-site reuse via another project, National/local community wood reuse scheme
New and used mineral fibre ceiling panels and tiles	Off-site reuse in other construction/refurbishment projects, local community schemes, charities

New and used mineral fibre ceiling panels and tiles	Off-site recycling via manufacturer for closed loop recycling
Vinyl floor coverings (uplifted vinyl flooring and post-installation offcuts)	Off-site direct recycling via manufacturer for closed loop recycling
Used carpet tiles (good reusable condition)	On-site reuse of carpet tiles in their original form
	Off-site direct reuse on other construction/refurbishment projects, local community schemes, charities
	Direct recycling via a manufacturer for closed loop recycling
Packaging materials (all timber, cardboard & plastic)	Repatriation of wooden pallets from product suppliers for direct reuse
New and unused insulation board (foam board only e.g. EPS, XPS, ISO, COMP. not mineral fibre)	Off-site reuse of new and unused insulation board on other construction/refurbishment projects, local community schemes, charities
	Resale of insulation board via surplus construction material trading companies
	Collection by manufacturer for closed loop recycling
Fixtures and fittings	On-site reuse in original form e.g. sinks, doors, gates
	Off-site reuse in original form, e.g. sinks, doors, gates

Wst01 Construction Waste Management C5-6: Resource Efficiency	RIBA Stage 3(D): Recommended action	Principal Contractor	Targeted	3	0	2	0
		Client	Targeted				

Assessor's Notes
At the pre-assessment meeting, this credit was considered achievable and a resource management plan will be produced for the construction site and at least two credits will be targeted for the resource efficiency credit.

Evidence/Action Required

5. Provide a copy of a Resource Management Plan (RMP) covering the waste arisings from the refurbishment or fit-out project with the aim of minimising waste, recording and reporting accurate data on waste arisings.

   The resource management plan aims to promote resource efficiency and to prevent illegal waste activities. Resource efficiency includes minimising waste at source and ensuring that clients, designers and principal contractors assess the use, reuse and recycling of materials and products on and off the site.
   The RMP must include:
   1. A target benchmark for resource efficiency, i.e. m³ of non-hazardous waste per 100m² or tonnes of non-hazardous waste per 100m²
   2. Procedures and commitments for minimising non-hazardous waste in line with the target benchmark
   3. Procedures for minimising hazardous waste
   4. Procedure for the principle contractor and all subcontractors for monitoring waste, managing and diverting demolition waste from landfill:
   5. A waste minimisation target and details of waste minimisation actions to be undertaken
   6. Procedures for estimating, monitoring, measuring and reporting hazardous and non-hazardous site waste covering the principle contractor and all subcontractors. If waste data are obtained from licensed external waste contractors, the data needs to be reliable and verifiable, e.g. by using data from EA/SEPA/EA Wales/NIEA Waste Return Forms. All construction waste data should be reported on a monthly basis throughout the project and checked against what would be expected based upon the stage of the project, invoices etc. to validate completeness of waste reporting data.
   7. Procedures for sorting, reusing and recycling construction waste into defined waste groups, either on-site or through a licensed external contractor
   8. Procedures for reviewing and updating the plan
   9. The name or job title of the individual responsible for implementing the above.

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 61 as relevant to the project type.

   Table - 61: Refurbishment and fit-out waste resource efficiency benchmarks - Refurbishment **(Combinations of Parts 1 - 4)**

BREEAM credits	Amount of construction waste generated per 100m² (gross internal floor area)	
	m³	Tonnes
One credit	≤11.3	≤3.5
Two credits	≤4.5	≤1.2
Three credits	≤2.1	≤0.4
Exemplary Level	≤1.4	≤0.3

   Note - Volume (m³) is actual volume of waste (not bulk volume).

Wst01 Construction Waste Management C7: Diversion of resources from landfill	RIBA Stage 3(D): Recommended action	Principal Contractor	Targeted	1	0	1	0
		Client	Targeted				

Assessor's Notes
At the pre-assessment meeting, this credit was considered achievable and at least 90% of construction waste by volume be diverted from landfill and where possible these figures should be maximised.

Evidence/Action Required

7. Provide written confirmation of the percentage of non hazardous construction and demolition waste to be diverted from landfill. The following percentages of non-hazardous construction and demolition waste (where applicable) generated have been diverted from landfill:

Table 63: Diversion of waste for refurbishment and fit-out

BREEAM credits	Source of waste	Volume	Tonnage
One credit	Refurbishment/fit-out	85%	90%
	Demolition	90%	95%
Exemplary level	Refurbishment/fit-out	95%	97%
	Demolition	95%	97%

Wst01 Construction Waste Management C8-11: Exemplary level criteria	RIBA Stage 3(D): Recommended action	N/A	Not targeted	1	0	0	0
		N/A	N/A				

Assessor's Notes
The exemplary credit for construction waste management has not been targeted at this stage.

Evidence/Action Required

The following criteria outlines the exemplary level criteria to achieve an innovation credit.

8. Non-hazardous construction waste generated by the building's design and refurbishment or fit-out is no greater than the exemplary level resource efficiency benchmark (outlined in Table 62 and Table 61).
9. The percentage of non-hazardous construction and demolition (if relevant) waste diverted from landfill meets or exceeds the exemplary level percentage benchmark (outlined in Table 63).
10. Waste materials will be sorted into separate key waste groups (according to the waste streams generated by the scope of the works; the List of Wastes/European Waste Catalogue code should be referenced) either on-site or off-site through a licensed contractor for recovery.
11. 75% of difficult to manage wastes have been reused on or off-site rather than recycled, in accordance with Table 64.

Wst02 Recycled Aggregates C1-3: One Credit	RIBA Stage 3(D): Recommended action	N/A	Not targeted	1	0	0	0
		N/A	N/A				

Assessor's Notes
At the pre-assessment meeting this credit was considered unachievable due to the nature of the build. Additionally potential issues with structural warranties.

Evidence/Action Required

1. Provide specification details, calculations and written confirmation that 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.

   This information must include the volumes and quality of the aggregate that can be obtained.

   Minimum high grade aggregate applications apply to:
   • Structural Frame 15%
   • Bitumen or hydraulically bound base, binder, and surface courses for paved areas and roads 30%
   • Building foundations 20%
   • Concrete road surfaces 15%
   • Pipe bedding 100%
   • Granular fill and capping (see Relevant definitions section in the BREEAM manual) 100%

2. The total amount of recycled or secondary aggregate specified, and meeting criterion 1, must be greater than 25% (by weight or volume) of the total high grade aggregate specified for the development. 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.

Wst02 Recycled Aggregates C4-6: Exemplary Level Criteria	RIBA Stage 3(D): Recommended action	N/A	Not targeted	1	0	0	0
		N/A	N/A				

Assessor's Notes
The exemplary credit for recycled aggregates has not been targeted at this stage.

Evidence/Action Required

4. The percentage of high-grade aggregate, that is recycled and/or secondary aggregate, specified in each application (present) must meet the exemplary minimum levels (by weight or volume), as defined below. 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.

   Minimum high grade aggregate applications for exemplary level apply to:
   • Structural Frame 30%
   • Bitumen or hydraulically bound base, binder, and surface courses for paved areas and roads 75%
   • Building foundations 35%
   • Concrete road surfaces 45%
   • Pipe bedding 100%
   • Granular fill and capping (see Relevant definitions section in the BREEAM manual) 100%
5. Where the total amount of recycled and/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.

Wst03 Operational Waste

Minimum standards for this credit with the currently targeted Very Good ≥ 55% BREEAM rating:
None

Wst03 Operational Waste C1-7: One Credit	RIBA Stage 3(D): Recommended action	Architect	Targeted	1	0	1	0
		Client	Targeted				

Assessor's Notes

At the pre-assessment meeting, this credit was considered achievable and dedicated space would be provided for the segregation and storage of operational recyclable waste. It was also confirmed that no static waste compacter or baler is applicable to the project and no organic waste is to be stored on site.

Evidence/Action Required

1. Provide marked up drawings and specification clauses confirming that 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.

   Minimum storage space provision:
   1. At least $2m^2$ per $1000m^2$ of net floor area for buildings < $5000m^2$.
   2. A minimum of $10m^2$ for buildings ≥$5000m^2$
   3. An additional $2m^2$ per $1000m^2$ of net floor area where catering is provided (with an additional minimum of $10m^2$ for buildings ≥ $5000m^2$).

Wst05 Adaptation to Climate Change C1: Structural and Fabric Resilience **Part 1 Major Refurbishment Only**	**RIBA Stage 1(A-B): Climate Adaptation Strategy Appraisal** RIBA Stage 3(D): Recommended action	Client	Targeted	1	0	1	0
		Architect	Targeted				

Assessor's Notes

At the pre-assessment meeting this credit was considered achievable.
Discussions are ongoing with the team to establish what is required and if this is feasible.

Evidence/Action Required

1. Provide a copy of the 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

   BREEAM definition of Structural and fabric resilience is the ability of a structure to withstand an increased burden of weather/increase pressure/hazards associated with climate change. Examples of increased pressures/hazards include:
   1. Solar radiation
   2. Temperature variation
   3. Water/moisture
   4. Wind
   5. Precipitation e.g rain and snow
   6. Extreme weather conditions: high wind speeds, flooding, driving rain, snow; rainwater ponding
   7. Subsidence/ground movement.

Methodology

Hazard identification
1. Review the evidence/information from relevant bodies to identify and understand the expected impacts of increased extreme weather events climate change for on the building.
2. Identify likely hazards (see Relevant definitions in the BREEAM manual).

Hazard assessment
1. Identify the scale of the hazards identified.

Risk estimation
1. Identify the risk presented by these hazards to the building and the likely impact of the hazards taking into account the following aspects as a minimum:
a. Structural stability
b. Structural robustness
c. Weather proofing and detailing
d. Material durability
e. Health and safety of building occupants and others
f. Impacts on building contents and business continuity.

Risk evaluation
1. Evaluate the potential impact of these risks on the building.
2. Determine the tolerable risk threshold.
3. Check the sensitivity of the risk assessment.
4. Identify areas where the risks are unacceptable in health and safety, life cycle assessment and financial terms.

Risk management
1. Identify risk reduction measures.
2. Mitigate the hazards as far as is practically feasible.
3. Adapt the design/specification to incorporate the measures identified by the risk assessment in the final design.

Wst05 Adaptation to Climate Change C2: Exemplary Level Criteria - Responding to adaptation to climate change	**RIBA Stage 1(A-B): Climate Adaptation Strategy Appraisal**	N/A	Not targeted	1	0	0	0
	RIBA Stage 3(D): Recommended action	N/A	Not targeted				

Assessor's Notes
The exemplary credit has not been targeted at this stage.

Evidence/Action Required

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 an innovation credit for this BREEAM issue:

2. Achievement of the Structural and fabric resilience issue above and the following issues and criteria points or credits:

Hea 04 – Thermal comfort
(Link to Wst 5 issue- to preventing increasing risks of overheating)
Criterion 6 in the second credit of the Hea 04 issue has been achieved.

Ene 01 – Reduction of energy use and carbon emissions
(Link to Wst 05 issue – to maximise energy efficiency contributing to low carbon emissions resulting from increasing energy demands)
At least eight credits in this issue have been achieved.

Ene 04 – Low carbon design
(Link to Wst 05 issue– to maximise opportunities to avoid unnecessary carbon emissions)
The Passive design analysis credit in this issue has been achieved.

Wat 01 – Water consumption
(Link to Wst 05: to minimise water demands in periods of drought)
A minimum of three credits in this issue have been achieved.

Mat 05 – Designing for durability and resilience
(Link to Wst 05 issue - to avoid increased risks of deterioration and higher maintenance demands)
Criterion 2 relating to material degradation in this issue has been achieved.

Pol 03 – Surface water run-off
(Link to Wst 05: to minimise the risks of increased flood risk and surface water run-off affecting the site or others)
Flood risk – a minimum of one credit has been achieved.
Surface water run off – two credits have been achieved.

Wst06 Functional Adaptability C1-2: One Credit	**RIBA Stage 1(A-B): Functional Adaptation Strategy Appraisal**	Architect	Targeted	1	0	1	0

	RIBA Stage 3(D): Recommended action	Client	Targeted	1	0	1	0

Assessor's Notes
At the pre-assessment meeting this credit was considered achievable and that the building is adaptable for future uses

Evidence/Action Required

1. Provide a copy of the functional adaptation strategy confirming that a building-specific functional adaptation strategy study has been undertaken by Concept Design (RIBA Stage 2 or equivalent), which includes recommendations for measures to be incorporated to facilitate future adaptation.

   This should consider:
   1. The potential for major refurbishment, including replacing the façade.
   2. Design aspects that facilitate the replacement of all major plant within the life of the building e.g. panels in floors/walls that can be removed without affecting the structure, providing lifting beams and hoists.
   3. The degree of adaptability of the internal environment to accommodate changes in working practices.
   4. The degree of adaptability of the internal physical space and external shell to accommodate change in-use.
   5. The extent of accessibility to local services, such as local power, data infrastructure etc.

2. Provide a copy of the implementation plan report confirming functional adaptation measures (see examples in Table 68) 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.

   The implementation will be specific to the building and scope of project, but information should be made available to the assessor covering:
   1. The feasibility for multiple/alternative building uses and area functions e.g.related to structural design of the building
   2. Options for multiple building uses and area functions based on design details e.g. modularity
   3. Routes and methods for major plant replacement e.g.networks and connections have flexibility and capacity for expansion
   4. Accessibility for local plant and service distribution routes e.g.detailed information on building conduits and connections infrastructure
   5. The potential for the building to be extended, horizontally and/or vertically.

Table 68: Design measures allowing future adaptation

	Accessibility	**Spatial adaptability**	**Expandability**
Part 1: Fabric and structure • External walls • Cladding • Ground and first floor • Roof	Use of products or systems which allow easy replacements	Location of structural components within the floor space	Provision to add extensions or alterations to increase building capacity
Parts 2 and 3: Core and local services • Mechanical and electrical • Plumbing • Stairs and lifts • Fire	Inclusion of facilities management requirements and CDM feedback for future operational needs		Provision of capacity in infrastructure to enable future expansion and adaptation

Land Use and Ecology

Total credits in Land Use and Ecology	Action By	Credit Status	AVL	ACH	CTS	TBC
			3	0	3	0

LE04 Enhancing Site Ecology C1-3: Ecologist's Report and Recommendations	**RIBA Stage 1(A-B): Ecologist Appointment** RIBA Stage 4(E-F) Recommended action	Ecologist	Targeted	1	0	1	0
		Principal Contractor	Targeted				

Assessor's Notes
At the pre-assessment meeting, this credit was considered achievable and the proposed site will sit on the exciting footprint which is currently all hard landscaping. An ecologist has been appointed. Planting is proposed but there is limited space available on the roof and a small postive change is only envisaged.

Evidence/Action Required

1. Provide confirmation that 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. Provide a copy of the SQE's Ecology Report with appropriate recommendations for the enhancement of the site's ecology at Concept Design stage (RIBA Stage 2 or equivalent). The report must be based on a site visit/survey by the SQE.

   The suitably qualified ecologist must carry out site surveys of existing site ecology, on which their report is based (or to provide verification where the report is prepared by others) at the Concept Design stage (RIBA Stage 2 or equivalent) in order to facilitate and maximise potential ecological enhancement.

3. Provide landscape plans and formal written confirmation that the 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.

LE05 Long Term Impact on Biodiversity C1-3: Up to Two Credits	RIBA Stage 4(E-F): Recommended action	Ecologist	Targeted	2	0	2	0
		Principal Contractor	Targeted				

Assessor's Notes

At the pre-assessment meeting, this credit was considered achievable and is being targeted for the project. It was confirmed that an ecologist will be appointed to complete a compliant BREEAM report/habitat plan. Additionally all suggested additional measures will be incorporated during construction.

Evidence/Action Required

1. Provide confirmation a Suitably Qualified Ecologist (SQE) was 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 will be complied with during the refurbishment or fit-out process.
2. Provide a copy of a site specific landscape and habitat management plan, appropriate to the site, covering at least the first five years after project completion in accordance with BS 42020:2013 Section 11.1. Provide written confirmation that this will be handed over to the building owner/occupants for use by the grounds maintenance staff.

   BS 42020: 2013 Section 11.1 states that the following should be included in long term management plans for habitats, species and biodiversity features:
   a. Description and evaluation of features to be managed
   b. Ecological trends and constraints on-site that could influence management
   c. Aims and objectives of management
   d. Appropriate management options for achieving aims and objectives
   e. Prescriptions for management actions
   f. Preparation of a work schedule (including an annual work plan capable of being rolled forward over a five year period)
   g. Body or organisation personnel responsible for implementation of the plan
   h. Monitoring and remedial measures (see 11.2)
   i. Funding resources and mechanisms to ensure sustainable long term delivery of the proposed management.
3. Where additional measures to improve the assessed site's long term biodiversity are adopted. Evidence is required in the form of letters, training schedules, toolbox talks, presentation literature, company policies, photographs, specification clauses, projects programmes, etc for the additional measures being implemented on site selected from Table 69.

Table - 69: Additional measures for the improvement of long term biodiversity

Ref	Additional measures for the improvement of long term biodiversity
1	The principal contractor nominates a Biodiversity Champion with the authority to influence site activities and ensure that detrimental impacts onsite biodiversity are minimised in line with the recommendations of a Suitably Qualified Ecologist
2	The principal contractor trains the site workforce on how to protect site ecology during the project. Specific training must be carried out for the entire site workforce to ensure they are aware of how to avoid damaging site ecology during operations onsite. Training should be based on the findings and recommendations for protection of ecological features highlighted within a report prepared by a Suitably Qualified Ecologist
3	The principal contractor records actions taken to protect biodiversity and monitor their effectiveness throughout key stages of the refurbishment or fit-out process. The requirement commits the principal contractor to make such records available where publicly requested.
4	Where a new ecologically valuable habitat appropriate to the local area is created. This includes a habitat that supports nationally, regionally or locally important biodiversity, and/or which is nationally, regionally or locally important itself; including any UK Biodiversity Action Plan (UK BAP) priority habitats Local Biodiversity Action Plan (LBAP) habitats, those protected within statutory sites (e.g. SSSIs), or those within non-statutory sites identified in local plans. Local biodiversity expertise should be sought during the Preparation and Brief (RIBA Stage 1 or equivalent) to help identify species of local biodiversity importance onsite and ensure that the proposals support local priorities
5	Where flora and/or fauna habitats exist onsite, the contractor programmes site works to minimise disturbance to wildlife. For example, site preparation, ground works, and soft landscape have been, or will be, scheduled at an appropriate time of year to minimise disturbance to wildlife. Timing of works may have a significant impact on, for example, breeding birds, flowering plants, seed germination, amphibians etc. Actions such as phased clearance of vegetation may help to mitigate ecological impacts. This additional requirement will be achieved where a clear plan has been produced detailing how activities will be timed to avoid any impact on site biodiversity in line with the recommendations of a Suitably Qualified Ecologist

Pollution

Total credits in Pollution:		Action By	Credit Status	AVL	ACH	CTS	TBC
Pol01 Impact of Refrigerants C2: Pre-requisite to Achieve C3-7	RIBA Stage 3(D): Recommended action	M&E	Targeted	Pre-requisite to achieve credit			
		N/A	N/A				

Assessor's Notes
At the pre-assessment meeting, this credit was considered achievable and that refrigerants will be specified for the development and it will comply with the relevant standards.

Evidence/Action Required

2. Where refrigerants are required:

   Provide a copy of the specification clause or letter from the M&E Engineer or system manufacturer confirming all systems (with electric compressors) comply with the requirements of BS EN 378:2008 (parts 2 and 3) and where refrigeration systems containing ammonia are installed, the Institute of Refrigeration Ammonia Refrigeration Systems Code of Practice.

Pol01 Impact of Refrigerants C3-5: Impact of Refrigerant	RIBA Stage 3(D): Recommended action	M&E	Targeted	2	0	1	0
		Principal Contractor	Targeted				

Assessor's Notes
At the pre-assessment meeting, this credit was considered achievable and any refrigerants specified for the development will have Direct Effect Life Cycle CO2 equivalent emissions of ≤100 kgCO2e/kW cooling/heating capacity or a low Global Warming Potential and at least two credit can be achieved.

Evidence/Action Required

Where refrigerants are required provide a copy of the specification clause, letter from the M&E Engineer or system manufacturer confirming the following relevant refrigeration types and system information for each specified system:

Provide the following information:
a. Global Warming Potential (GWP) of the specified system refrigerant(s);
b. Total refrigerant charge (kg);
c. Cooling capacity of the systems(s) (kW);
d. Sectoral release factors:
• Annual refrigerant leakage rate (% of refrigerant charge);
• Annual purge release factor (% of refrigerant charge);
• Annual service release factor for catastrophic system failure (%);
• Recovery efficiency (% of refrigerant charge).

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. This includes systems using refrigerants: comfort cooling systems, I.T servers and I.T equipment and cold storage units, commercial food/drink display cabinets but excluding domestic white goods e.g. fridges and freezers) and or/space heating (including refrigerants in heat pumps) capacity. To calculate the DELC CO_{2e} please refer to the Relevant definitions in the Additional information section and the Methodology section in the manual.

   OR

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

5. One credit is achieved where the systems using refrigerants have Direct Effect Life Cycle CO_2 equivalent emissions (DELC CO_{2e}) of ≤1000 $kgCO_{2e}$/kW cooling/heating capacity. This includes systems using refrigerants: comfort cooling systems, I.T servers and I.T equipment and cold storage units, commercial food/drink display cabinets but excluding domestic white goods e.g. fridges and freezers) and or/space heating (including refrigerants in heat pumps) capacity.

Pol01 Impact of Refrigerants C6-7: Leak Detection	RIBA Stage 3(D): Recommended action	M&E	Targeted	1	0	1	0
		Principal Contractor	Targeted				

Assessor's Notes
At the pre-assessment meeting, this credit was considered achievable and that a refrigerant leak detection system will be specified for the systems using refrigerants and will meet the below criteria.

Evidence/Action Required

6. Provide a copy of the specification clause, a letter from the M&E Engineer or system manufacturer confirming that systems using refrigerants have a permanent automated refrigerant leak detection system installed; OR an in-built 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.

7. The system must be capable of automatically isolating and containing the remaining refrigerant(s) charge in response to a leak detection incident. A system which initiates an automated shut down and pump down of the refrigerant into a separate storage tank would meet this criterion.

Pol02 NO_x Emissions C1-2: Up to Three Credits (All Building Types except Industrial)	RIBA Stage 3(D): Recommended action	N/A	Not targeted	3	0	0	0
		N/A	N/A				

Assessor's Notes
At the meeting it was noted the site is proposing a VRF and these systems have high Nox levels and no credits are currently sought.

Evidence/Action Required

1. Provide relevant specification clauses from the building specification or contract confirming the NO_x emissions of the boilers specified for the project and the manufacturer's product information confirming the NO_x emissions as 0% excess O_2 dry conditions.

   The building's delivered heating and hot water demand, under normal operating conditions, dry NO_x emission levels (at 0% excess O_2) must meet the following:

NO_x Emission levels for heating and hot water (mg/kWh)	Credit
≤100 mg/kWh	1 credit
≤70 mg/kWh	2 credits
≤40 mg/kWh	3 credits

   Provide calculations showing the average NO_x emissions for the building where multiple systems are present.

2. The direct and indirect NO_x emissions will be reported via the BREEAM scoring and reporting tool in mg/kWh and energy consumption in kWh/m^2/yr arising from systems installed to meet the building's space heating, cooling and hot water demands.

Pol03 Flood Risk Management and Reducing Surface Water Run-off C1-6: Flood Risk Management	RIBA Stage 3(D): Recommended action	Drainage Consultant	Targeted	2	0	2	0
		N/A	N/A				

Assessor's Notes
At the pre-assessment meeting, this credit was considered achievable and a Flood Risk Assessment report will be undertaken for the project and confirmed as low risk.

Evidence/Action Required

Low Flood Risk

1. Provide flood maps from the appropriate statutory body, such as the Environment Agency in England and Wales, the Rivers Agency in Northern Ireland and the Scottish Environment Protection Agency in Scotland or the relevant local authority/internal drainage board, which confirm that the refurbishment or fit-out is situated in a flood zone that is defined as having a low annual probability of flooding

   OR

2. Provide completed checklist confirming that 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.

Pol03 Flood Risk Management and Reducing Surface Water Run-off C7-10: Surface Water Run-off	RIBA Stage 3(D): Recommended action	Drainage Consultant	Targeted	2	0	1	0
		N/A	N/A				

Assessor's Notes
At the pre-assessment meeting, this credit was considered achievable and that the proposed site will sit on the exciting footprint. No new attenuation measures are proposed as the building will utilise the existing drainage system, thus a neutral impact is assumed for one credit.

Evidence/Action Required

One credit - neutral impact on surface water

7. Provide a drainage report, full calculations and drawings from an appropriate consultant confirming that 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.

Two credits - reducing run-off

9. Provide a drainage report, full calculations and drawing to confirm that an Appropriate Consultant has been used to design an appropriate drainage strategy for the site.

10. Provide a drainage report, full calculations and drawing confirming that 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.

Pol03 Flood Risk Management and Reducing Surface Water Run-off C11-14: Minimising Water Course Pollution	RIBA Stage 3(D): Recommended action	N/A	Not targeted	1	0	0	0
		N/A	N/A				

Assessor's Notes
At the pre-assessment meeting this credit was considered unachievable because the proposed site will sit on the exciting footprint. No pollution measures are proposed as the building will utilise the existing drainage system, thus no credits are assumed.

Evidence/Action Required

11. Provide a written statement or drainage report, calculations and/or drawings confirming that 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. Provide design drawings or relevant specification clauses indicating that suitable pollution prevention measures are put in place (or already exist) for the different sources of pollution present on the assessed site as follows :

    Low risk source of watercourse pollution: An appropriate level of pollution prevention treatment is provided, using appropriate SuDS techniques

    High risk source of watercourse pollution: Where there is risk of contamination or spillage of substances such as petrol and oil in areas such as vehicle manoeuvring areas, car parks, waste disposal facilities, delivery and storage facilities or plant areas, separators (or an equivalent system) are installed in surface water drainage systems.

    Chemical/liquid gas storage areas: A means of containment is fitted to the site drainage system (i.e. shut-off valves) to prevent the escape of chemicals to natural watercourses (in the event of a spillage or bunding failure).

    Vehicle washing areas: Pollution prevention systems must be in accordance with Pollution Prevention Guidelines 13. All water pollution prevention systems have been designed and installed in accordance with the recommendations of documents such as Pollution Prevention Guideline 3 (PPG 3) and/or where applicable the SuDS manual.
13. Provide formal written confirmation that a comprehensive and up-to-date drainage plan of the site will be made available for the building/site occupiers.
14. Provide formal written confirmation that relevant maintenance agreements for the ownership, long term operation and maintenance of all specified SuDS will be in place.

Pol03 Flood Risk Management and Reducing Surface Water Run-off C15: Exemplary level requirements	RIBA Stage 3(D): Recommended action	N/A	Not targeted	1	0	0	0
		N/A	N/A				

Assessor's Notes
The exemplary credit for reducing surface water has not been targeted at this stage.

Evidence/Action Required

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.

Pol04 Reduction of Night Time Light Pollution C:1-5 One credit	RIBA Stage 3(D): Recommended action	M&E	Targeted	1	0	1	0
		Principal Contractor	Targeted				

Assessor's Notes
At the pre-assessment meeting, this credit was considered achievable and that external lighting will be designed according to the relevant BREEAM criteria.

Evidence/Action Required

Provide specification clauses and drawings confirming the external lighting meets the following requirements:

1. 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.

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 PLG 05 The Brightness of Illuminated Advertisements.

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