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BREEAM  
New Construction 2018 (UK)  
Pre-Assessment Report

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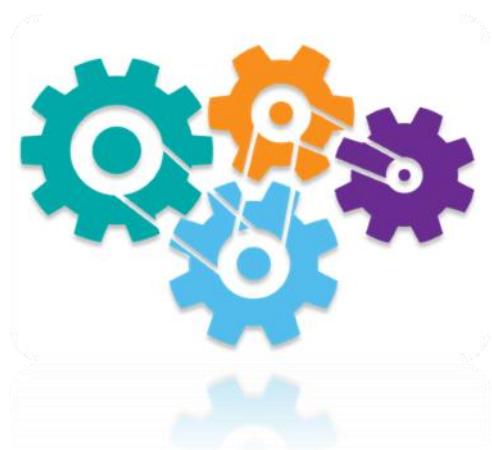
560 Sipson  
Road, West  
Drayton,  
UB7 0JF

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August 2022

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Ref: 21-8895



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The signatories below verify that this document has been prepared in accordance with our quality control requirements. These procedures do not affect the content and views expressed by the originator.

<i>Revision</i>	<i>Initial</i>	<i>Rev A</i>	<i>Rev B</i>	<i>Rev C</i>
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## 1. Executive Summary

Syntegra Consulting Ltd has been commissioned to undertake the Building Research Establishment Environmental Assessment Method (BREEAM) for **560 Sipson Road, West Drayton, UB7 0JF**. The BREEAM pre-assessment aims to provide the outline sustainability strategy and act as a sustainable design guide for the construction works to be performed. In accordance with planning requirements, the proposed developments will be expected to meet a minimum BREEAM 'Excellent' rating demonstrating this way that the project is designed and built to minimise greenhouse gas emissions across their lifetime and incorporate sustainable design and construction measures.

The building is to be classified as a Non-residential institution Fully Fitted Assessment under BREEAM New Construction 2018 (UK) for which the pre-assessment shows that by achieving the minimum standard requirements together the most feasible credits; the proposed project could achieve an overall score of 71.15% leading to a BREEAM rating of 'Excellent'.

*It should be noted that the project can and is committed to achieving a minimum score of 70% only, the threshold for 'Excellent'. The score outlined in this report is a target to ensure the required 'Excellent' threshold will be met. The current BREEAM strategy may be subject to change and therefore cannot be subjected to a specific score in order to ensure future flexibility with respect to third party verification by the BRE and any changes necessitated.*

Environmental Section	Weighting	Credits Available	Credits Targeted	Weighted Score
Management	11.00%	21.0	21.0	11.00%
Health & Wellbeing	14.00%	18.0	15.0	11.66%
Energy	16.00%	23.0	12.0	8.34%
Transport	10.00%	12.0	6.0	5.00%
Water	7.00%	9.0	7.0	7.00%
Materials	15.00%	14.0	7.0	7.50%
Waste	6.00%	10.0	7.0	4.20%
Land Use & Ecology	13.00%	13.0	11.0	11.00%
Pollution	8.00%	12.0	9.0	6.00%
Innovation	10.00%	10.0	0.0	1.00%
Indicative BREEAM Score			71.15% 'Excellent' Rating	

## 2. Introduction

This BREEAM Pre-assessment report will be included as part of the planning application that addresses the environmental impact of the development. This report focuses on the environmental strategy for the proposed scheme and how BREEAM measurements will be targeted to achieve the sustainability aspirations of this project and also to meet the planning policy requirements.

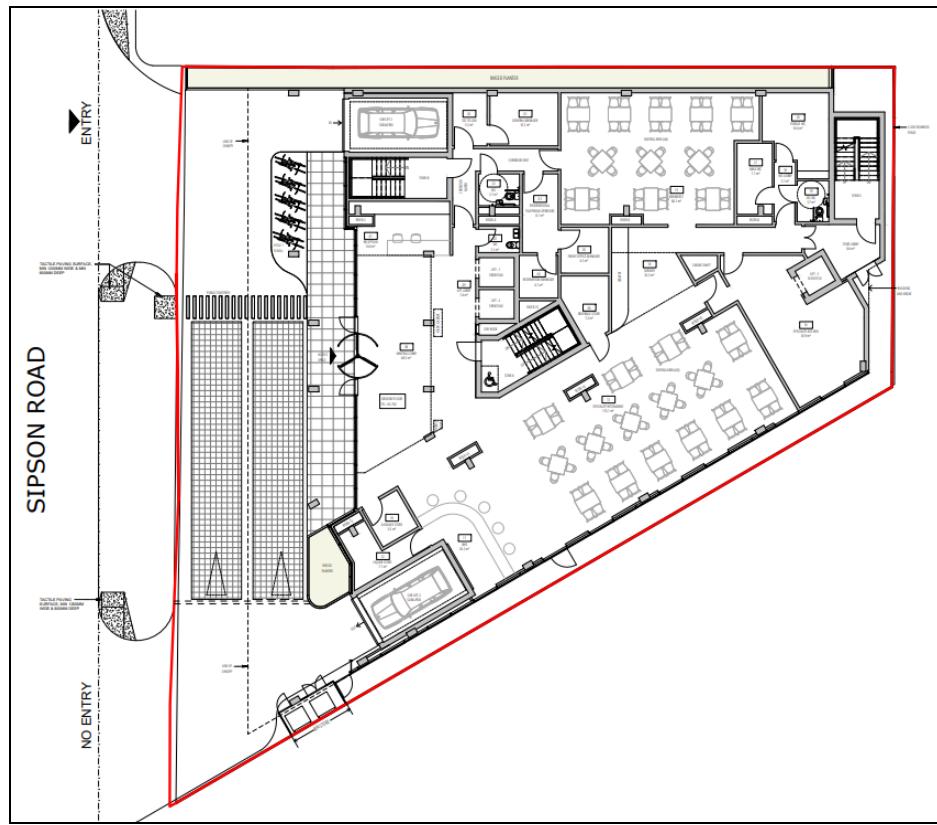
The development is to be located in the London Borough of Hillingdon. The proposal consists of the redevelopment of the site to accommodate a 108 room hotel over 7 storey's, with associated public amenity and parking. There will also be a basement level which will provide 24 parking spaces and at ground floor forecourt there is 1x designated disabled bay and a delivery bay, which can be used as an additional space when not in use, extending it to 26 car parking spaces. There is also a coach lay by area which is accessed directly of Sipson Road. The basement level will also provide 3x vertical access cores, which include 3 sets of stairs and 2 lifts.

The new-build elements would be assessed under a BREEAM New Construction 2018 assessment, and the planning condition would be satisfied by this assessment strategy. A BREEAM New Construction 2018 assessment of the extensions would not include any fabric improvements to the existing building.



Figure 1 Site Location

560 Sipson Road, West Drayton, UB7 0JF, to be further referred to as the 'proposed development' comprises of:



- Basement – 875sqm
- Ground Floor – 626.80sqm
- 1st Floor – 575sqm
- 2nd – 5th Floor – 704.46sqm (per floor)
- 6th Floor – 532sqm

### 3. BREEAM New Construction 2018 (UK) Non- domestic buildings

BREEAM New Construction 2018 (UK) is a performance-based assessment method and certification scheme for new projects. The primary aim of BREEAM New Construction 2018 (UK) is to mitigate the life cycle impacts of new buildings on the environment in a robust and cost-effective manner. This is achieved through integration and use of the scheme by clients and their project teams at key stages in the design and construction process.

#### 3.1 Introduction

BREEAM Rating	Score Achieved
Outstanding	$\geq 85$
Excellent	$\geq 70$
Very Good	$\geq 55$
Good	$\geq 45$
Pass	$\geq 30$
Unclassified (Non-Compliant)	< 30

This project is classed as an Office and comes under BREEAM New Construction 2018 (UK).

#### 3.2 Assessment Process

The BREEAM scheme can be used to assess and rate the environmental impacts of projects at the design and construction stages.

**Design Stage (DS):** The performance of the building is assessed at the design stage, usually prior to the beginning of the construction process. At this stage an Interim Certificate is issued based on a provisional estimated rating.

**Post-Construction (PCS):** The Post- Construction assessment confirms the final performance of the building, representing the 'As-built' state in accordance with that certified at the design stage. At this stage the final BREEAM certificate is issued.

A project can opt to pursue either a DS and PCS review or a full PCR review according to what suits the project better. Assessments at both stages must be carried out by a licensed assessor, who registers the assessment with the BRE.

### 3.3 Environmental Issues

Projects are assessed using a system of credits under different environmental issues which are divided up into the following nine categories. Innovation credits are also available for the recognition of performance levels that go beyond best practices.

- Management
- Health and Wellbeing
- Energy
- Transport
- Water
- Materials
- Waste
- Land-use and ecology
- Pollution
- Innovation

### 3.4 BREEAM 2018 Credit Weightings

BREEAM 2018 also introduces different credit weightings, i.e. relative scale of importance to various credit issues depending on the assessment route adopted.

The table below outlines the weightings for each of the nine environmental sections included in the BREEAM New Construction 2018 (UK). The core weightings are applied to fully fitted out, simple building, shell and core and shell only are also used for the basis of defining the weightings for all other projects. The core weightings are applied proportionately according to the number of credits available in each category for that project type.

Environmental section	Weighting			
	Fully fitted out	Simple building	Shell and core only	Shell only
Management	11%	7.5%	11%	12%
Health and Wellbeing	14%	16.5%	8%	7%
Energy	16%	11.5%	14%	9.5%
Transport	10%	11.5%	11.5%	14.5%
Water	7%	7.5%	7%	2%
Materials	15%	17.5%	17.5%	22%
Waste	6%	7%	7%	8%
Land Use and Ecology	13%	15%	15%	19%
Pollution	8%	6%	9%	6%
Total	100%	100%	100%	100%
Innovation (additional)	10%	10%	10%	10%

### 3.5 Mandatory credit issues

There are mandatory credits set which must be achieved in order to achieve the different performance ratings. These must be achieved in addition to the optional credits to achieve the targeted ratings.

**Failure to meet the mandatory criteria may restrict a development to an UNCLASSIFIED rating, regardless of the overall percentage achieved.**

Category	BREEAM Rating	Pass	Good	Very Good	Excellent	Outstanding
	Minimum Score	<30%	<45%	<55%	<70%	<85%
Management	Man 03 – Responsible Construction Practices	-	-	-	One credit (Considerate construction)	Two credits (Considerate construction)
	Man 04 – Commissioning and Handover	-	-	One credit (commissioning-test schedule and responsibilities)	One credit (commissioning-test schedule and responsibilities)	One credit (commissioning-test schedule and responsibilities)
	Man 04 – Commissioning and Handover	-	-	Criterion 11 (Building User Guide)	Criterion 11 (Building User Guide)	Criterion 11 (Building User Guide)
	Man 05 – Aftercare	-	-	-	One credit (commissioning-implementation) (Seasonal commissioning)	One credit (commissioning-implementation)
Energy	Ene 01 – Reduction in CO <sub>2</sub> Emissions	-	-	-	4 credits (Energy performance or Prediction of operational energy consumption*)	6 credits (Energy performance) and Four credits (Prediction of operational energy consumption*)
	Ene 02 – Energy Monitoring	-	-	One credit (First sub-metering credit)	One credit (First sub-metering credit)	One credit (First sub-metering credit)
Water	Wat 01 – Water Consumption	-	One credit	One credit	One credit (where applicable)	Two credits
	Wat 02 – Water Metering	-	Criterion 1	Criterion 1	Part 2: Criterion 1 only	Criterion 1
Materials	Mat 03 – Responsible Sourcing	Criterion 1	Criterion 1	Criterion 1	Criterion 1 only	Criterion 1
Waste	Was 01 – Construction Waste Management	-	-	-	-	One credit
	Was 03 – Operational Waste	-	-	-	1 credit	1 credit

### 3.6 Credits Requiring Early Actions

Under the BREEAM New construction 2018 (UK) criteria, there are a number of credits which require early action by the design team in order for the credits to be awarded. For these credits, the actions required prior to end of RIBA Stages 1 and 2; and the members of the design team responsible for these are listed below:

Credit Title	RIBA Work Stage	Action By
<b>MANAGEMENT</b>		
<b>Man 01 Project brief and design</b>		
Stakeholder consultation (project delivery)	RIBA 2	Project Manager
Stakeholder consultation (third party)	RIBA 4	Project Manager
Sustainability Champion (design)	RIBA 2	BREEAM AP
Sustainability Champion (monitoring progress)	RIBA 3	BREEAM AP
<b>Man 03 Responsible construction practices</b>		
Sustainability Champion (construction)	RIBA 5, RIBA 6	BREEAM AP
<b>Man 02 Life cycle cost and service life planning</b>		
Elemental life cycle cost (LCC)	RIBA 2	n/a
Component level LCC option appraisal	RIBA 4	n/a
<b>HEALTH AND WELLBEING</b>		
<b>Hea 06 Safety and security</b>		
Security of site and building	RIBA 2	Architect
<b>Energy</b>		
<b>Ene 04 Low carbon design</b>		
Passive design analysis	RIBA 2	Sustainability Consultant
Low zero carbon feasibility study	RIBA 2	Sustainability Consultant
<b>Materials</b>		
<b>Mat 06 Material efficiency</b>		
Material efficiency	RIBA 1, RIBA 2, RIBA 3, RIBA 4, RIBA 5	n/a
<b>Waste</b>		
<b>Wst 05 Adaptation to climate change</b>		
Structural and fabric resilience	RIBA 2	Architect
<b>Wst 06 Functional adaptability</b>		
Functional adaptability	RIBA 2, RIBA 4	Architect
<b>LAND USE AND ECOLOGY</b>		
<b>LE 04 Enhancing site ecology</b>		
Ecologist's report and recommendations	RIBA 1, RIBA 2	Ecologist
<b>LE 05 Long term impact on biodiversity</b>		
LE 05 Long term impact on biodiversity	RIBA 1	Ecologist

### 3.7 Summary credit list

The following table summarises the status of each credit and provides the RIBA Stage 2 assessment score and rating.

All credits in the 'Green' column are targeted and are included into the Stage 2 design. The design team should be aware that above score is subject to change:

T- Targeted credit	
Minimum standards by BREEAM rating level	

Credit Code	Credit Title	Credits Available	T	M	Action Lead	Stage
<b>MANAGEMENT</b>						
Man 01	Stakeholder consultation (project delivery)	1	1		Project Manager/ Architect/ Client	
	Stakeholder consultation (third party)	1	1		Project Manager/ Architect/ Client	
	Sustainability Champion (design)	1	1		Project Manager/ Client / Sustainability Champion	
	Sustainability Champion (monitoring progress)	1	1		Project Manager/ Client / Sustainability Champion	
Man 02	Elemental life cycle cost (LCC)	2	2		Project Manager/ Cost Consultant	
	Component level LCC option appraisal	1	1		Cost Consultant	
	Capital cost reporting	1	1		Cost Consultant	
Man 03	Environmental management	1	1		Principal Contractor	
	Sustainability Champion (Construction)	1	1		Principal Contractor	
	Responsible Construction management	2	2	✓	Principal Contractor	
	Monitoring of construction-site impacts					
	~ Utility consumption	2	1		Principal Contractor	
	~ Transport of construction materials and waste		1		Principal Contractor	
	Exemplary	1	1		Principal Contractor	
Man 04	Commissioning - testing schedule and responsibilities	1	1	✓	M&E Engineer	

Credit Code	Credit Title	Credits Available	T	M	Action Lead	Stage
	Commissioning – design and preparation	1	1		M&E Engineer	
	Testing and inspecting building fabric	1	1		M&E Engineer	
	Handover	1	1	✓	Client/ Project Manager/ Principal	
Man 05	Aftercare support	1	1		Project Manager	
	Seasonal commissioning	1	1	✓	Project Manager	
	Post occupancy evaluation	1	1		Client/ Project Manager	
<b>HEALTH AND WELLBEING</b>						
Hea 01	Glare control	1	1		Architect	
	Daylighting	1	1		Architect	
	View out	1	1		Architect	
	Internal and external lighting	1	1		M&E Engineer	
	Exemplary	1			M&E Engineer	
Hea 02	Indoor air quality (IAQ) plan	-	-		Architect / Air Quality Consultant	
	Ventilation	1	1		Architect	
	Volatile organic compound (VOC) emission levels (products)	2	2		Architect	
	Volatile organic compound (VOC) emission levels (post construction)				Principal Contractor	
	Post-construction indoor air quality measurements	1	1		Architect	
	Exemplary - Minimising sources of air pollution	1			Architect / Air Quality Consultant	
Hea 04	Thermal modelling	1	1		Sustainability Consultant	
	Design for future thermal comfort	1	1		Sustainability Consultant	
	Thermal zoning and controls	1	1		Sustainability Consultant	
Hea 05	Acoustic Performance	4	3		Acoustician	
Hea 06	Security of site and building	1	1		Architect	

Credit Code	Credit Title	Credits Available	T	M	Action Lead	Stage
Hea 07	Safe Access	1	1		Architect	
	Outside Space	1			Architect	
ENERGY						
Ene 01	Energy performance	13	4	✓	Sustainability Consultant	
	Exemplary	5			M&E Engineer	
Ene 02	Sub-metering of major energy consuming systems	2	2	✓	M&E Engineer	
Ene 03	External lighting	1	1		M&E Engineer	
Ene 04	Passive design					
	~ Passive design analysis	1			Sustainability Consultant	
	~ Free cooling	1			Sustainability Consultant	
	Low zero carbon feasibility study	1	1		Sustainability Consultant	
Ene 06	Energy efficient transportation systems	2	2		Lift Manufacturer	
Ene 08	Energy Efficient Equipment	2	2		Client	
TRANSPORT						
Tra 01	Travel plan	2	2		Architect	
Tra 02	Sustainable transport measures	10	4		Architect	
WATER						
Wat 01	Water consumption	5	3	✓	Architect	
	Exemplary	1			Architect	
Wat 02	Water monitoring	1	1	✓	M&E Engineer	
Wat 03	Water leak detection	2	2		M&E Engineer	
Wat 04	Water efficient equipment	1	1		Architect	
MATERIAL						
Mat 01	Life cycle impacts	7	3		LCA Consultant / Architect	
	Exemplary	1			LCA Consultant / Architect	

Credit Code	Credit Title	Credits Available	T	M	Action Lead	Stage
Mat 02	Environmental impacts from construction products	1			LCA Consultant / Principal Contractor	
Mat 03	Legal and sustainable timber	-	-	✓	M&E Engineer	
	Sustainable procurement plan	1	1		Developer/Architect	
	Responsible sourcing of materials (RSM)	3	2		Principal Contractor	
	Exemplary	1			Principal Contractor	
	Mat 05	Designing for durability and resilience	1	1	Architect	
Mat 06	Material efficiency	1			Architect	
<b>WASTE</b>						
Wst 01	Pre-demolition audit	1	1		Waste Contractor	
	Resource efficiency	3	2		Waste Contractor	
	Diversion of resources from landfill	1	1		Waste Contractor	
	Exemplary	1			Waste Contractor	
Wst 02	Projects Sustainable Aggregate	1	1		Principal Contractor	
	Exemplary	1				
Wst 03	Operational waste	1	1	✓	Principal Contractor	
Wst 05	Adaption to climate change	1	1		Architect	
Wst 06	Design for disassembly and adaptability	2			Architect	
<b>LAND USE AND ECOLOGY</b>						
LE 01	Site selection	1	1		Architect	
	Contaminated land	1			Contamination specialist	
LE 02	Ecological risk and opportunities	2	2		Ecologist	
LE 03	Managing impacts on ecology	3	3		Ecologist	
LE 04	Ecological change and enhancement	4	2		Ecologist	
LE 05	Long term ecology management and maintenance	2	2		Ecologist	
<b>POLLUTION</b>						
Pol 01	Impact of refrigerants	3	1			
Pol 02	Local air quality	2	2		M&E Engineer	

Credit Code	Credit Title	Credits Available	T	M	Action Lead	Stage
Pol 03	Flood resilience	2	2		Flood Risk Consultant	
	Surface water run-off	2	1		Flood Risk Consultant	
	Minimising water course pollution	1			Flood Risk Consultant	
Pol 04	Reduction of night time light pollution	1	1		M&E Engineer	
Pol 05	Noise attenuation	1	1		Acoustician	
AI Approved Innovation						
Approved Innovation		1				
Score			71.15%			
Rating		Excellent				

### 3.8 BREEAM New Construction 2018 (UK)

Credit criteria and requirements are contained within the BREEAM New Construction 2018 (UK) manual. The credits have been categorised as follows:

**Targeted (T)**- Credits that are deemed to be achievable by the design team subject to compliant evidence being provided to the assessor.

**Potential (P)**- Credits that require further investigation by the design team and could not be deemed targeted at this stage. To gain the 'Potential' credits should not require significant investment by any design team member.

Credit title	Credits Available	T	P	Action Lead	Headline Requirements	Project Specific Notes
MANAGEMENT Credit weight = 11.00%						
Man 01 Project brief and design						
Stakeholder consultation (project delivery)	1	1		Project Manager/ Architect/ Client	<p>Provide meeting minutes/ responsibilities schedules/ employers requirements (clearly highlighting) the project delivery stakeholders (client, building occupier (if known), design team, including Principal Contractor) have met to identify and define their roles, responsibilities and contributions for each of the key phases of project delivery.</p> <p>Provide a copies of the project execution plan, project brief or role and responsibilities schedule for each key phase (RIBA Stage) of the project, clearly highlighting the following has been considered when defining the roles and responsibilities: a. End user requirements b. Aims of the design and design strategy c. Particular installation and construction requirements/limitations d. Occupiers' budget and technical expertise in maintaining any proposed systems e. Maintainability and adaptability of the proposals f. Requirements for the production of project and end user documentation g. Requirements for commissioning, training and aftercare support.</p> <p>Provide an updated project brief and concept design documents to show how the project team stakeholder contributions and the outcomes of the consultation process have influenced or changed the Initial Project Brief, including if appropriate, the Project Execution Plan, Communication Strategy, and the Concept Design documents.</p>	<p>Project team meetings have taken place and roles and responsibilities have been defined.</p> <p>The design team are required to demonstrate how project team collaboration has influenced the design.</p>

Credit title	Credits Available	T	P	Action Lead	Headline Requirements	Project Specific Notes
Stakeholder consultation (interested parties)	1	1		Project Manager/ Architect/ Client	<p>Provide meeting minutes and a consultation plan (setting out the process and scope of consultation) demonstrating that all third party stakeholders have been consulted with prior to completion of the Concept Design stage (RIBA Stage 2). The consultation information provided must clearly highlight the following items have been considered: a. Functionality, build quality and impact (including aesthetics). b. Provision of appropriate internal and external facilities (for future building occupants and visitors/users). c. Management and operational implications. d. Maintenance resources implications. e. Impacts on the local community, e.g. local traffic/transport impact. f. Opportunities for shared use of facilities and infrastructure with the community/appropriate stakeholders, if relevant/appropriate to building type. g. Compliance with statutory (national/local) consultation requirements. h. Inclusive and accessible design.</p> <p>Provide evidence such as an updated project brief clearly highlighting how the stakeholder contributions and outcomes of the consultation exercise have influenced or changed the Initial Project Brief and Concept Design.</p> <p>Provide evidence such as leaflet drops, mailing lists, website information, of how feedback has been made to all stakeholders prior to completion of the detailed design (RIBA Stage 4, Technical Design or equivalent). Feedback must focus on the stakeholder suggestions, comments, recommendations and the consultation outcomes. This includes how the suggestions and outcomes influenced, or resulted in modifications to, the proposed design and building operation/use</p>	<p>User group consultation has taken place.</p> <p>Are there any other third party stakeholders that should be consulted?</p> <p>The design team are required to demonstrate how consultation has influenced the design.</p>
Prerequisite:	Yes			Project Manager/ Client	Have the client and the contractor formally agreed performance targets?	
Sustainability Champion (design)	1	1		Project Manager/ Client / Sustainable Champion	<p>Provide an appointment letter to demonstrate the BREEAM AP Involvement during RIBA Stage 1 / Preparation and Brief and that the Sustainability Champion (e.g. BREEAM AP) has facilitated the setting of BREEAM performance targets for the project.</p> <p>Provide a copy of a formal agreement (contract/letters of appointment) between the client and the project team members confirming the Sustainability Champions target, set at RIBA stage 2, of EXCELLENT will be achieved.</p> <p>Note: The design stage assessment must be completed for these credits to be awarded</p>	BREEAM Assessor can act as BREEAM AP

Credit title	Credits Available	T	P	Action Lead	Headline Requirements	Project Specific Notes
Sustainability Champion (monitoring progress)	1	1		Project Manager/ Client / Sustainable Champion	<p>The Sustainability Champion (Design) credit must be achieved</p> <p>Provide confirmation the formal agreement (contract/letters of appointment) confirms the Sustainability Champion will attend key design team meetings and provide BREEAM update reports for each key RIBA stage up to and including RIBA Stage 4. The Sustainability Champion must provide reports for each stage and attend key project/design team meetings. To achieve this credit at the interim design stage assessment, the agreed BREEAM performance target(s) must be demonstrably achieved by the project design. This must be demonstrated via the BREEAM Assessor's design stage assessment report.</p>	BREEAM Assessor can act as BREEAM AP
Man 02 Life cycle cost and service life planning						
Elemental life cycle cost (LCC)	2	2		Project Manager/ Cost Consultant	<p>Provide a copy of an outline, entire asset elemental life cycle cost plan undertaken at RIBA Stage 2 and a design option appraisal in line with 'Standardised method of life cycle costing for construction procurement' PD 156865:2008.</p> <p>This is commonly used for developing solutions at project level during option appraisals. Costs are normally at building elemental level on the entire asset. Information may be a mix of typical benchmark costs for key elements, comparative cost modelling or approximate estimates. It is expressed as cost/m<sup>2</sup> of gross internal floor area (GIFA) and presented for elemental analysis, aligned to the level of capital cost plans.</p> <p>the elemental LCC plan must: a) Provide an indication of future replacement costs over a period of analysis as required by the client (e.g. 20, 30, 50 or 60 years); b) Includes service life, maintenance and operation cost estimates.</p> <p>Demonstrate, using appropriate examples provided by the design team, how the elemental LCC plan has been used to influence building and systems design/specification to minimise life cycle costs and maximise critical value.</p>	Appoint Cost Consultant
Component level LCC option appraisal	1	1		Cost Consultant	<p>Provide a Component level LCC option appraisal developed by end of Stage 4/Technical Design in line with PD 156865:2008 and that includes the following component types; a. Envelope, e.g. cladding, windows, and/or roofing b. Services, e.g. heat source cooling source, and/or controls c. Finishes, e.g. walls, floors and/or ceilings d. External spaces, e.g. alternative hard landscaping, boundary protection. Demonstrate, using appropriate examples provided by the design team, how the component level LCC cycle appraisal has been used to influence building and systems design/specification to minimise life cycle costs and maximise critical value.</p>	Appoint Cost Consultant
Capital cost reporting	1	1		Cost Consultant	Provide the capital cost for the building in pounds per square metre (£k/m <sup>2</sup> )	The capital cost of the project will be reported.

Credit title	Credits Available	T	P	Action Lead	Headline Requirements	Project Specific Notes
Man 03 Responsible construction practices						
Prerequisite:	Yes		Project Manager/ Client	Have the client and the contractor formally agreed performance targets?		
Environmental management	1	1		Principal Contractor	Provide a copy of best practice policies and procedures and an ISO 14001 certificate  Provide confirmation 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	To be included in the contractor's prelims.
Prerequisite:	Yes		Project Manager/ Client	Have the client and the contractor formally agreed performance targets?		
BREEAM Advisory Professional (site)	1	1	Principal Contractor	<p>Provide confirmation and a scope of appointment for a construction site sustainability champion, the person should ideally be based on site.</p> <p>Members of the following schemes satisfy the requirement of a Sustainability Champion (Construction)</p> <ul style="list-style-type: none"> <li>- BREEAM Accredited Professional (AP) Membership Scheme</li> <li>- BRE Site Sustainability Manager Membership Scheme.</li> </ul> <p>Provide progress reports required during RIBA Stages 5-6 (Construction, Handover and Close out Stages) at key stages including where:</p> <ul style="list-style-type: none"> <li>-works can be observed before they are covered up or new works or trades start.</li> <li>- where significant risks of conflicts or errors could occur.</li> <li>- where timing is critical to demonstrating compliance.</li> <li>- where key evidence is required to be produced at specific times including, but not limited to photographic, delivery notes and another documentary evidence; and</li> <li>- where different trades and systems come together and one could harm the integrity or compliance of another system's performance against BREEAM requirements.</li> </ul> <p>Provide a contract clause or appointment letter to confirming the defined BREEAM performance targets from part of the Principal Contractor's contract</p> <p>The performance target EXCELLENT must be achieved for the credit to be awarded.</p>		

Credit title	Credits Available	T	P	Action Lead	Headline Requirements	Project Specific Notes
Responsible Construction Management	2	2		Principal Contractor	<p>Provide confirmation the Principal Contractor will use a 'compliant' organisational, local or national considerate construction scheme (e.g. CCS) and confirm the targeted score</p> <p>One credit: a CCS score between 25 and 34 with a score of 5 in each of the 5 sections is required under the CCS scheme. This is based on the final site inspection</p> <p>Two credits: A score of 35-39 is required with a score of 7 in each of the 5 sections is required under the CCS scheme. This is based on the final site inspection</p>	<p>To be included in the contractor's prelims.</p>

Monitoring of construction-site impacts						
~ Utility consumption	2	1	1	Principal Contractor	<p>Provide formal letter confirming monitoring, recording and reporting of energy and water consumption from the use of construction plant, equipment (mobile and fixed) and site accommodation.</p> <p>Energy emissions must be reported in terms of total kgCO<sub>2</sub>/project value. Water use must be reported in m<sup>3</sup>.</p> <p>Note: This is applicable to both principal contractor and subcontractor operations</p>	To be included in the contractor's prelims.
~ Transport of construction materials and waste		1	1		<p>Confirm an appropriate person is assigned to monitor, record and report energy and water consumption from the use of construction plant, equipment (mobile and fixed) and site accommodation. This is applicable to both principal contractor and subcontractor.</p> <p>Provide formal letter confirming monitoring, recording and reporting of transport of construction materials and waste accommodation.</p> <p>Reporting must be separate for materials and waste, the total fuel consumption (litres) and total carbon dioxide emissions (kgCO<sub>2</sub> eq), plus total distance travelled (km) must be included. This is applicable to both principal contractor and subcontractor</p>	To be included in the contractor's prelims but may be cost prohibitive following tender.
Exemplary	1	1	1	Principal Contractor	To achieve the exemplary credits, a score of 40 with a score of 7 in each of the 5 sections is required under the CCS scheme. As well as completing site fleet operator training and accident reporting.	
Man 04 Commissioning and handover						
Commissioning - testing schedule and responsibilities	1	1	1	M&E Engineer	<p>Provide a schedule of commissioning and testing that identifies and includes a suitable timescale for commissioning and re-commissioning of all complex and non-complex building services and control systems and testing and inspecting building fabric. The schedule provided must 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. BMS commissioning procedures must be undertaken in line with BREEAM. Provide an appointment letter confirming an appropriate project team member(s) is appointed to monitor and programme, pre-commissioning, commissioning, testing and, where necessary, recommissioning activities on behalf of the client. Provide confirmation 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.</p>	To be included in the contractor's prelims.

Commissioning – design and preparation	1	1		M&E Engineer	<p>Appoint a project team member with responsibilities for:</p> <ul style="list-style-type: none"> <li>• Undertaking design reviews and giving advice on suitability for ease of commissioning.</li> <li>• Providing commissioning management input to construction programming and during installation stages.</li> <li>• Management of commissioning, performance testing and handover or post-handover stages.</li> </ul>	<p>Must achieve Commissioning -testing and responsibilities credit.</p> <p>Team member must not be involved in general installation works</p>
Testing and inspection building fabric	1	1		M&E Engineer	<p>A suitably qualified professional undertakes the survey and testing in accordance with the appropriate standard to complete post-construction testing and inspection to quality-assure the integrity of the building fabric, including continuity of insulation, avoidance of thermal bridging and air leakage paths (this is through airtightness testing and a thermographic survey).</p> <p>Rectify any defects identified during post-construction testing and inspection prior to building handover and close out.</p>	<p>Must achieve Commissioning -testing and responsibilities credit.</p>

Handover	1	1	Client/ Project Manager/ Principal	<p>A non-technical Building User Guide (BUG) must be produced to meet the BREEAM requirements prior handover for distribution to the building occupiers and premises managers. This should include:</p> <ul style="list-style-type: none"> <li>a) 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.</li> <li>b) Building services overview and access to controls, e.g. where to find them, what they control, how to operate effectively and efficiently etc.</li> <li>c) Pre-arrival information for visitors, e.g. access and security procedures/provisions</li> <li>d) Provision of, and access to, shared facilities</li> <li>e) Safety and emergency information/instructions</li> <li>f) Building related operational procedures specific to building type/operation, e.g. laboratories</li> <li>g) Building related incident reporting/feedback arrangements</li> <li>h) Building related training information/links</li> <li>i) Provision of, and access to, transport facilities, e.g. public transport, cyclist facilities, pedestrian routes etc.</li> <li>j) Provision of, and access to, local amenities</li> <li>k) Re-fit, refurbishment and maintenance arrangements/considerations</li> <li>l) Links, references and relevant contact details</li> <li>m) There is no requirement on the format the Building User Guide should take.</li> </ul> <p>Provide a copy of the BREEAM training schedule prepared for building occupiers/premises managers, timed appropriately around handover and proposed occupation plans. This should include</p> <ul style="list-style-type: none"> <li>a. The building's design intent</li> <li>b. The available aftercare provision and aftercare team main contact(s), including any scheduled seasonal commissioning and post occupancy evaluation</li> <li>c. Introduction to, and demonstration of, installed systems and key features, particularly building management systems, controls and their interfaces</li> <li>d. Introduction to the Building User Guide and other relevant building documentation, e.g. design data, technical guides, maintenance strategy, operations and maintenance (O&amp;M) manual, commissioning records, log book etc.</li> </ul> <p>Maintenance requirements, including any maintenance contracts and regimes in place.</p>	To be included in the contractor's prelims.
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Man 05 Aftercare					
Aftercare support	1	1	Aftercare support	<p>Provide confirmation there is (or will be) operational infrastructure and resources plan in place to provide aftercare support to the building occupier(s), which includes the following as a minimum:</p> <ul style="list-style-type: none"> <li>a. A meeting programmed to occur between the aftercare team/individual and the occupier/management (prior to initial occupation, or as soon as possible thereafter) to:           <ul style="list-style-type: none"> <li>I. Introduce the aftercare team to the aftercare support available, including the Building User Guide and training schedule/content.</li> <li>II. Present key information about the building including the design intent and how to use the building to ensure it operates as efficiently and effectively as possible.</li> </ul> </li> <li>b. On-site facilities management training, including a walkabout of the building and introduction to and familiarisation with the building systems, controls and how to operate them in accordance with the design intent and operational demands.</li> <li>c. Initial aftercare support provision for at least the first month of building occupation, e.g. on-site attendance on a weekly basis to support building users and management</li> <li>d. Longer term aftercare support provision for occupants for at least the first 12 months from occupation, e.g. a helpline, nominated individual or other appropriate system to support building users/management.</li> </ul> <p>Provide confirmation there is (or will be) operational infrastructure and resources plan in place to coordinate the collection and monitoring of energy and water consumption data for a minimum of 12 months once the building is occupied. This is done to facilitate analysis of discrepancies between actual and predicted performance, with a view to adjusting systems and/or user behaviours accordingly.</p>	Aftercare support to be included in the contractor's prelims. Confirm operational infrastructure and procedures for monitoring of utilities.
Commissioning – implementation	1	1	Seasonal commissioning	<p>Provide an appointment letter and commissioning schedule confirming seasonal commissioning activities will be completed over a minimum 12-month period, once the building becomes substantially occupied:</p> <ul style="list-style-type: none"> <li>a. Complex systems - Appoint a Specialist Commissioning Manager: I. Testing of all building services under full load conditions, i.e. heating equipment in mid-winter, cooling/ventilation equipment in mid-summer, and under part load conditions (spring/autumn). II. Where applicable, testing should also be carried out during periods of extreme (high or low) occupancy. III. Interviews with building occupants (where they are affected by the complex services) to identify problems or concerns regarding the effectiveness of the systems. Re-commissioning of systems (following any work needed to serve revised loads), and incorporating any revisions in operating procedures into the operations and maintenance (O&amp;M) manuals</li> </ul>	To be included in the contractor's prelims.

Post occupancy evaluation (POE)	1	1	Post occupancy evaluation	<p>Provide a commitment from the client or building occupier must make to carry out a post occupancy evaluation (POE) exercise one year after initial building occupation. The POE must contain</p> <ul style="list-style-type: none"> <li>a. A review of the design intent and construction process (review of design, procurement, construction and handover processes).</li> <li>b. Feedback from a wide range of building users including Facilities Management on the design and environmental conditions of the building covering:           <ul style="list-style-type: none"> <li>I. Internal environmental conditions (light, noise, temperature, air quality)</li> <li>II. Control, operation and maintenance</li> <li>III. Facilities and amenities</li> <li>IV. Access and layout</li> </ul> </li> <li>V. Other relevant issues vi. Sustainability performance (energy/water consumption, performance of any sustainable features or technologies e.g. materials, renewable energy, rainwater harvesting etc.).</li> </ul> <p>The client or building occupier must provide a commitment to carry out the appropriate dissemination (e.g. to immediate stakeholders such as building occupants, managers and owners and a case study on own website, press release etc) of information on the building's post occupancy performance. This is done to share good practice and lessons learned and inform changes in user behaviour, building operational processes and procedures, and system controls</p> <p>Where there is a demonstrably justifiable reason why public dissemination is not possible, for example the information is commercially or security sensitive, compliance can be demonstrated by a commitment to produce and disseminate the relevant information at an organisational level or to appropriate internal/external stakeholders.</p>	Confirm a commitment to undertake a Post Occupancy Evaluation 12 months following occupation.
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HEALTH AND WELLBEING Credit weight = 14.00%						
Hea 01 Visual comfort						
Glare control	1	1		Architect	<p>The potential for disabling glare must be designed out of all relevant building areas using a glare control strategy, either through building form and layout and/or building design measures. Provide drawings and specifications showing the glare control option for the building:</p> <ul style="list-style-type: none"> <li>- Building integrated measures (e.g. low eaves)</li> <li>- Occupant controlled devices such as blinds (where transmittance value is &lt;10%)</li> <li>- Bioclimatic design, external shading or brise soleil.</li> </ul> <p>Provide confirmation (formal statement, specification) the glare control strategy avoids increasing lighting energy consumption, by ensuring that:</p> <p>a. The glare control system is designed to maximise daylight levels under all conditions while avoiding disabling glare in the workplace or other sensitive areas. The system should not inhibit daylight from entering the space under cloudy conditions, or when sunlight is not on the facade. AND</p> <p>The use or location of shading does not conflict with the operation of lighting control systems.</p>	Glare Study potentially required
Daylighting	2	2		Architect	<p>Provide calculations to demonstrate the average daylight factor criteria are achieved: a) Average daylight factor requires 2% over 80% of the occupied spaces for 1 credit; or 3% for patient areas over 80% of the occupied spaces for 2 credits AND i. The relevant uniformity ratio (0.3) or minimum point factors (0.3 times the value of the minimum daylight factor) are achieved. And Either ii. 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). or iii. The room depth criterion <math>d/w + d/HW &lt; 2/(1-RB)</math> is satisfied for Specific Schemes Or (if not 3 a i and either ii or iii above) Provide calculations demonstrating the relevant building areas meet the good practice average and minimum point daylight illuminance criteria: Average daylight illuminance (averaged over entire space) of at least 300 lux for 2000 hours per year with a minimum of at least 90 Lux for 2000 hours per year for over 80% of the floor area</p>	

View out	1	1	Architect	<p>Provide marked up drawings showing 95% of the relevant building areas (i.e. workstations or desks), is within 7m of a wall which has a window or permanent opening that provides an adequate view out. The window opening must be of 20% or more where the room depth is 7m or less.</p> <p>Where the depth is greater than the 7m requirement, compliance is only possible where the % of window is greater than the values in Table 1 of BS 8206:</p> <table> <thead> <tr> <th>Depth of room from outside wall (metres)</th><th>% of window wall as seen from the inside</th></tr> </thead> <tbody> <tr> <td>&lt;8</td><td>20</td></tr> <tr> <td>≥ 8 ≤ 11</td><td>25</td></tr> <tr> <td>&gt;11 ≤ 14</td><td>30</td></tr> <tr> <td>&gt; 14</td><td>35</td></tr> </tbody> </table>	Depth of room from outside wall (metres)	% of window wall as seen from the inside	<8	20	≥ 8 ≤ 11	25	>11 ≤ 14	30	> 14	35	
Depth of room from outside wall (metres)	% of window wall as seen from the inside														
<8	20														
≥ 8 ≤ 11	25														
>11 ≤ 14	30														
> 14	35														
Internal and external lighting	1	1	M&E Engineer	<p>Provide a specification clause and manufacturers details confirming all fluorescent and compact fluorescent lamps are to be fitted with high frequency ballasts/ control gear. Illuminance (lux) levels in all internal relevant building areas of the building as listed in the Design and Performance criteria section of this specification have been specified in accordance with the SLL Code for Lighting 2012.</p> <p>In all areas where computer screens are regularly used, the lighting design shall comply with SLL Lighting Guide 7 sections 3.3, 4.6, 4.7, 4.8 and 4.9</p> <p>Provide a specification clause and drawings demonstrating all external lighting located within the construction zone is designed to meet:</p> <p>BS 5489-1:2013 Lighting of roads and public amenity areas AND BS EN 12464-2:2014 Light and lighting - Lighting of work places - Part 2: Outdoor work places.</p> <p>Provide specification clause and lighting zoning drawings showing manual lighting controls have been to be specified to all occupied spaces.</p>	<p>Internal and external lighting will comply with the required standards and lighting will be appropriately zoned with occupant control.</p>										

Exemplary	1			M&E Engineer	<p>Provide calculations to demonstrate the average daylight factor criteria are achieved: a) Average daylight factor requires 3% over 80% of the occupied spaces. Or</p> <p>Provide calculations demonstrating the relevant building areas meet the good practice average and minimum point daylight illuminance criteria: Average daylight illuminance (averaged over entire space) of at least 300 lux for 3000 hours per year with a minimum of at least 90 Lux for 2650 hours per year for over 80% of the floor area.</p>	Not deemed to be achievable
Hea 02 Indoor air quality						
Prerequisite:	Yes			Air Quality Consultant	A site-specific indoor air quality plan has been produced and implemented in accordance with the guidance in Guidance Note GN06.	
Ventilation	1	1		Architect	<p>Provide a specification confirming fresh air rates into the building will be in accordance with the criteria of the relevant standard for ventilation, for offices this is the top of the range recommendation in the British Council for Offices Guide to Best Practice in the Specification of Offices i.e. 12 litres per second per person/ Provide a specification and design drawings showing the building's air intakes and exhausts are over 10m apart and intakes are over 20m from sources of external pollution (i.e. car parks, roads, loading /waiting bays) or Provide drawings and a specification clause confirming 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 13779:2007 Annex A2. Where present, provide a specification confirming HVAC systems must incorporate suitable filtration to minimise external air pollution, as defined in BS EN 13779:2007 Annex A3. Where present, provide a specification confirming areas of the building subject to large and unpredictable or variable occupancy patterns (examples include gyms, auditoria and retail) have carbon dioxide (CO2) or air quality sensors specified and that mechanically ventilated buildings/spaces: sensor(s) are linked to the mechanical ventilation system and provide demand controlled ventilation to the space. Or confirm there are no areas of variable occupancy.</p>	

Volatile organic compound (VOC) emission levels (products)	2	1	Principal Contractor	<p>Provide manufacturers data sheets or statements clearly highlighting the BREEAM VOC standards the products achieve.</p> <p>All decorative paints and varnishes specified meet the criteria in Table – 18 in the BREEAM New Construction 2018 (UK) Manual</p> <p>At least five of the seven remaining product categories listed in Table - 18 meet the testing requirements and emission levels criteria for volatile organic compound (VOC) emissions (listed in the table).</p> <p>Undertake post construction but pre-occupation VOC testing within the building. Where the VOC and formaldehyde levels are found to exceed the limits defined in criteria 8 and 9, the project team confirms the measures that have, or will be taken, in accordance with the IAQ plan, to reduce the levels to within these limits</p>	
Post-construction indoor air quality measurement	1	1	Air Quality Consultant	Undertake post construction but pre-occupation VOC testing within the building. Where the VOC and formaldehyde levels are found to exceed the limits defined in criteria 8 and 9, the project team confirms the measures that have, or will be taken, in accordance with the IAQ plan, to reduce the levels to within these limits	
Exemplary - Minimising sources of air pollution	1	1	Architect / Air Quality Consultant	<p>The building ventilation strategy is designed to be flexible and adaptable to potential building occupant needs and climatic scenarios. The occupied spaces of the building must be designed to be capable of providing fresh air entirely via a natural ventilation strategy. I.e. meet the room depth criteria in CIBSE AM 10 and have a 5% openable window area in proportion to the floor area or provide adequate cross flow of air, demonstrated by using ventilation design tool that meet the requirements of CIBSE AM10</p> <p>The natural ventilation strategy should be capable of providing at least two levels of user control on the supply of fresh air to the occupied space.</p>	

Hea 04 Thermal Comfort					
Thermal modelling	1	1		M&E Engineer	<p>Provide a copy of a CIBSE AM 11 compliant thermal modelling report</p> <p>Provide formal confirmation the software used provides full dynamic thermal analysis</p> <p>The thermal modelling report must confirm that 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.</p> <p>The thermal modelling report must confirm the PMV (predicted mean vote) and PPD (predicted percentage of dissatisfied) indices for the building.</p>
Design for future thermal comfort	1	1		M&E Engineer	<p>Hea 04 credit 1 must be achieved</p> <p>Provide a copy of the thermal modelling report confirming criterion 3 of the first credit will be achieved for a projected climate change environment.</p> <p>Where thermal comfort criteria are not met for the projected climate change environment, the project team demonstrates how the building has been adapted or designed to be easily adapted in future using passive design solutions in order to subsequently meet the requirements under criterion 6 of the first credit. Design drawings and adaptability strategy may be required to demonstrate the criteria.</p> <p>provide a copy of the thermal model / report (for the climate change scenario) confirming the PMV (predicted mean vote) and PPD (predicted percentage of dissatisfied) indices for the building</p>

Thermal zoning and controls	1	1	M&E Engineer	<p>Criterion 1-4 are achieved<sup>10</sup>) Provide a copy of the BREEAM compliant thermal controls strategy. The strategy for proposed heating/cooling system(s) demonstrates that it has addressed the following:</p> <ul style="list-style-type: none"> <li>• Zones within the building and how the building services could efficiently and appropriately heat or cool these areas</li> <li>• The degree of occupant control required for these zones based on end user discussions including           <ul style="list-style-type: none"> <li>• User knowledge of building services</li> <li>• Occupancy type, patterns and room functions (and therefore appropriate level of control required)</li> <li>• 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.</li> <li>• The user expectations (this may differ in the summer and winter) and degree of individual control</li> <li>• How the proposed systems will interact with each other</li> <li>• The need or otherwise for an accessible building user actuated manual override</li> </ul> </li> </ul>	A thermal zoning and controls strategy will be developed.
Hea 05 Acoustic performance					
Acoustic performance	3	3	Acoustician	<p>The building meets the appropriate acoustic performance standards and testing requirements defined in the relevant table below. Or A suitably qualified acoustician (SQA) is appointed to define a bespoke set of performance requirements for all function areas in the building.</p> <p>These tables define criteria for the acoustic principles of:</p> <ul style="list-style-type: none"> <li>• Sound insulation</li> <li>• Indoor ambient noise level</li> <li>• Room acoustics.</li> </ul>	An Acousticians report will be produced

Hea 06 Safety and security					
Security of site and building	1	1		Architect	<p>Provide a copy of the Security Needs Assessment undertaken at RIBA stage 2 by the Suitably Qualified Security Specialist (SQSS).</p> <p>Provide details of the SQSS's recommendations or solutions during or prior to Concept Design (RIBA Stage</p> <p>The 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 SNA.</p> <p>Provide confirmation (formal letter and highlighted examples in design drawings) that the recommendations or solutions proposed by the 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.</p> <p>Undertake a compliant risk based security rating certification scheme where performance is confirmed by independent assessment and verification.</p>
Exemplary	1		1	Architect	A compliant risk based security rating scheme has been used. The performance against the scheme has been confirmed by independent assessment and verification
Hea 07 Safe and Healthy Surroundings					
Safe access	1	1		Architect	<p>Dedicated and safe cycle and foot paths are provided around site to connect to car park, cycle storage, building entrance off-site paths etc</p> <p>Delivery areas are not accessed through general parking areas and do not cross or share paths</p>
Outside space	1		1	Architect	There is an outside space providing building users with an external amenity area.

ENERGY Credit weight = 16.00%						
Ene 01 Reduction of energy use and carbon emissions						
Energy performance – building score	13	4		M&E Engineer	Provide a copy of the Part L model and outputs (BRUKL) for the Energy Performance Ratio for New Constructions (EPR NC) to be calculated. Provide the accredited energy assessors qualification details. Provide a copy of the green fit-out agreement detailing the performance specification to be undertaken in line with the base build to ensure the EPR is maintained during fit out.	Credits are awarded based on the output of the Part L2a model.
Exemplary	1			M&E Engineer	Two credits - Zero regulated carbon Up to four credits - Zero regulated carbon and carbon neutral unregulated energy Five credits - Carbon negative	Not deemed to be feasible.
Ene 02 Energy Monitoring						
Sub-metering of end-use categories	2	2		M&E Engineer	<p>Provide a specification clause and design schematics showing that energy sub metering is provided for at least 90% of the estimated annual energy consumption of each fuel to be assigned to the following energy consuming systems:</p> <ul style="list-style-type: none"> <li>- Space heating</li> <li>- Domestic hot water</li> <li>- Humidification</li> <li>- Cooling - Pumps</li> <li>- Lighting</li> <li>- Small Power</li> <li>- Renewable or low carbon systems (each system separately)</li> <li>- Controls</li> <li>- Other major energy consuming systems ( e.g. kitchen plant/catering equipment/transportation systems/dedicated computer rooms/covered car parks/floodlighting sports and leisure facilities)</li> </ul> <p>Provide a specification clause and drawings confirming the meters will be connected to a building energy management systems (BEMS) or automatic meter reading systems (AMR) Provide confirmation end energy consuming uses are identifiable to the building users, for example through labelling or data outputs (photographic /BMS screenshot evidence must be provided at PCR)</p>	A compliant metering strategy will be developed.

Ene 03 External lighting						
External lighting	1	1		M&E Engineer	Provide a specification clause and drawings confirming the luminous efficacy of external light fittings $\geq 60$ lamp lumen/circuit watt Provide a specification clause and drawings confirming external light fittings controlled for daylight and presence detection in areas of intermittent pedestrian traffic.	Energy efficient lighting will be specified.
Ene 04 Low carbon design						
Passive design						
~ Passive design analysis	1	1	1	Architect	<p>Provide confirmation the first Credit within issue Hea04 Thermal Comfort is achieved.</p> <p>Provide a passive design analysis carried out at RIBA Stage 2/Concept Design. As a minimum, this must cover:</p> <ul style="list-style-type: none"> <li>- Site Location</li> <li>- Site Weather</li> <li>- Microclimate</li> <li>- Building Layout</li> <li>- Building Orientation</li> <li>- Building Form</li> <li>- Building Fabric</li> <li>- Thermal Mass/Other Fabric Thermal Storage</li> <li>- Building Occupancy type - Daylighting strategy</li> <li>- Ventilation Strategy</li> <li>- Adaptation to climate change</li> </ul> <p>The analysis should show passive design measures reduce the total heating, cooling, mechanical ventilation and lighting loads. Measures to contribute <math>\geq 5\%</math> of overall building energy demand.</p>	Not deemed to be achievable

~ Free cooling	1			<p>Provide confirmation the passive design analysis is achieved</p> <p>The passive design analysis carried out under criterion 2 (above) includes an analysis of free cooling and identifies opportunities for the implementation of free cooling solutions.</p> <p>Provide evidence of the building free cooling strategy (e.g. a specification) used to reduce the cooling demand</p>	Not deemed to be feasible.
Low zero carbon feasibility study	1	1		<p>Provide a copy of the BREEAM compliant LZC Feasibility Study required at RIBA Stage 2/Concept Design. An LZC installation should be specified and should contribute <math>\geq 5\%</math> of overall CO2 emissions</p> <p>Note: If the LZC study clearly demonstrates not technologies are feasible at stage 2 the credit can still be awarded.</p>	

TRANSPORT Credit weight = 9.16%						
Tra 01 Transport assessment and travel plan						
Transport assessment and travel plan	2	2		Transport assessor	<p>During the feasibility and design stages, develop a travel plan based on a site-specific travel assessment or statement.</p> <p>The site-specific travel assessment or statement covers as a minimum:</p> <ul style="list-style-type: none"> <li>a. Existing travel patterns and opinions of existing building or site users towards cycling and walking, identifying constraints and opportunities, if relevant</li> <li>b. Travel patterns and transport impact of future building users</li> <li>c. Current local environment for walkers and cyclists (accounting for visitors who may be accompanied by young children)</li> <li>d. Reporting of the number and type of existing accessible amenities, see Table 7.1 below, within 500m of the site</li> <li>e. Disabled access (accounting for varying levels of disability and visual impairment)</li> <li>f. Calculation of the existing public transport Accessibility Index (AI)</li> <li>g. Current facilities for cyclists</li> </ul>	Credits are achievable where a compliant transport assessment is produced.
Tra 02 Proximity to amenities						
Prerequisite	Yes		Transport assessor	Provide transports assessment and travel plan		
Sustainable transport measures	10	4	Architect	Provide sustainable transport measures. Credits are awarded according to the existing Accessible Index (AI) of the project, and the total number of points achieved for the options implemented	Bus route information, Amenities, New Amenities - Community	

WATER Credit weight = 55.25%						
Wat 01 Water consumption						
Water consumption	5	3		Water consumption	<p>Provide a copy of a sanitaryware schedule clearly highlighting the number and type of all water consuming fittings within the building. The efficiency of the following domestic scale water consuming components must be included (where present):</p> <ul style="list-style-type: none"> <li>- WCs (litres/flush)</li> <li>- Urinals (litres/use) or (Flushing frequency per hour and cistern capacity in litres)</li> <li>- Taps (including kitchenette taps) (litres/min)</li> <li>- Showers (litres/min)</li> <li>- Baths (Capacity to overflow in litres)</li> <li>- Dishwashers (litres/cycle - domestic type) or (litres/rack - commercial type)</li> <li>- Washing Machines (litres/use - domestic type) or (litres/Kg - commercial type)</li> </ul> <p>Provide a copy of the specification confirming the flow rate / flush volume of each water consuming fitting in the building (manufacturers details are required at PCR clearly highlighting the flow rate /flush volumes) in line with the BREEAM requirements</p> <p>Provide the yield details of the greywater or rainwater harvesting system (if present).</p> <p>Provide a specification confirming any greywater systems must be specified and installed in compliance with BS 8525-1:2010 Greywater Systems - Part 1 Code of Practice. Any rainwater systems must be specified and installed in compliance with BS 8515:2009+A1:2013 Rainwater Harvesting Systems - Code of practice</p>	Planning requirement
Exemplary	1			Exemplary	A 65% improvement over baseline building water consumption needs to be achieved.	Not deemed to be achievable.

Wat 02 Water monitoring					
Water monitoring	1	1	Water monitoring	Provide a specification and drawing confirming a pulsed water meter will be installed on the mains water supply to each building	Water will be monitored via a pulsed output meter.
Wat 03 Water leak detection					
Leak detection system	1	1	M&E	<p>Install a leak detection system capable of detecting a major water leak</p> <p>The leak detection system is:</p> <ul style="list-style-type: none"> <li>• A permanent automated water leak detection system that alerts the building occupants to the leak OR an inbuilt automated diagnostic procedure for detecting leaks</li> <li>• Activated when the flow of water passing through the water meter or data logger is at a flow rate above a pre-set maximum for a pre-set period of time.</li> <li>• Able to identify different flow and therefore leakage rates</li> <li>• Programmable to suit the owner's or occupier's water consumption criteria</li> <li>• Where applicable, designed to avoid false alarms caused by normal operation of large water-consuming plant such as chillers.</li> </ul>	<p>On the utilities water supply within the buildings, to detect any major leaks within the buildings</p> <p>AND</p> <p>Between the buildings and the utilities water supply, to detect any major leaks between the utilities supply and the buildings under assessment.</p>

Flow control devices	1	1	M&E	<p>Provide a specification and drawings confirming flow control devices that regulate the supply of water to each WC area/facility according to demand are installed (and therefore minimise water leaks and wastage from sanitary fittings). Acceptable devices include:</p> <ul style="list-style-type: none"> <li>a. A time controller, i.e. an automatic time switch device to switch off the water supply after a predetermined interval</li> <li>b. A programmed time controller, i.e. an automatic time switch device to switch water on and/or off at predetermined times.</li> <li>c. 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</li> <li>d. 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.</li> </ul> <p>Note: BREEAM compliant control devices can be fitted to the CWS only however systems must be designed to prevent scalding.</p>	PIR controlled solenoid valves to be specified covering the water supply to each toilet area.
Water efficient equipment	1	1	M&E	<p>Confirmation of the water demands from uses other than those listed under Wat 01 Water consumption.</p> <p>Identify systems or processes to reduce the relevant water demand (criterion 1), and establish, through either good practice design or specification, a demonstrable reduction in the total water demand of the building.</p> <p>Alternatively where watering plant are the only source of non-regulated water use, confirm the external landscaping is watered only via precipitation or via the use of a water butt.</p>	Ecology

MATERIALS Credit weight = 10.71%						
Mat 01 Environmental impact of materials						
Life cycle impacts	7	3		LCA Consultant / Architect	<p>During Concept Design, identify opportunities for reducing environmental impacts as follows:</p> <ol style="list-style-type: none"> <li>Carry out building LCA options appraisal of 2 to 4 significantly different superstructure design options (applicable to the Concept Design stage, see Methodology on page 212).</li> <li>Use a building LCA tool that is recognised by BREEAM (as suitable for assessing superstructure during Concept Design) according to the methodology (see Methodology on page 212).</li> <li>For each design option, fulfil the same functional requirements specified by the client and all statutory requirements (to ensure functional equivalency).</li> <li>Integrate the LCA options appraisal activity within the wider design decision-making process. Record this in an options appraisal summary document.</li> <li>Record the following in the Mat 01/02 Results Submission Tool: The differences between the design options; the design option selected by the client to be progressed beyond Concept Design; the reasons for selecting it and the reasons for not selecting the other design options.</li> <li>Submit the Mat 01/02 Results Submission Tool to BRE at the end of Concept Design, and before Planning permission is applied for (that includes external material or product specifications).</li> </ol>	3 credit via online tool
Exemplary	3			LCA Consultant / Architect	<p>Where IMPACT will not be undertaken route 1 applies.4-5) Route 1) Using the Green Guide Specification: Where assessing four or more applicable building elements, the building achieves at least 2 points in addition to the total. Where assessing fewer than four applicable elements, the building achieves at least one point in addition to the total Where IMPACT is undertaken route 2 applies6-8) Route 2) Using compliant life cycle assessment software tools e.g. IMPACT Where the design team has used an IMPACT compliant software tool to measure the environmental impact of the building. Where the design team can demonstrate how the use of an IMPACT compliant software has benefited the building in terms of measuring and reducing its environmental impact Where the design team submit the building information model (BIM) from the IMPACT compliant tool for the assessed building to BRE.</p>	Not deemed to be achievable
Mat 02 Environmental impacts from construction products - Environmental Product Declarations (EPD)						

Environmental Product Declarations (EPD)	1	1	1	Architect	<p>Specify construction products with EPD that achieve a total EPD points score of at least 20</p> <p>Enter the details of each EPD into the Mat 01/02 Results Submission Tool, including the material category classification. The Mat 01/02 Results Submission Tool will verify the EPD points score and credit award.</p>	Not deemed to be achievable.
<b>Mat 03 Responsible sourcing of materials</b>						
MAT 03 – Pre-requisite	Yes		Principal Contractor / Architect	<p>Pre-Requisite (Mandatory credit element): 1) All timber AND timber based products used on the project is 'Legally harvested and traded timber'.</p>		To be included in the contractor's requirements.
Enabling Sustainable procurement	1	1	1	Developer/ Architect	<p>Provide a copy of the BREEAM compliant sustainable procurement plan. A plan that sets out a clear framework for the responsible sourcing of materials to guide procurement throughout a project and by all involved in the specification and procurement of construction materials. 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:</p> <ul style="list-style-type: none"> <li>- 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.</li> <li>- Aims, objectives and targets to guide sustainable procurement activities.</li> <li>- The strategic assessment of sustainably sourced materials available locally and nationally. There should be a policy to procure materials locally where possible.</li> <li>- 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</li> </ul>	

Responsible sourcing of materials (RSM)	3	2	Principal Contractor	<p>Provide a materials schedule and full list of suppliers and manufacturers of the materials in the following building elements.</p> <p>At least 70% of the materials that makeup that element must be responsibly sourced (i.e. classified by Responsible Sourcing Certification Schemes points levels) with full third party certification:</p> <ul style="list-style-type: none"> <li>a. Ceiling (including ceiling finishes)</li> <li>b. Door/window</li> <li>c. Floor (including floor finishes)</li> <li>d. Insulation</li> <li>e. Internal partition/internal walls (including finishes)</li> <li>f. Roof (including roof finishes)</li> <li>g. Structure, primary and secondary</li> <li>h. External wall ( e.g. cladding, lining, render, including finishes )</li> <li>i. Building service</li> <li>j. Hard landscaping</li> <li>k. Other</li> </ul> <p>Provide design drawings showing the building elements and written confirmation of the breakdown of each material in m3 or %.</p>	
Exemplary	1		Principal Contractor	Where 70% of available RSM are achieved	Not deemed to be achievable.
<b>Mat 05 Design for durability and resilience</b>					
Designing for durability and resilience	1	1	Architect	<p>Provide drawings and a highlighted specification to confirm suitable durability and protection measures or designed features/solutions to prevent damage to vulnerable parts of the internal and external building and landscaping elements:</p> <ul style="list-style-type: none"> <li>a. Protection from the effects of high pedestrian traffic in main entrances, public areas and thoroughfares (corridors, lifts, stairs, doors etc.).</li> <li>b. Protection against any internal vehicular/trolley movement within 1m of the internal building fabric in storage, delivery, corridor and kitchen areas.</li> <li>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.</li> </ul> <p><b>Exposed elements :</b> The relevant building elements incorporate appropriate design and specification measures to limit material degradation due to environmental factors. Provide a specification and/or material pallet</p>	Features of robustness and durable materials to be implemented.

					<p>confirming how each of the items below is addressed.</p> <p><b>Applicable Building Elements</b></p> <ul style="list-style-type: none"> <li>a. Foundation/substructure/lowest floor/retaining walls</li> <li>b. External walls Roof/balconies</li> <li>c. Glazing: windows, skylight</li> <li>d. External doors</li> <li>e. Railings/balusters (where exposed to external environment)</li> <li>f. Cladding (where exposed to external environment)</li> <li>g. Staircase/ramps (where exposed to external environment)</li> <li>h. Hard landscaping</li> </ul> <p><b>Material Degradation Effects</b></p> <ul style="list-style-type: none"> <li>a. Corrosion</li> <li>b. Dimensional change, e.g. swelling or shrinkage</li> <li>c. Fading/discolouration</li> <li>d. Rotting</li> <li>e. Leaching</li> <li>f. Blistering</li> <li>g. Melting</li> <li>h. Salt crystallisation</li> <li>i. Abrasion</li> </ul>	
Mat 06 Material efficiency						
Material efficiency	1		1	Architect	<p>Provide details of all materials efficiency strategies undertaken on the project. Provide reports, drawings, building integrated models, calculations required (as appropriate) at each stage to demonstrate ideas discussed, analysis done and decisions taken at : - RIBA Stage 1/ Preparation and Brief - RIBA Stage 2/ Concept Design - RIBA Stage 3/ Developed Design - RIBA Stage 4/ Technical Design - RIBA Stage 5/ Construction</p> <p>Provide details of specific workshops (such as WRAP designing out waste workshop) or discussions with - Client/developer - Cost consultant - Architect - Structural/civil engineers - Building services engineers - mechanical, electrical - Principal contractor - Demolition/strip-out contractor - Environmental consultant - Project management consultant - Materials/component manufacturers/suppliers</p> <p>Provide evidence that process for material efficiency in BS 8895 Designing for material efficiency in buildings projects - Part 1: Code of practice for Strategic Definition and Preparation and Brief has been implemented.</p>	Not deemed to be achievable.

WASTE Credit weight = 3.27%																							
Wst 01 Construction waste management																							
Pre-demolition audit	1	1	Waste manager	Complete a pre-demolition audit of any existing buildings, structures or hard surfaces being considered for demolition. This must be used to determine whether refurbishment or reuse is feasible and, in the case of demolition, to maximise the recovery of material for subsequent high grade or value applications. The audit must cover the content of Pre-demolition audit scope and: <ul style="list-style-type: none"> <li>• Be carried out at Concept Design stage by a competent person (see Definitions) prior to strip-out or demolition works</li> <li>• Guide the design, consider materials for reuse and set targets for waste management</li> <li>• Engage all contractors in the process of maximising high grade reuse and recycling opportunities</li> </ul> Make reference to the audit in the resource management plan (RMP)           Compare actual waste arisings and waste management routes used with those forecast and investigate significant deviations from planned targets.	Audit by demolition contractor																		
Construction Resource Efficiency	3	2	Principal Contractor	Prepare a compliant Resource Management Plan (RMP) covering: <ol style="list-style-type: none"> <li>a. Non-hazardous waste materials (from on-site construction and dedicated off-site manufacture or fabrication, see Definitions on page 246), including demolition and excavation waste</li> <li>b. Accurate data records on waste arisings and waste management routes.</li> </ol> Meet or improve upon the benchmarks in Table 10.1 for non-hazardous construction waste, excluding demolition and excavation waste.           BREEAM Credits Amount of waste generated per 100 m <sup>2</sup> (gross internal floor area) routes <table border="1" data-bbox="826 1113 1612 1289"> <thead> <tr> <th>BREEAM Credits</th> <th>Amount of waste generated per 100 m<sup>2</sup> (gross internal floor area)</th> </tr> </thead> <tbody> <tr> <td></td> <td>m<sup>3</sup> (actual, not bulk volume)</td> </tr> <tr> <td>One credit</td> <td>≤ 13.3</td> </tr> <tr> <td>Two credits</td> <td>≤ 7.5</td> </tr> <tr> <td>Three credits</td> <td>≤ 3.4</td> </tr> <tr> <td></td> <td>tonnes</td> </tr> <tr> <td>One credit</td> <td>≤ 11.1</td> </tr> <tr> <td>Two credits</td> <td>≤ 6.5</td> </tr> <tr> <td>Three credits</td> <td>≤ 3.2</td> </tr> </tbody> </table>	BREEAM Credits	Amount of waste generated per 100 m <sup>2</sup> (gross internal floor area)		m <sup>3</sup> (actual, not bulk volume)	One credit	≤ 13.3	Two credits	≤ 7.5	Three credits	≤ 3.4		tonnes	One credit	≤ 11.1	Two credits	≤ 6.5	Three credits	≤ 3.2	To be included in the contractor's requirements. The target set is currently 7.5m <sup>3</sup> / 100m <sup>2</sup> of floor area which would result in 3 credit.
BREEAM Credits	Amount of waste generated per 100 m <sup>2</sup> (gross internal floor area)																						
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Exemplary level	$\leq 1.6$	$\leq 1.9$							
					Meet or improve upon the benchmarks in Table 10.1 for non-hazardous construction waste, excluding demolition and excavation waste.				
Diversion of resources from landfill	1	1		Principal Contractor	Provide confirmation in the RMP that 80% (by volume) of demolition waste and 70% (by volume) of non-demolition waste diverted from landfill. Includes on site and off site manufacture/fabrication in a dedicated facility.	To be included in the contractor's requirements.			
Exemplary	1			Principal Contractor	Non-hazardous construction waste generated by the building is no greater than the exemplary level resource efficiency benchmark. The % of non-hazardous construction waste diverted from landfill is no greater than the exemplary level resource efficiency benchmark in tables 51 and 52 of the manual. All waste groups are identified for diversion.	Not deemed to be achievable.			
Wst 02 Use of recycled and sustainably sourced aggregates									
Prerequisite	Yes		Waste contractor	If demolition occurs on site, complete a pre-demolition audit of any existing buildings, structures or hard surfaces					
Project sustainable Aggregate Points	1	1	Waste contractor	Determine the quantity in tonnes for each identified use and aggregate type. Identify the region in which the aggregate source is located. Calculate the distance in kilometres travelled by all aggregates by transport type  Enter the information into the BREEAM Wst 02 calculator		Not deemed to be achievable			
Exemplary	1		Waste contractor	Determine the quantity in tonnes for each identified use and aggregate type. Identify the region in which the aggregate source is located. Calculate the distance in kilometres travelled by all aggregates by transport type  Enter the information into the BREEAM Wst 02 calculator. The Project Sustainable Aggregate Points score meets or exceeds the exemplary level performance		Not deemed to be achievable			

Wst 03 Operational waste					
Operational waste	1	1	Principal Contractor	<p>Provide marked up drawings (highlighting the m<sup>2</sup> and labelling for recyclable waste) clearly showing the dedicated space for segregation and operation of recyclable waste streams. The design team demonstrates that the provision of waste management facilities for the assessed building is adequate given the building type, occupier (if known), operational function and likely waste streams and volumes to be generated. Where it is not possible to determine what provision should be made, the following guide for minimum storage space provision should be used:</p> <p>a. At least 2m<sup>2</sup> per 1000m<sup>2</sup> of net floor area for building 5000 m<sup>2</sup>;  b. A minimum of 10m<sup>2</sup> for buildings &gt;5000 m<sup>2</sup>;  c. An additional 2m<sup>2</sup> per 1000m<sup>2</sup> of net floor area where catering is provided (with an additional minimum of 10m<sup>2</sup> for buildings &gt;5000m<sup>2</sup>).</p> <p>Where the consistent generation in volume of the appropriate operational waste streams is likely to exist Provide drawings showing:</p> <p>a. Static waste compactor(s) or baler(s); situated in a service area or dedicated waste management space.  b. Vessel(s) for composting suitable organic waste resulting from the building's daily operation and use; OR adequate space(s) for storing segregated food waste and compostable organic material prior to collection and delivery to an alternative composting facility.  c. Where organic waste is to be stored/composted on-site, a water outlet is provided adjacent to or within the facility for cleaning and hygiene purposes.</p> <p>Note: If the end- occupier is not known but the function/area of the assessed building suggests that large amount of packaging/ compostable waste is likely to be generated, then appropriately sized space and services/infrastructure to accommodate relevant facilities must be provided. Facilities themselves do not need to be installed for a Shell &amp; Core Assessment.</p>	A dedicated recyclable waste storage area will be provided.

Wst 05 Adaptation to climate change					
Resilience of structure, fabric, building services and renewables installation	1	1	Architect	<p>Provide a copy of the Conduct a climate change adaptation strategy appraisal for structural and fabric resilience by the end of Concept Design (RIBA Stage 2). The assessment must cover:</p> <ul style="list-style-type: none"> <li>-Hazard identification</li> <li>-Hazard assessment</li> <li>-Risk estimation</li> <li>-Risk evaluation</li> <li>-Risk management.</li> </ul> <p>Provide specifications / drawings to demonstrate how any identified risks have been mitigated as far as practically feasible.</p>	Architect to develop a climate change adaptation strategy
Wst 06 Functional adaptability					
Functional adaptability	2	2	Architect	<p>Provide a copy of the building specific functional adaptation strategy by Concept Design/RIBA Stage 2 with recommendations for measures. This should consider:</p> <ol style="list-style-type: none"> <li>a. The potential for major refurbishment, including replacing the façade.</li> <li>b. 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.</li> <li>c. The degree of adaptability of the internal environment to accommodate changes in working practices.</li> <li>d. The degree of adaptability of the internal physical space and external shell to accommodate change in-use.</li> <li>e. The extent of accessibility to local services, such as local power, data infrastructure etc.</li> </ol> <p>Provide marked up drawings and specification showing how the functional adaptation measures have been adopted in the design by Technical Design/Stage 4:</p> <ol style="list-style-type: none"> <li>a. The feasibility for multiple/alternative building uses and area functions e.g. related to structural design of the building</li> <li>b. Options for multiple building uses and area functions based on design details e.g. modularity</li> <li>c. Routes and methods for major plant replacement e.g. networks and connections have flexibility and capacity for expansion. Accessibility for local plant and service distribution routes e.g. detailed information on building conduits and connections infrastructure. The potential for the building to be extended, horizontally and/or vertically.</li> </ol>	Not deemed to be achievable

LAND USE AND ECOLOGY Credit weight = 6.00%						
Le 01 Site selection						
Previously occupied land	1	1		Architect	At least 75% of the proposed development is on previously occupied land	
Contaminated land	1	1	1	Contamination specialist	A contaminated land professional undertakes a site investigation, risk assessment and appraisal, which deems that land within the development footprint to be affected by contamination. This report identifies: a: The degree of contamination b: The contaminant sources or types c: The options for remediating sources of contamination which present an unacceptable risk.	Not deemed to be achievable.
Le 02 Ecologist risks and opportunities						
Prerequisite	Yes			Ecologist	The client or contractor confirms compliance is monitored against all relevant UK and EU or international legislation relating to the ecology of the site.	
Survey and evaluation and Determining ecological outcomes	2	1		Ecologist	The site is evaluated using the BREEAM Ecological Risk Evaluation Checklist (Guidance Note 34) confirming that the Foundation route can be used	

Exemplary	1		Ecologist	<p>The site is evaluated using the BREEAM Ecological Risk Evaluation Checklist (Guidance Note 34) confirming that the Foundation route can be used</p> <p>Achieve the credits of the assessment issues outlined below:</p> <p>a: Hea 07 Safe and healthy surroundings - Both credits  b: Pol 03 Flood and surface water management - Achieve credits for 'Surface water run-off' and 'Minimising watercourse pollution'  c: Pol 05 Reduction of noise pollution</p>	Ecologist Report Required
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Le 03 Managing impacts on ecology					
Prerequisite	Yes		Ecologist	LE 02's 'Survey and evaluation and Determining ecological outcomes' criteria have been achieved using the Foundation route (Route 1) or the Comprehensive route (Route 2).	
Planning and measures on-site	1	1	Ecologist	Further planning to avoid and manage negative ecological impacts on-site is carried out early enough to influence the concept design and design brief as well as site preparation planning (typically Concept Design stage).  On-site measures for managing negative ecological impacts during site preparation and construction are implemented in-practice (e.g. mitigation measures to protect existing ecological features) (see Methodology).	Ecologist Report Required
Managing negative impacts	2	1	Ecologist	Negative impacts from site preparation and construction works are managed according to the mitigation hierarchy and no overall loss of ecological value has occurred.	Ecologist Report Required
Le 04 Ecological change and enhancement					
Prerequisite	Yes		Ecologist	<p>Criterion 6 (for Foundation route) or 8 (for Comprehensive route) in LE 03 has been achieved.</p> <p>The client or contractor confirms compliance is monitored against all relevant UK, EU or international legislation relating to the ecology of the site.</p>	
Change and enhancement of ecology	4	2	Ecologist	Locally relevant ecological measures have been implemented that enhance the site's ecological value. The measures adopted are based on:  a: Recommendations from recognised 'local' ecological expertise and specialist input and guidance.  b: Input from the project team in collaboration with representative stakeholders and data collated as part of 'Determining ecological outcomes' in LE 02.	Ecologist Report Required

Le 05 Long term ecology management and maintenance					
Prerequisite	Yes		Ecologist	In according to the route being assessed: Foundation route (Route 1) - Criterion <u>6</u> in LE 03 has been achieved.	
Management and maintenance throughout the project			Ecologist	Measures have been implemented to manage and maintain ecology throughout the project. These measures are based on input from the project team in collaboration with representative stakeholders and data collated as part of the 'Determining ecological outcomes' in LE 02	Ecologist Report Required
Landscape and ecology management plan	2	2	Ecologist	<p>A Landscape and Ecology Management Plan, or equivalent, has been developed in accordance with BS 42020:2013 Section 11.11 covering at least the first five years after project completion as a minimum and including:</p> <ul style="list-style-type: none"> <li>a: Actions and responsibilities of relevant individuals prior to handover</li> <li>b: The ecological value and condition of the site at handover and how this is expected to develop and change over time</li> <li>c: Identification of opportunities for ongoing alignment with activities beyond the development project, which support the aims of BREEAM's Strategic Ecology Framework</li> <li>d: Identification and guidance to trigger appropriate remedial actions to address previously unforeseen impacts</li> <li>e: Clearly defined and allocated roles and responsibilities for delivering the plan</li> </ul> <p>The landscape and management plan or similar will be updated to support maintenance of the ecological value of the site (see sections relating to Maintenance and Monitoring in CIEEM, CIRIA, IEEMA, for helpful guidance2).</p>	Develop a Landscape and Ecology Management Plan

POLLUTION Credit weight = 7.33%						
Pol 01 Impact of refrigerants						
No refrigerant use	3	1		M&E Engineer	No refrigerant use within the installed plant or systems.	
Prerequisite	Yes			M&E Engineer	All systems with electric compressors comply with the requirements of BS EN 378:2016 <sup>1</sup> (parts 2 and 3). Refrigeration systems containing ammonia comply with the Institute of Refrigeration Ammonia Refrigeration Systems code of practice	
Impact of refrigerant	2	1		M&E Engineer	All heating and hot water is supplied by non-combustion systems. For example, only powered by electricity. OR alternatively; Emissions from all installed combustion plant that provide space heating and domestic hot water do not exceed the levels set. The measurements must be provided by manufacturers, following the labelling requirements of the European directive 2009/125/EC. No credits can be awarded for Pol 02 if any of the combustion appliances are not covered in Table 12.4 below and Table 12.5 in the detailed guidance. Gas boiler 1 credit – 27 mg/kWh 2 credits – 24 mg/kWh	.
Leak detection	1			M&E Engineer	<p>All systems are hermetically sealed or only use environmentally benign refrigerants</p> <p>Or</p> <p>Where the systems are not hermetically sealed:</p> <ul style="list-style-type: none"> <li>Systems have:           <ul style="list-style-type: none"> <li>A permanent automated refrigerant leak detection system, which is robust and tested, and capable of continuously monitoring for leaks.</li> <li>An inbuilt automated diagnostic procedure for detecting leakage is enabled.</li> </ul> </li> <li>In the event of a leak, the system must be capable of automatically responding and</li> </ul>	Not deemed to be achievable.

					managing the remaining refrigerant charge to limit loss of refrigerant.	
Pol 02 Local air quality						
Local air quality	2	2	M&E Engineer	<p>All heating and hot water is supplied by non-combustion systems. For example, only powered by electricity.</p> <p>OR alternatively,</p> <p>Emissions from all installed combustion plant that provide space heating and domestic hot water do not exceed the levels set in BREEAM Maximum NO<sub>x</sub> emission levels by appliance type, fuel and location table.</p>		

Pol 03 Flood risk management and reducing surface water run-off					
Prerequisite	Yes		Flood Risk Consultant	An appropriate consultant is appointed to carry out and demonstrate the development's compliance with all criteria.  Provide a site specific Flood Risk Assessment to determine the flood zone of the site and detail the flood risk from: -Fluvial; -Tidal; -Surface water: Sheet run-off from adjacent land (urban and rural); -Groundwater: Most common in low-lying areas underlain by permeable rock (aquifers); -Sewers: Combined, foul or surface water sewers; -Reservoirs, canals and other artificial sources.	
Flood resilience	2	2	Flood Risk Consultant	<p>The site specific Flood Risk Assessment confirms the site as having a low annual probability of flooding. If the site is defined as having a medium or high annual probability of flooding and is not in a functional floodplain (in accordance with current best practice national planning guidance) to increase the resilience and resistance of the development to flooding, one of the following must be achieved:</p> <p>a. The ground level of the building and access to both the building and the site, are designed (or zoned) so they are at least 600mm above the design flood level of the flood zone in which the assessed development is located; OR</p> <p>b. The final design of the building and the wider site reflects the recommendations made by an appropriate consultant in accordance with the hierarchy approach outlined in section 5 of BS 8533:2011</p>	It is assumed that the site has a low probability of flooding.
Surface water run-off	2	1	Flood Risk Consultant	<p>Drainage measures are specified so that the peak rate of run-off from the site to the watercourses (natural or municipal) shows a 30% improvement for the developed site compared with the pre-developed site. This should comply at the 1-year and 100-year return period events.</p> <p>Relevant maintenance agreements for the ownership, long term operation and maintenance of all specified Sustainable Drainage Systems (SuDS) are in place.</p> <p>Calculations include an allowance for climate change. This should be made in accordance with current best practice planning guidance (see Definitions on page 316).</p>	

Minimising water course pollution	1		1	Flood Risk Consultant	<p>There is no discharge from the developed site for rainfall up to 5 mm (confirmed by the appropriate consultant).</p> <p>Areas with a low risk source of watercourse pollution, an appropriate level of pollution prevention treatment is provided, using appropriate SuDS techniques.</p> <p>Areas with a high risk of contamination or spillage of substances, such as petrol and oil, have separators (or an equivalent system) are installed in surface water drainage systems.</p> <p>Chemical or liquid gas storage areas have a means of containment fitted to the site drainage system (i.e. shut-off valves). This is to prevent the escape of chemicals to natural watercourses in the event of a spillage or bunding failure.</p> <p>All water pollution prevention systems have been designed and installed in accordance with the recommendations of documents such as the SuDS manual (211) and other relevant industry best practice. They must be bespoke solutions taking account of the specific site requirements and natural or man-made environment of and surrounding the site.</p> <p>A comprehensive and up to date drainage plan of the site will be made available for the building or site occupiers.</p> <p>Relevant maintenance agreements for the ownership, long term operation and maintenance of all specified SuDS must be in place.</p> <p>All external storage and delivery areas are designed and detailed in accordance with the current best practice planning guidance.</p>	Not deemed to be achievable.
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Pol 04 Reduction of night time light pollution					
Reduction of night time light pollution	1	1	M&E Engineer	<p>Provide specification clauses and drawings confirming the external lighting (and timers) meet the following requirements: The external lighting strategy has been designed in compliance with Table 1 (and its accompanying notes) of the ILP Guidance notes for the reduction of obtrusive light, 2011. This can be demonstrated via completion of the checklists in Annexes B and C of the guidance note by a relevant member of the design team. All external lighting (except for safety and security lighting) can be automatically switched off between 2300hrs and 0700hrs. This can be achieved by providing a timer for all external lighting set to the appropriate hours. If safety or security lighting is provided and will be used between 2300hrs and 0700hrs, this part of the lighting system must comply with the lower levels of lighting recommended during these hours in Table 2 of the ILP's Guidance notes, for example by using an automatic switch to reduce the lighting levels at 2300 or earlier. Where specified, illuminated advertisements, must be designed in accordance with P PLG 05 The Brightness of Illuminated Advertisements 2015</p>	
Pol 05 Reduction of noise pollution					
Noise Attenuation	1	1	Acoustician	<p>Provide confirmation of the Suitably Qualified Acousticians accreditation details (i.e. a consultant holding a recognised acoustic qualification and membership of an appropriate professional body) Provide a copy of the SQA's noise impact assessment in compliance with BS 4142:2014, with the following noise levels measured/determined:</p> <p>i. Existing background noise levels must be at the nearest or most exposed noise-sensitive development to the proposed development or at a location where background conditions can be argued to be similar.</p> <p>ii. The rating noise level resulting from the new noise-source</p> <p>The noise level from the proposed site/building, as measured in the locality of the nearest or most exposed noise-sensitive development, is a difference no greater than +5dB during the day (0700hrs to 2300hrs) and +3dB at night (2300hrs to 0700hrs) compared to the background noise level.</p> <p>Where the noise source(s) from the proposed site/building is greater than the levels described above, provide written confirmation that appropriate measures will be installed to attenuate the noise at its source to a level where it will comply with the noise levels listed above.</p>	

				<p>Provide drawings showing the noise sensitive buildings within 800m radius of the assessed building. Drawings must include scale and distance from the nearest noise sensitive buildings to the assessed building in metres.</p> <p><b>Note:</b> Post completion testing, and a report or calculations based on as built information confirming compliance with the above standards will be required based on the installed and operational plant</p>	
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#### 4. Conclusion

In summary the project aims to achieve high sustainability standards and as can be seen in the table below, the proposed development can achieve 'Excellent' under BREEAM New construction 2018 (UK) scheme.

Environmental Section	Weighting	Credits Available	Credits Targeted	Weighted Score
Management	11.00%	21.0	21.0	11.00%
Health & Wellbeing	14.00%	18.0	15.0	11.66%
Energy	16.00%	23.0	12.0	8.34%
Transport	10.00%	12.0	6.0	5.00%
Water	7.00%	9.0	7.0	7.00%
Materials	15.00%	14.0	7.0	7.50%
Waste	6.00%	10.0	7.0	4.20%
Land Use & Ecology	13.00%	13.0	11.0	11.00%
Pollution	8.00%	12.0	9.0	6.00%
Innovation	10.00%	10.0	0.0	1.00%
Indicative BREEAM Score	71.15% 'Excellent' Rating			