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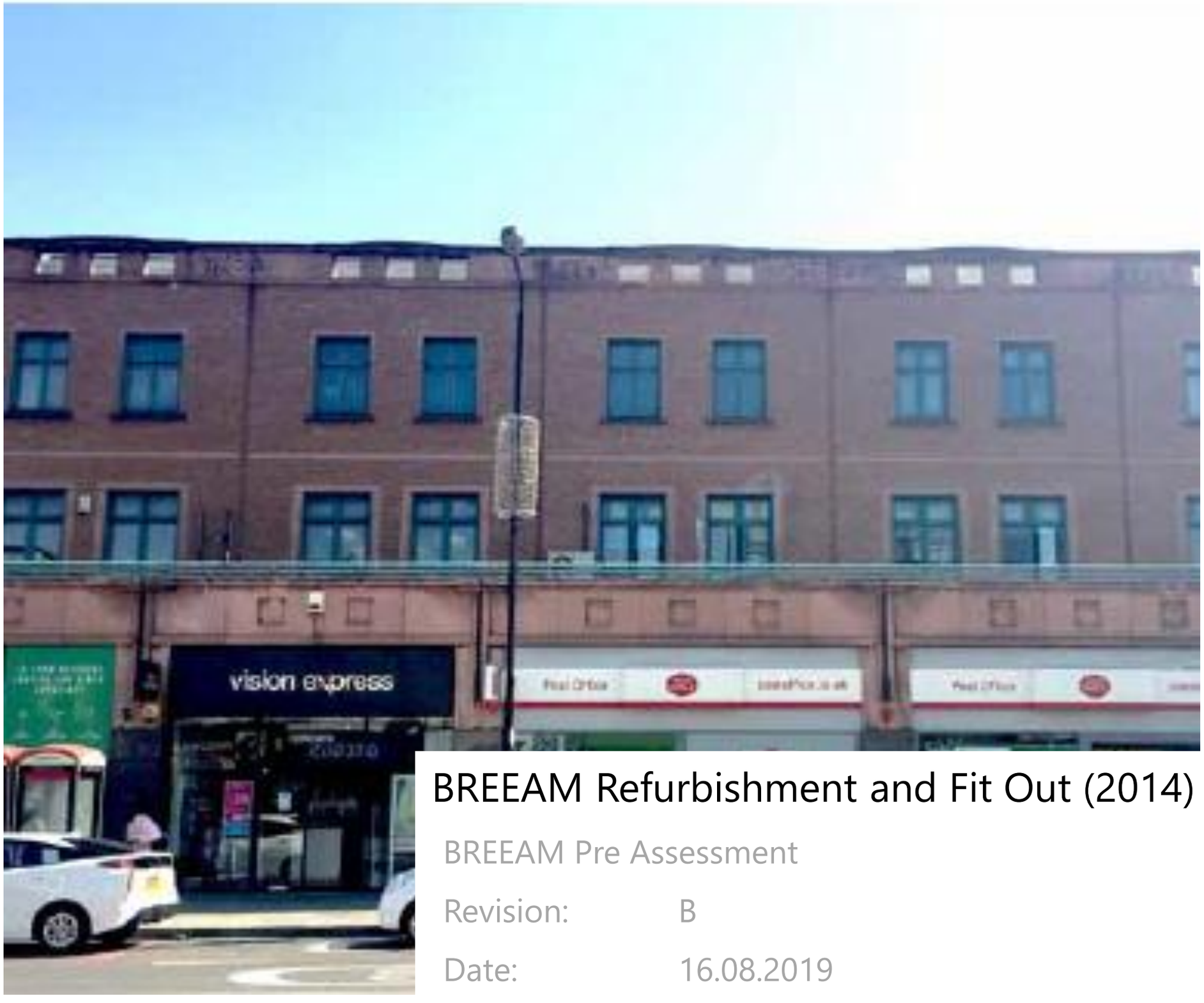


BREEAM Refurbishment and Fit Out (2014)

BREEAM Pre Assessment

Revision: B

Date: 16.08.2019

112-124 Camden High Street

Introduction and Site Context

Taylor Project Services have been commissioned to undertake a BREEAM Non Domestic Refurbishment and Fit Out the proposed office and retail project at 112-124 Camden High Street, Camden

The proposal sees the change of use of the first and second floor from ancillary retail (Use A1) to office (Use B1a) and the erection of a single storey roof extension to provide additional office space (Use B1a). The final spaces will be Office and Retail.

The report shows that a BREEEAM Excellent score is achievable through the sustainable measures detailed within the report and therefore accomplishes the level set out in local and national planning requirements for major developments.

The BREEAM **Target** score is 72.52 and gives a 2.52% margin. This should be reviewed post planning to identify where a higher margin can be attained.

Building Type	BREEAM Score
OFFICES/RETAIL (2014)	72.52%
EXCELLENT	

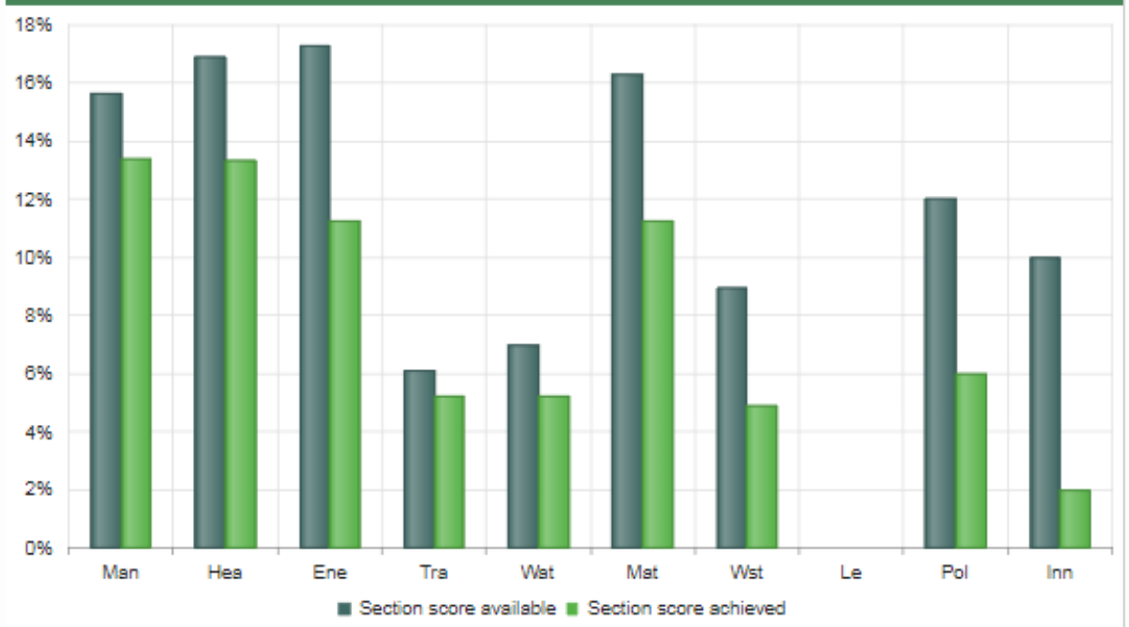
Revision

Date	Issue	Comments
12.08.19	A	For Comment
16/08/19	B	Planning Issue

BREEAM Rating

	Credits available	Credits achieved	% Credits achieved	Weighting	Category score
Man	21.0	18.0	85.71%	15.62%	13.39%
Hea	19.0	15.0	78.95%	16.87%	13.31%
Ene	23.0	15.0	65.22%	17.24%	11.24%
Tra	7.0	6.0	85.71%	6.08%	5.20%
Wat	8.0	6.0	75.00%	6.94%	5.20%
Mat	13.0	9.0	69.23%	16.28%	11.26%
Wst	11.0	6.0	54.55%	8.95%	4.88%
Le	0.0	0.0	0.00%	0.00%	0.00%
Pol	12.0	6.0	50.00%	12.02%	6.00%
Inn	10.0	2.0	20.00%	10.00%	2.00%
Total	124.0	83.0	66.94%	-	72.52%
Rating	-	-	-	-	Excellent

Performance by environmental category



Using this Document

This document is a BREEAM 2014 Pre Assessment Report. The aim of this report is to indicate the credits that are targeted in order to achieve a **'Excellent'** rating and to summarise the requirements associated with each of the assumed credits.

It is vital that all design team members use this document to review the full BREEAM requirements, which is developed in accordance with the BREEAM Refurbishment and Fit Out Technical Guide 2014.

It should also be noted that TPS cannot guarantee a BREEAM score with this document alone and any discrepancies should be discussed between the design team the BREEAM assessor, should any of the credits be unobtainable.

Until the evidence has been supplied to the BREEAM assessor to back up the assumed credit scoring features, an accurate 'achieved' score cannot be supplied.

Each applicable credit has been detailed on independent pages, which outlines:

- The credit category
- Sub-category
- Credit requirements
- What is assumed
- The member of the team that is responsible to provide the evidence.

Achieving BREEAM Certification

The BREEAM UK Non-Domestic Refurbishment and Fit-out 2014 scheme is used to assess the environmental life cycle impacts of existing non-domestic buildings at the refurbishment and fit-out stages.

The definition of ‘refurbishment’ encompasses a wide range of works to improve the performance, function and overall condition of an existing building. ‘Fit-out’ also encompasses a wide range of works, however it is more associated with internal works to the building including the first fit-out of a newly constructed building or re-fitting an existing building.

The BREEAM UK Non-Domestic Refurbishment and Fit-out 2014 scheme provides a modular set of criteria that are applied depending upon the scope of works for a particular project type including:

- Part 1: Fabric and Structure
- Part 2: Core Services
- Part 3: Local Services
- Part 4: Interior Design

For commercial buildings, parts 1 and 2 typically reflect the aspects of a building that are landlord responsibilities, with parts 3 and 4 typically being aspects of the building that are tenant responsibilities although this will vary between specific projects.

This is a companion scheme to the BREEAM New Construction 2014 scheme, covering the same scope and allowing a new build shell and core building to be further assessed at the fit-out stage to give a fully fitted rating and certificate.

Design Stage

Following on from the Pre-Assessment, a design stage assessment and subsequent interim BREEAM award represents the performance of the building at the design stage of the assessment, typically prior to the beginning of site operations. Certification at this stage however, does not represent the buildings final ‘as built’ stage BREEAM performance.

Post Construction

The Post Construction assessment and awarded certificate represents the final ‘As Built’ building performance rating. A final post construction stage assessment is completed and certified after practical completion of the building works.

Weightings

Environmental weightings are fundamental to any building environmental assessment method as they provide a means of defining, and therefore ranking, the relative impact of environmental issues.

BREEAM uses an explicit weighting system derived from a combination of consensus based weightings and ranking by a panel of experts. The outputs from this exercise are then used to determine the relative value of the environmental sections used in BREEAM and their contribution to the overall BREEAM score.

This weighting system is defined in greater detail within the BRE Global Core Process Standard (BES5301) and it's supporting procedural documents. These form part of the over-arching BREEAM Standard and the Code for a Sustainable Built Environment. The same ranking of impacts used in BREEAM underpins the scoring mechanisms in the BRE Green Guide to Specification and the BRE Environmental Profiling Method for construction materials.

The assessment will be based around a 'Fully Fitted' assessment. The weightings are as follows:

Environmental Section				**Project Specific Weightings**				
	Core Weightings	Part 1 Only	Part 2 Only	Part 3 Only	Part 4 Only	Parts 1 & 2	Parts 2 & 3	Parts 3 & 4
Management	12%	15.0%	16.7%	16.5%	20.0%	13.0%	16.5%	14.1%
Health & Wellbeing	15%	14.8%	14.4%	15.3%	19.9%	11.0%	15.3%	15.9%
Energy	19%	16.4%	24.5%	24.3%	2.5%	18.8%	24.3%	22.5%
Transport	8%	10.0%	11.2%	11.1%	13.4%	8.6%	11.1%	9.5%
Water	6%	0.0%	7.5%	7.4%	10.1%	5.7%	7.4%	7.1%
Materials	12.5%	15.6%	5.4%	5.3%	19.3%	13.4%	5.3%	13.7%
Waste	7.5%	9.4%	9.3%	9.2%	11.2%	8.1%	9.2%	7.9%
Land Use and Ecology	10%	12.5%	0.0%	0.0%	0.0%	10.7%	0.0%	0.0%
Pollution	10%	6.3%	11.0%	10.9%	3.6%	10.7%	10.9%	9.3%
Total	100%	100%	100%	100%	100%	100%	100%	100%
Innovation (additional)	10%	10%	10%	10%	10%	10%	10%	10%

The following table outlines the weightings for each of the nine environmental sections included in the BREEAM UK Refurbishment and Fit-out 2014 scheme. The core weightings are applied to a fully fitted building (i.e. a major refurbishment assessed against all Parts 1, 2, 3 and 4) and are also used for the basis of defining the weightings for all other projects. For other project types, not being assessed against all parts, such as a fit-out project assessed against Parts 3 or 4 only, the core weightings are applied proportionately according to the number of credits available in each category for that project type. Project specific weightings for common projects types are illustrated in Table 6

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Summary of Categories

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

Management	Waste
• Project Brief and Design • Life Cycle Cost and Service Life Planning • Responsible Construction Practices • Commissioning and Handover • Aftercare	• Project Waste Management • Recycled Aggregates • Operational Waste • Speculative Finishes • Adaptation to Climate Change • Functional Adaptability
Health and Wellbeing	**Pollution**
• Visual Comfort • Indoor Air Quality • Safe Containment in Laboratories • Thermal Comfort • Acoustic Performance • Safety and Security	• Impact of Refrigerants • NOx Emissions • Flood Risk Management and Reducing Surface Water Run off • Reduction of Night Time Light Pollution • Reduction of Noise Pollution
Energy	**Land use and Ecology**
• Reduction of CO^2 Emissions • Energy Monitoring • Energy Efficient External Lighting • Low Carbon Design • Energy Efficient Cold Storage • Energy Efficient Transportation Systems • Energy Efficient Laboratory Systems • Energy Efficient Equipment • Drying Space	• Site Selection • Adaptation to Climate Change • Functional Adaptability • Enhancing Site Ecology • Long Term Impact on Bio Diversity
Transport	**Materials**
• Public Transport Accessibility • Proximity to Amenities • Cyclist Amenities • Maximum Car Parking Capacity • Travel Plan	• Environmental Impact of Materials • Hard Landscaping and Boundary Protection • Responsible Sourcing of Materials • Insulation • Designing for Durability and Resilience • Material Efficiency
Water	**Innovation**
• Water Consumption • Water Monitoring • Water Leak Detection and Prevention • Water Efficient Equipment (Process)	• Innovation

Ratings and Minimum Standards

This table summarises the overall percentage score that is required to classify within each rating

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

To achieve the respective rating, there are minimum standards throughout the categories, as highlighted

BREEAM Issue	Minimum Standards by BREEAM Rating Level				
	Pass	Good	Very Good	Excellent	Outstanding
Man 03: Responsible Construction Practices	None			1 Credit (Considerate Construction)	2 Credits (Considerate Construction)
Man 04: Commissioning and Handover	None			Criterion 10 (Building User Guide)	Criterion 10 (Building User Guide)
Man 05: Aftercare	None			1 Credit (Seasonal Commissioning)	1 Credit (Seasonal Commissioning)
Ene 01: Reduction of Energy Use and Carbon Emissions	None			Parts 1, 2, 3 and 4 (full assessments): Six credits, varies for other assessment types	Parts 1, 2, 3 and 4 (full assessments): 10 credits, varies for other assessment types
Ene 02: Energy Monitoring	None	None	1 Credit (First Sub-Metering Credit)	Parts 2, 3 and 4: One credit (First sub-metering credit)	Parts 2, 3 and 4: One credit (First sub-metering credit)
Wat 01: Water Consumption	None	1 Credit			2 Credits
Wat 02: Water Monitoring	None	Part 2: Criterion 1 only			
Mat 03: Responsible Sourcing of Materials	Criterion 1 Only	Criterion 1 Only	Criterion 1 Only	Criterion 1 Only	Criterion 1 Only
Wst 01: Project Waste Management	None				1 Credit
Wst 03: Operational Waste	None			1 Credit	1 Credit

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Third Party Reports Schedule

		RIBA Stage 1 (Preperation & Brief)	RIBA Stage 2 (Concept Design)	RIBA Stage 3 (Developed Design)	RIBA Stage 4 (Technical Design)	RIBA Stage 5 (Construction)	RIBA Stage 6 (Handover & Close Out)	RIBA Stage 7 (In-Use)
Man 01	Project Brief and Design	BREEAM Accredited Professional (AP)		BREEAM Accredited Professional (AP)				
Man 02	Lifecycle Costing and Service Life Planning		Elemental Lifecycle Cost		Component Level LCC Appraisal			
Man 03	Responsible Construction Practices				BREEAM Accredited Professional (AP)			
Man 04	Commissioning and Handover				Commissioning Manager			Commissioning
Man 05	Aftercare							Seasonal Commissioning
Hea 01	Visual Comfort			Daylighting Calculations				
Hea 02	Indoor Air Quality			Indoor Air Quality Plan				
				Potential for Natural Ventilation Strategy				
Hea 04	Thermal Comfort			Thermal Modelling				
Hea 05	Acoustic Performance			Acoustic Report and Design				
Ene 01	Reduction of Energy Use and Carbon Emissions		SBEM	Energy Performance Modelling, Including Part L Compliance and Draft EPC				
Ene 04	Low Carbon Design			Passive Design Analysis				
				LZC Feasibility Study				
Ene 06	Energy Efficient Transport Systems		Transport Demand Analysis	Transport Demand Analysis				
			Energy Consumption Calculation	Energy Consumption Calculation				
Tra 01	Public Transport Accessibility	PTAL Check		Public Transport Accessibility Index Calculation				
Tra 02	Proximity to Amenities			Local Amenities Proximity Calculation				
Tra 05	Travel Plan	Draft Travel Plan		Travel Plan Brief			Final Travel Plan	
Wat 01	Water Consumption		Water Calculations	Water Efficiency Calculations				
Mat 01	Environmental Impact of Materials			Construction Material Life Cycle Impact Calculations				
Mat 02	Hard Landscaping and Boundary Protection			Landscaping Material Life Cycle Impact Calculations				
Mat 03	Responsible Sourcing of Materials			Responsible Sourcing of Material Calculations				
Mat 04	Insulation			Insulation Material Life Cycle Impact Calculations				
Le 02	Adaptation to Climate Change	Ecological Site Appraisal						
Le 03	Functional Adaptability	Ecological Site Appraisal						
Le 04	Enhancing Site Ecology	Ecological Site Appraisal						
Le 05	Long Term Impact on Biodiversity	Ecological Site Appraisal					Habitat Management Plan	
Pol 01	Impact of Refrigerants			Direct Effect Life Cycle CO2 Equivalent Emmissions Calculations				
Pol 02	NOx Emissions			NOx Emmissions Calculations				
Pol 03	Flood Risk Management & Reducing Surface Water Run Off		Flood Risk Assessment		Hydrologist Design			
Pol 05	Reduction of Noise Pollution			Acoustic Report and Design				

- BREEAM Specific
- Architect
- MEP/Energy Services
- Quantity Surveyor
- Contractor
- Third Party

112-124 Camden High Street

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REQUIREMENTS

Scoreable credits in this sub category are awarded with the encouragement to providing an integrated design process that optimises building performance.

STAKEHOLDER CONSULTATION

1 Credit	1 Credit
Project Delivery Prior to completion of Concept Design (RIBA Stage 2), the project delivery stakeholders must meet to define their roles, responsibilities and contributions at the key phases of project delivery. The team includes the client, occupier, design team and contractor	**Third Party** Prior to completion of Concept Design (RIBA Stage 2), all relevant third-party stakeholders have been liaised with. Consultation feedback has been used to influence or change the initial project brief and concept design

SUSTAINABILITY CHAMPION

1 Credit	1 Credit
• A Sustainability Champion has been appointed during feasibility stage (RIBA Stage 1) • The BREEAM performance target is formally agreed before the end of concept design (RIBA Stage 2) via a BREEAM Assessors Pre-assessment report	• The design requirements are met (from earlier stages) • The Sustainability Champion is appointed to monitor the progress of the design against the BREEAM performance target and formally report to the client and design team

Man 01: Project Brief and Design

Intent

- These credits require actions from RIBA Stage 2. It is assumed that this is the case, as all stakeholders have been liaising since pre planning stage (Stage 1)
- Additionally, a BREEAM champion has been appointed since Stage 1 and the performance target has been ascertained from this stage
- Moving forward, the sustainability champion is to monitor the progress of the design against the BREEAM performance target throughout, formally report to the client and the design team.

Responsibility

- Stakeholders (client, occupier, design team)
- Developer
- BREEAM Sustainability Champion

Evidence Required

- Developers Letter of Intent
- Consultation plan setting out the process and Scope of consultation
- Meeting minutes
- Appointment letter of sustainability champion

Assumed Score	4/4	Contribution to Final Score	2.29%

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Man 02: Life Cycle Cost and Service Life Planning

REQUIREMENTS

Scoreable credits in this sub category are awarded where measures are implemented to deliver whole life value by encouraging the use of life cycle costing to improve design, specification, through-life maintenance and operation , and through the dissemination of capital cost reporting promote economic sustainability.

2 Credits

Elemental Life Cycle Cost (LCC) Analysis
An LCC analysis is to be carried out during RIBA Stage 2 (Concept Design), in line with 'Standardised method of lifecycle costing for construction procurement (PD 156865:2008). This will cover:

- An indication of future replacement costs over a period of analysis as required by the client (e.g. 20, 30, 50 or 60 years)
- Includes service life, maintenance and operation cost estimates
- Demonstrates, 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.

1 Credit

Component Level Life Cycle Cost (LCC) Plan
A component level LCC option appraisal has been developed by the end of RIBA Stage 4, in line with PD 156865:2008 and includes:

- Envelope, e.g. cladding, windows, and/or roofing
- Services, e.g. heat source cooling source, and/or controls
- Finishes, e.g. walls, floors and/or ceilings
- Among the options, the Lowest LCC is preferred

1 Credit

Capital Cost Reporting (£k/m2)
Report the capital cost for the building in pounds per square metre (£k/m²), via the BREEAM Assessment Scoring and Reporting tool, Assessment Issue Scoring tab, Management section

Intent

The **Capital Cost Reporting** credit is targeted.

- It is assumed that the client will report the capital cost in pounds per square metre (£k/m2) via the BREEAM Assessment Scoring and Reporting tool.

Responsibility

- Quantity Surveyor
- BREEAM Assessor (to input figures into BREEAM scoring tool)

Evidence Required

- Predicted Capital Cost Figure

Assumed Score	1/4

Contribution to Final Score	0.58%

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Man 03: Responsible Construction Practices

REQUIREMENTS

Scoreable credits in this sub category are awarded where measures are put in place to recognise and encourage construction sites which are managed in an environmentally and socially considerate, responsible and accountable manner.

PREREQUISITE

All timber used on project must be legally harvested and traded

CREDITS

1 Credit

Environmental Management
- Principle contractor operates an Environmental Management System (EMS) to BS14001 standards or equivalent

AND
- Operates best practice pollution prevention policies and procedures on site. This is in accordance with PPG6

1 Credit

Sustainability Champion
- A sustainability champion is appointed to monitor ongoing BREEAM compliance

AND
- The Sustainability Champion will be based on site or will carry out regular spot checks during the Construction, Handover and Close out Stages

2 Credits

Considerate Constructor
The Contractor is registered with the Considerate Constructor Scheme (or equivalent). The scores are as follows:
1 Credit: Score of 25-34 (with at least 5 in each section) (Min. for BREEAM Excellent)
2 Credits: Score of 35-39 and at least 7 in each section
Exemplary: score of 40 or more, with at least 7 in each of each of the five sections

2 Credits

Monitoring of Construction Site Impacts
- An individual is appointed for the monitoring, recording and reporting of energy use, water consumption and transport data from site construction processes

AND
- The appointed person must have the authority to access and request the required information.

Intent

- In line with Man 01, it is assumed that a **Sustainability Champion** is appointed, to provide consultation on responsible construction practices.
- The principle contractor should also ensure that the site is registered under the **Considerate Construction Scheme (CCS**) and look into scoring 35-39, with a score of at least 5 in each of the 7 categories. One credit has been assumed
- A **site based operative** is to be assigned for monitoring, recording and reporting energy use, water consumption and transport data, resulting from ALL on-site processes.

Responsibility

- Contractor
- Developer
- Sustainability Champion

Evidence Required

- Developers Letter of Intent
- Letter confirming Sustainability Champion appointment
- Letter confirming registration to CCS

Assumed Score	5/6	Contribution to Final Score	2.9%

REQUIREMENTS

Scoreable credits in this sub category are awarded where measures are put in place to encourage a properly planned handover and commissioning process that reflects the needs of the building occupants.

CREDITS

1 Credit

Commissioning and Testing Schedule and Responsibilities

- The developer and M&E consultants are to supply a schedule of commissioning and testing that identifies appropriate commissioning required for the scope of works, including a suitable timescale for commissioning and re-commissioning of all relevant works carried out.

1 Credit

Commissioning building services

- A specialist commissioning manager is to be appointed during the design stage (by either client or contractor) to carry out design reviews and provide commission management input to the design of the systems.

1 Credit

Testing and Inspecting Building Fabric

- The integrity of the building fabric, including continuity of insulation, avoidance of thermal bridging and air leakage paths is to be quality assured through completion of a thermographic survey as well as airtightness testing and visual inspection at appropriate times during the refurbishment.

1 Credit

Handover

- A Building User Guide is to developed, prior to handover for distribution to the building occupiers and premises. A training plan is to be developed for the occupiers

Man 04: Commissioning and Handover

Intent

- **The Commissioning and Testing Schedule and Responsibilities** credit has been targeted. It is assumed that the contractor will be appointed to undertake the commissioning, monitoring and programming role and all works will be carried out in line with the current Building Regulations BSRIA and CIBSE requirements and advice.
- **The Commissioning Building Services** credit is also targeted and a contractor will be appointed to monitor and provide consultation on the design, management and programming of the building services commissioning, performance and handover stages.
- **The Testing and Inspection of Building Fabric** credit is targeted. The thermographic survey and relevant fabric testing works are to be carried out at the final construction stages.
- **The Handover** credit is targeted. The Building User Guide will be completed and issued to building users, along with adequate training of plant and building use

Responsibility

- Developer
- Mechanical and Electrical Engineer
- Contractor

Evidence Required

- Contractors/Developers Letter of Intent
- M&E Letter of Intent

Assumed Score	4/4	Contribution to Final Score	1.93%

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Man 05: Aftercare

REQUIREMENTS

Scoreable credits in this sub category are awarded where measures are put in place to provide post-handover aftercare to the building owner/occupants during the first year of occupation to ensure the building operates and adapts, where relevant, in accordance with the design intent and operational demands.

CREDITS

1 Credit

Aftercare Support
There is (or will be) operational infrastructure and resources in place to provide aftercare support to the building occupier, which includes the following as a minimum:
- A meeting between the aftercare team and the building occupier
- On site training of facilities management
- Aftercare for at least the first month with frequent site attendance
- 12 Months aftercare support with direct contact
- Energy and water meters to be in place at this time, to compare design and actual figures

1 Credit

Seasonal Commissioning
Within the first 12 months of occupation, seasonal commissioning should be undertaken for all complex and simple systems

1 Credit

Post Occupancy Evaluation
A Post Occupancy Evaluation (POE) is undertaken one year after initial building sign off. This should be carried out by a third party

Innovation/Exemplary Credit

Post Occupancy Evaluation
A Post Occupancy Evaluation (POE) is undertaken for a min. 3 year period

Intent

- **The Aftercare Support** credit is targeted
- **The Seasonal Commissioning** credit is targeted

Responsibility

- Contractor
- Developer
- M&E Consultant

Evidence Required

- Developers Letter of Intent

Assumed Score	2/3	Contribution to Final Score	0.96%

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Hea 01: Visual Comfort

REQUIREMENTS

Scoreable credits in this sub category are awarded where measures are put in place to ensure daylighting, artificial lighting and occupant controls are considered at the design stage to ensure best practice in visual performance and comfort for building occupants.

1 Credit

Glare Control
Compliant shading measures for meeting glare control credit include:
- building integrated measures
- occupant controlled
- external shading or brise soleil.

AND

Glare Control
The glare control measures should not hinder natural daylight levels when direct sunlight is not present on the elevations of the building

2 Credits

Daylighting
All areas that are occupied for 30 minutes or more are to achieve an average daylight factor (ADF) of min 2%
1 Credit: where 60% of areas comply
2 Credits: Where 80% of areas comply

AND

Daylighting
Uniformity ratio of 0.3 min. or minimum point daylight factor of 0.7% (a)
OR
- View of sky from Desk height (b)
- Room Depth criterion (c) met

1 Credit

View Out
where 80% of the floor area space in relevant building areas is within 7m of a wall which has a window or permanent opening that provides an adequate view out

1 Credit

Internal and External Lighting
- Internal and external lighting levels are to be compliant with SLL code 2012

Intent

- **The Glare Control** credit has been targeted
- One **Daylighting Credit** has been targeted. A daylighting strategy/report will be completed at post planning stage to confirm these figures.
- The **View Out** credit has been targeted
- The **Internal and External Lighting** credit has been targeted
- **Criterion 14** has been considered to ensure adequate zoning and occupant control

Responsibility

- Developer
- M&E Consultant
- Daylighting Specialist

Evidence Required

- Average Daylighting Calculations
- Developers Letter of Intent
- Drawings and Specification Showing Glare Control Measures
- Design Drawings

Assumed Score	4/5	Contribution to Final Score	1.93%

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Hea 02: Indoor Air Quality

REQUIREMENTS

Scoreable credits in this sub category are awarded where measures are put in place to recognise and encourage a healthy internal environment through the specification and installation of appropriate ventilation, equipment and finishes.

MINIMISING SOURCES OF AIR POLLUTION

1 Credit

Indoor Air Quality Plan
An indoor air quality plan is to be produced and implemented, with the objective of facilitating a process that leads to design, specification and installation decisions and actions that minimise indoor air pollution during the design, construction and occupation of the building.

VENTILATION

1 Credit

Mechanical Ventilation intakes and exhausts are to be spaced min.10 meters apart

AND

Air Intakes are to be min.20 meters from pollution.
For naturally ventilated buildings, a min.10 meters

AND

Areas of the building subject to large and unpredictable or variable occupancy patterns have CO2 or air quality sensors specified

VOC & ADAPTABILITY

1 Credit

- Low VOC decorative paints and varnishes
- Low VOC Products in building elements (i.e. flooring)

1 Credit

- The formaldehyde concentration level is measured post construction (but pre-occupancy) and is found to be less than or equal to 100µg/m3 averaged over 30 minutes

1 Credit

The building ventilation strategy is designed to be flexible and adaptable to potential building occupant needs and climatic scenarios.

- Openable Window areas in each occupied space
- Two levels of control on the provision of outside air

Intent

- The **Indoor Air Quality Plan** credit has been targeted
- The **Ventilation** credit has been targeted
- The **VOC Decorative Paints and Varnishes** credit has been targeted

Responsibility

- Developer
- M&E Consultant
- Air Quality Specialist

Evidence Required

- Developers Letter of Intent
- Air Quality Report
- M&E Letter of Intent

Assumed Score **3/5**

Contribution to Final Score **2.89%**

Hea 03: Safe Containment in Laboratories

REQUIREMENTS

Scoreable credits in this sub category are awarded where measures are put in place to recognise and encourage a healthy internal environment through the safe containment and removal of pollutants.

LABORATORY CONTAINMENT DEVICES AND CONTAINMENT AREAS

1 Credit

- An objective risk assessment of the proposed laboratory facilities is to be carried out prior to completion of RIBA Stage 3 or equivalent.
- Where containment devices such as fume cupboards are specified, their manufacture and installation meet best practice safety and performance requirements and objectives, demonstrated through compliance with the following standards:
- **For Schools, Sixth Form Colleges and Further Education with laboratories and fume cupboards for subjects up to and including 'A'-level (or equivalent):**
- G9 Fume cupboards in schools.
- Where laboratory containment devices that are ducted to discharge externally are specified, the guidance in the National Annex of BS EN 14175-2 must be followed to ensure an appropriate discharge velocity is achieved.

BUILDINGS WITH CONTAINMENT LEVEL 2&3

1 Credit

Level 2 and 3 laboratory facilities must meet best practice safety and performance criteria and objectives as follows:

- Criterion 1 has been achieved.
- Ventilation systems are designed in compliance with the best practice guidance set out in 'DRAFT HSE Biological Agents and Genetically Modified Organisms (Contained Use) Regulations 2010'
- Filters for all areas designated as containment level 2 and 3 are located outside the main laboratory space for ease of cleaning/replacement and the filters are easily accessible by maintenance staff or technicians.
- The design team demonstrate that the individual fume cupboard location and stack heights have been considered in accordance with HMIP Technical Guidance Note (Dispersion) D110.

Intent

- The credits relating to this sub category are not targeted

Responsibility

Evidence Required

Assumed Score	0/2	Contribution to Final Score	0.00%

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Hea 04: Thermal Comfort

REQUIREMENTS

Scoreable credits in this sub category are awarded where measures are put in place to ensure that appropriate thermal comfort levels are achieved through design, and controls are selected to maintain a thermally comfortable environment for occupants within the building.

THERMAL COMFORT MODEL

1 Credit

Dynamic study demonstrating that the design can deliver thermal comfort levels in line with CIBSE Guide A and CIBSE TM52 requirements for both winter and summer months.

ADAPTABILITY FOR CLIMATE CHANGE

1 Credit

- The Thermal Comfort Model has been completed
- The thermal modelling demonstrates that the relevant requirements set out in criterion 3 are achieved for a projected climate change environment
- Where thermal comfort criteria are not met for the projected climate change environment, the project team demonstrates how the building has been adapted
- For air conditioned buildings, the PMV and PPD indices based on the above modelling are reported via the BREEAM assessment scoring and reporting tool.

THERMAL ZONING AND CONTROLS

1 Credit

- The Thermal Comfort and Adaptability for Climate credits are achieved
- The degree of occupant control required for these zones, based on discussions with the end user considers:
- User knowledge of building services
- Occupancy type, patterns and room functions
- How the user is likely to operate or interact with the system
- The user expectations and degree of individual control
- How the proposed systems will interact with each other
- The need or otherwise for an accessible building user actuated manual override for any automatic systems.

Intent

- The **Thermal Comfort Model** credit has been targeted.
- The **Thermal Zoning and Controls** credit has been targeted.
- **The Adaptability for Climate Change** credit has been targeted

Responsibility

- Developer
- DSM Modeller
- MEP Consultant

Evidence Required

- Developers Letter of Intent
- Thermal Comfort Report
- M&E Letter of Intent and Specification/Drawings Showing Controls

Assumed Score	3/3	Contribution to Final Score	2.61%

Hea 05: Acoustic Performance

REQUIREMENTS

Scoreable credits in this sub category are awarded where measures are put in place to ensure the building's acoustic performance including sound insulation meet the appropriate standards for its purpose.

SOUND INSULATION

1 Credit

The sound insulation between acoustically sensitive rooms and other occupied areas complies with the performance criteria given in Section 7 of BS 8233:20145. A programme of pre-completion acoustic testing is carried out by a compliant test body in accordance with the acoustic testing and measurement procedures outlined in the Additional information section of this BREEAM issue.

INTERNAL INDOOR AMBIENT NOISE LEVELS

1 Credit

Achieve indoor ambient noise levels that comply with the design ranges given in Section 7 of BS 8233:2014.
A programme of acoustic measurements is carried out by a compliant test body in accordance with the acoustic testing and measurement procedures outlines in the Additional information section of this BREEAM issue.

REVERBERATION

1 Credit

- Achieve the requirements relating to sound absorption and reverberation times, where applicable, set out in Section 7 of BS 8233:2014.
- A programme of acoustic measurements is carried out by a compliant test body in accordance with the acoustic testing and measurement procedures outlined in the Additional information section of this BREEAM issue.

Intent

- The **Ventilation** Credit has been targeted
- The **Noise Level** Credit has been targeted

Responsibility

- Developer
- Acoustician

Evidence Required

- Developers Letter of Intent
- Confirmation of specialist appointment
- Design stage acoustic report

Assumed Score	2/3	Contribution to Final Score	1.16%

REQUIREMENTS

Scoreable credits in this sub category are awarded where measures are put in place to recognise and encourage effective measures that promote safe and secure use and access to and from the building.

SAFE ACCESS

1 Credit

Where external site areas form part of the assessed development

- Dedicated cycle paths provide direct access from the site entrances to any cycle storage provided, without the need to deviate from the cycle path and, if relevant, connect to offsite cycle paths where these run adjacent to the development's site boundary.
- Footpaths on site provide direct access from the site entrances to the building entrances and connect to public footpaths off-site (where existing)
- Where provided, drop-off areas are designed off/adjoining to the access road and provide direct access to pedestrian footpaths,
- Dedicated pedestrian crossings must be provided where pedestrian routes cross vehicle access routes, and appropriate traffic calming measures must be in place to slow traffic down at these crossing points.
- The lighting for access roads, pedestrian routes and cycle lanes is compliant with the external lighting standards in BS5489-1:20131 Lighting of roads and public amenity areas.

SECURITY OF SITE AND BULDINGS

1 Credit

- A Suitably Qualified Security Specialist (SQSS) is to appointed to conduct a Security Needs Assessment (SNA) during or prior to Concept Design (RIBA Stage 2 or equivalent).
- The SQSS develops will also create a set of recommendations or solutions during or prior to Concept Design (RIBA Stage 2 or equivalent), 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.

Hea 06: Safety and Security

Intent

- The **Safe Access** credit is targeted

Responsibility

- Developer
- Architect

Evidence Required

- Developers Letter of Intent
- Site plan showing that the criteria for the safe access credit is met

Assumed Score	1/2	Contribution to Final Score	0.59%

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Ene 01: Reduction of Emissions

REDUCTION OF EMISSIONS

Calculated 'Energy Demand' + Calculated 'Primary Energy Consumption' + Calculated 'CO2 Emissions' = EPR^{NC} (From Ene 01 Calculator)

CREDIT SCORES

Credits	EPRNC	Minimum Standards	Notes
1	0.075	None	Requires a performance improvement progressively better than the relevant national building regulations compliant standard
2	0.15		
3	0.225		
4	0.30		
5	0.375	Excellent	Requires 5 credits to be achieved (equivalent to an EPR of at least 0.375).
6	0.45		
7	0.525		
8	0.60	Outstanding	Requires 8 credits to be achieved (equivalent to an EPR of at least 0.6).
9	0.675		
10	0.75		
11	0.825		
12	0.90 (Zero net CO2 emissions)		

Intent

- An SBEM assessment has been carried out to determine the EPR^{NC} rating, by SGA Consulting Ltd, showing a proposed CO2 reduction of 58.00%.
- 7 credits have been targeted and falls in line with the Local Authority emissions targets and London Plan criteria.

Responsibility

- Architect
- Energy Assessor
- BREEAM Assessor

Evidence Required

- A copy of the Building Regulations Output Document from the approved software for the proposed building.

Assumed Score **7/12**

Contribution to Final Score **4.76%**

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Ene 02: Energy Monitoring

REQUIREMENTS

Credit scoring is based on the degree of sub-meters installed, which all require a pulsed output. These should also be connected to the Building Management System (BMS) and be clearly identifiable and accessible.

- The first credit is applicable to all building types.
- The second credit is not applicable to Pre-schools, Primary schools, Law courts, Prisons, Multi-residential and Other buildings: Residential institutions.

SUB METERING – OFFICES/RETAIL

1 Credit

- Kitchens (excluding small staff kitchens and food technology rooms)
- Computer suites
- Workshops
- Lecture halls
- Conference rooms
- Drama studios
- Sports halls
- Laboratories
- High containment suites within laboratories
- Controlled environment chambers
- IT work and study rooms, including IT-equipped library space and any space with provision of more than one computer terminal per 5m².
- Individual sub-metering of standard classrooms/seminar rooms is not required

SUB-METERING OF HIGH ENERGY LOAD

1 Credit

- An accessible energy monitoring and management system or separate accessible energy sub-meters with pulsed or other open protocol communication outputs to enable future connection to an energy monitoring and management system are provided.
- If sub-metering is provided for each floor plate, it is possible to combine lighting and small power into a single sub meter (per floor plate)

Intent

- The Sub metering credit is targeted and meters should be provided to the spaces listed
- The Sub-metering of High Energy Load credit is targeted

Responsibility

- Architect
- Developer
- MEP Consultant

Evidence Required

- Developers and MEP Letter of intent
- Drawings showing location and specification of meters

Assumed Score	2/2	Contribution to Final Score	1.36%

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Ene 03: External Lighting

REQUIREMENTS

Scoreable credits in this sub category are awarded where measures are put in place to recognise and encourage the specification of energy efficient light fittings for external areas of the development.

NO EXTERNAL LIGHTING

- For projects that have no external lighting, this credit is awarded by default

OR

- The average luminous efficacy of the external light fixtures within the construction zone is to be no less than 60 luminaire lumens per circuit Watt

+

- All external lighting fixtures are to be automatically controlled for prevention of operation during daylight hours and presence detection in areas of intermittent pedestrian traffic

Intent

- There is no proposed external lighting and the default credit can therefore be targeted

Responsibility

- Architect
- MEP Consultant

Evidence Required

- Developers and MEP Letter of intent
- Drawings showing location of External Lighting
- Specification document

Assumed Score	1/1	Contribution to Final Score	0.68%

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Ene 04: Low Carbon Design

REQUIREMENTS

Scoreable credits in this sub category are awarded where measures are put in place to encourage the adoption of design measures, which reduce building energy consumption and associated carbon emissions and minimise reliance on active building services systems

PASSIVE DESIGN

1 Credit	1 Credit
Passive Design Analysis **RIBA STAGE 2** A building specific analysis of passive design measures is carried out, to look into minimising heating, cooling, mechanical ventilation, lighting and other demand. This in turn will reduce CO2 emissions	**Free Cooling** The passive design analysis contains a collection of free cooling strategies. At least one of the strategies are to be implemented into the design of the building to ensure that there is no significant use of any active free cooling systems

LOW AND ZERO CARBON STUDY

1 Credit
LZC Assessment **RIBA STAGE 2** A Low or Zero Carbon (LZC) study carried out at the completion of the Concept Design stage by an energy specialist, to establish the most appropriate recognised local (on-site or near-site) low or zero carbon (LZC) energy source(s)for the building. This report should show: • Energy generated from LZC energy source per year • Carbon dioxide savings from LZC energy source per year • Life cycle cost of the potential specification, accounting for payback • Local planning criteria, including land use and noise • Feasibility of exporting heat/electricity from the system • Any available grants • All technologies appropriate to the site and energy demand of the development. • Reasons for excluding other technologies • Where appropriate to the building type, connecting the proposed building to an existing local community CHP system

- In order to score these credits, the Hea 04 – Thermal Comfort credits must also be achieved
- The LZC study can be carried out post RIBA Stage 2. However, there would be additional criteria

Intent

- The **Passive Design Analysis** credit is targeted
- The **Low and Zero Carbon Technologies** credit is targeted

Responsibility

- Energy Assessor
- MEP Consultant

Evidence Required

- Developers Letter of intent
- Results from a dynamic simulation model demonstrating the feasibility of the free cooling strategy and meeting the first credit for Hea 04.

Assumed Score	2/3	Contribution to Final Score	1.36%

Ene 05: Energy Efficient Cold Storage

REQUIREMENTS

Scoreable credits in this sub category are awarded where measures are put in place to recognise and encourage the installation of energy efficient refrigeration systems, therefore reducing operational greenhouse gas emissions resulting from the system's energy use.

DESIGN, INSTALLATION AND COMMISSIONING OF THE REFRIGERATION SYSTEM

1 Credit

- Refrigeration systems and components used are to be present on the ECA Technology Product List
- Systems specified are to be in accordance with the Commercial Refrigeration Code of Conduct for Reducing Carbon Emissions

+

- All external lighting fixtures are to be automatically controlled for prevention of operation during daylight hours and presence detection in areas of intermittent pedestrian traffic

Intent

- This credit is not targeted, although it is possible.

Responsibility

Evidence Required

Assumed Score	0/3	Contribution to Final Score	0.00%

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Ene 06: Energy Efficient Transportation

REQUIREMENTS

Scoreable credits in this sub category are awarded where measures are put in place To recognise and encourage the specification of energy efficient transportation systems.

ENERGY CONSUMPTION

1 Credit

Where either lifts, escalators or moving walks are specified:

- An analysis of the transportation demand and usage patterns for the building has been carried out to determine the optimum number and size of lifts
- The energy consumption has been estimated in accordance with ISO BS EN25745 Part 2 - Lifts and/or Part 3 -
- The transportation system with the lowest energy consumption is specified.

+

ENERGY EFFICIENT FEATURES

1 Credit

Lifts

- The lifts are to operate in a standby condition during off-peak periods.
- The lift car lighting and display lighting provides an average lamp efficacy, of > 55 lamp lumens/circuit Watt.
- The lift uses a drive controller capable of variable speed, variable-voltage, and variable-frequency (VVVF) control of the drive motor.
- Where the use of regenerative drives is demonstrated to save energy, they are specified.

Escalators

- Fitted with a load-sensing device that synchronises motor output to passenger demand through a variable speed drive

OR

- Fitted with a passenger-sensing device for automated operation (auto walk), so the escalator operates in standby mode when there is no passenger demand.

If the lift system has a regenerative drive unit, so that any energy generated by a traction lift, or by a hydraulic lift, the energy would be returned back to the electricity utility supplier or used elsewhere in the building.

Intent

- The Energy consumption credit is targeted. A lift traffic analysis is required and an assessment of the lift energy consumption is to be produced. From this study, the most energy efficient system is to be specified.
- The Energy Efficient Features credit is targeted, by ensuring the three criterion are met.

Responsibility

- Lift Specialist
- MEP Consultant

Evidence Required

- MEP Letter of Intent
- Lift Specialist Report Confirming the Energy Efficient Design

Assumed Score	2/2	Contribution to Final Score	1.36%

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Ene 07: Energy Efficient Laboratory Systems

REQUIREMENTS

Scoreable credits in this sub category are awarded where measures are put in to recognise and encourage laboratory areas that are designed to be energy efficient and minimise the CO2 emissions associated with their operational energy consumption.

PREREQUISITE

Criterion 1 within issue Hea 03 Safe containment in laboratories has been achieved.

DESIGN SPECIFICATION

1. Client engagement is sought through consultation during RIBA Stage 1 or equivalent, to define laboratory performance criteria.
2. Performance criteria should include, but not be limited to the following aspects:
   - Description of purpose
   - Occupant/process activities
   - Containment requirements and standards
   - Air change rate requirements
   - Ventilation system performance and efficiencies
   - Heating and cooling requirements
   - Interaction between systems
   - Flexibility/adaptability of laboratory facilities.
3. The design team demonstrates that the energy demand of the laboratory facilities has been minimised
4. Where ducted fume cupboards are specified:
   - Compliance with item A in Table 27 .
   - The measurement of volume flow rate should be taken in the exhaust duct to take account of reductions in (inward) volume flow rate from fume cupboard leakage.
   - A reduction in air flow does not compromise the defined performance criteria and therefore does not increase the health and safety risk to future building occupants.

BEST PRACTICE ENERGY EFFICIENT MEASURES

1. Laboratory plant and systems are designed in compliance with items B to L in Table 27
2. **2 credits:** The laboratory areas 10-24% of the total building floor area
3. **4 credits:** The laboratory area >25% of the total building floor area

Intent

- The credits relating to this sub category are not targeted

Responsibility

Evidence Required

Assumed Score	0/5	Contribution to Final Score	0.00%

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REQUIREMENTS

2 credits are awarded where the unregulated consumption loads are estimated and use the methods below to make a reduction in the unregulated energy load for the building:

SMALL POWER AND PLUG IN EQUIPMENT

1. Equipment should be on the 'Energy Technology Product List'
2. Equipment should be energy star rated
3. Procured in accordance with the 'Government Buying Standards'

IT INTENSIVE OPERATING AREAS

1. Applicable areas should use natural ventilation and cooling strategy as standard, with forced ventilation only to be used when the internal temperature exceeds 20°C and active cooling only when the internal temperature exceeds 22°C.
2. There is a mechanism to achieve automatic power-down of equipment when not in-use, including overnight.

KITCHEN AND CATERING

1. At least two thirds of energy efficiency measures from CIBSE TM50: 8,9,11,12,13,14,15 are adopted
2. Domestic scale appliances are to have a high rating under the EU labelling scheme

Ene 08: Energy Efficient Equipment

Intent

- The credits relating to this sub category are not targeted

Responsibility

Evidence Required

Assumed Score	0/2	Contribution to Final Score	0.00%

Ene 09: Drying Space

REQUIREMENTS

Adequate space and equipment is to be provided to dry clothes in the residential area of the development. The following criteria is to be followed:

SELF CONTAINED DWELLINGS

1. 1-2 bedroom dwellings: 4 meter length minimum drying line
2. For 3 bedrooms+: dwellings: 6 meter length minimum dry line

INDIVIDUAL DWELLINGS

1. For 1-30 rooms: 2 meter length minimum drying line per bedroom
2. For 31+ rooms: 1 meter length minimum drying line per bedroom

ADDITIONAL REQUIREMENTS

1. The internal or external space is to be secure
2. The drying space must be heated with controlled intermittent extract ventilation, achieving a minimum extract rate of 30 litres per second or be an externally secure space
3. Any fixtures or fittings must be permanently fixed

Intent

- The credits relating to this sub category are not targeted

Responsibility

Evidence Required

Assumed Score	0/2	Contribution to Final Score	0.00%

TRANSPORT

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REQUIREMENTS

To recognise projects where the proximity of good public transport networks has been reviewed, and encourage the implementation of alternative transport solutions where proximity to public transport networks is poor; thus helping to reduce transport-related pollution and congestion.

PUBLIC TRANSPORT ACCESSIBILITY

Distance to and from public transport nodes. This will be any bus stop within 650m and train stations 1000m away from the main entrance

+

Public Transport types (e.g. train, bus, underground)

+

Services per hour (average)

CREDIT SCORES

Number of Credits	Accessibility Index
1	≥2
2	≥4
3	≥8
4	≥12
5	≥18

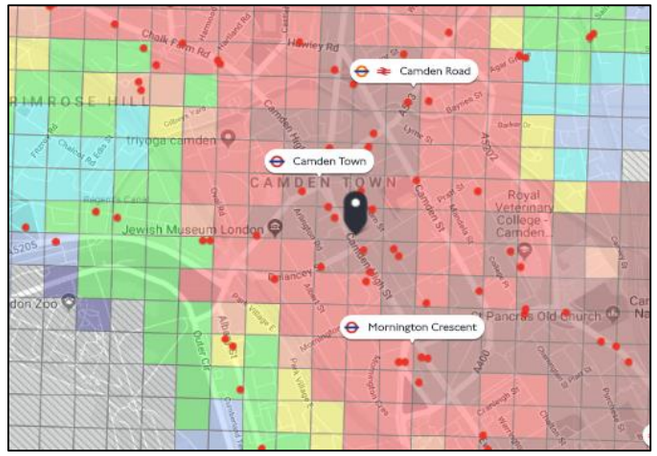
Tra 01: Sustainable Transport Solutions

Intent

- This particular site has been classed as
- **Offices, Industrial, Multi-Residential, Other Building**
- **Retail, Law Court, Further Education College, Higher Education type 1, Other building type**
- An initial study has been carried out using the PTAL calculator and Tra 01 calculation tool, to determine an accessibility index of **43.81**, this is based on the location and frequency of public transport in the vicinity of the site.

Responsibility

- BREEAM Assessor
- Architect



Evidence Required

- PTAL Report
- Tra 01 Calculator
- Confirmation from the Architect that this information is correct

Assumed Score	5/5	Contribution to Final Score	3.00%

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Tra 02: Proximity to Amenities

REQUIREMENTS

1 credit is available where the building is located in an area that meets the following criteria:

1 Credit

Retail = Type 1
Offices = Type 1
2 local amenities within 500 meters
appropriate ATM and Food Outlet, Access to Outdoor Open Space, Access to Leisure/Fitness Facility

CORE AMENITIES

- Food Outlet
- Access to Cash
- Access to a recreation/ leisure facility

ADDITIONAL AMENITIES

- Publicly Available Postal Facility

Intent

- On initial assessment, the location of the core and additional amenities suggests a score of 1 credit.

Responsibility

- BREEAM Assessor
- Architect

Evidence Required

- Confirmation of local services and their exact distance
- Confirmation from the Architect that this information is correct

Assumed Score	1/1	Contribution to Final Score	0.90%

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Tra 03: Cyclist Facilities

REQUIREMENTS

Up to 2 credits are available, where the development has the provision of cyclist facilities, as follows:

CYCLE SPACES

1 Credit

At least 1 cycle space per 10 staff/pupils/students are to be provided

CYCLIST FACILITIES

1 Credit

Any TWO of the following amenities:

Showers

- 1 shower for every 10 cycle storage spaces, subject to a minimum provision of one shower.
- Any building providing eight showers or more will comply regardless of the number of cycle storage spaces provided.
- Both male and female users must be catered for,
- The showers do not need to be dedicated to cyclists and can be those shared with other users/uses.

Lockers

- The number of lockers is at least equal to the number of cycle spaces required.
- Lockers are either in, or adjacent to, compliant changing rooms, where provided.
- The lockers are sized appropriately for the storage of a cyclist's equipment.

Changing Facilities

- Appropriately sized for number of users.
- Must include adequate space and facilities to hang or store clothing and equipment while changing
- Toilet/shower cubicles cannot be counted as changing facilities.

Drying Space

- A space specifically designed and designated with adequate heating/ventilation for the drying of wet clothes.

Intent

- It is assumed that the Cycle Spaces credit is targeted
  - Cycles can be secured within spaces in rack(s). They are to be covered overhead and the cycle racks are set in or fixed to a permanent
  - Alternatively the cycle storage may be located in a locked structure fixed to, or part of, a permanent structure with appropriate surveillance.
  - The distance between each cycle rack, and cycle racks and other obstructions, e.g. a wall, allows for appropriate access to the cycle storage space to enable bikes to be easily stored and accessed.
  - The storage facility or entrance to the facility is in a prominent site location that is viewable/overlooked from either an occupied building or a main access to a building.
  - The cycle storage facility has adequate lighting
- It is assumed that the Cyclist Facilities credit is targeted.
  - Showers will be provided and should be marked up on the plans
  - Lockers will be provided and should be marked up on the plans
  - Changing facilities will be provided and should be marked up on the plans

Responsibility

- BREEAM Assessor
- Architect

Evidence Required

- Confirmation of local services and their exact distance
- Confirmation from the Architect that this information is correct

Assumed Score	2/2	Contribution to Final Score	1.80%

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Tra 04: Maximum Car Parking Capacity

REQUIREMENTS

Credits are awarded based on the number of car parking spaces, per building user. The following figures are applicable and are relative to the Tra 01 Public Transport Accessibility Index, listed below:

Public Transport Accessibility

Public Transport Accessibility Index			Number of Credits
<4	≥4 < 8	>8	
15	20	25	1
20	25	30	2

Additional Notes

Parking spaces set aside for the following building users can be excluded provided these spaces are dedicated for that use, i.e. sized accordingly with the appropriate signage/markings:

- Disabled
- Parent and baby
- Motorbike
- Car share .

In the case of excluding car share spaces, the future building occupier will need to confirm they have an enforceable car share policy.

Intent

- The credits relating to this sub category are not targeted

Responsibility

Evidence Required

Assumed Score **0/2**

Contribution to Final Score **0.00%**

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Tra 05: Travel Plan

REQUIREMENTS

Credits are awarded where a site specific travel assessment/statement has been undertaken, to ensure the travel plan is structured to meet the needs of the particular site and covers the following (as a minimum): :

Travel Plan

- Where relevant, existing travel patterns and opinions of existing building or site users towards cycling and walking should be sought so that constraints and opportunities can be identified.
- The plan should analyse travel patterns and the transport impact of future building users.
- Disabled access (accounting for varying levels of disability and visual impairment).
- Public transport links serving the site.
- Facilities for cyclists.

Additional Notes

- The travel plan should include a package of measures to encourage the use of sustainable modes of transport and movement of people and goods during the building's operation and use.
- If the occupier is known, they must be involved in the development of the travel plan and they must confirm that the travel plan will be implemented post construction and be supported by the building's management in operation.

Intent

- It is assumed that the Travel Plan credit will be targeted

Responsibility

- Developer (Liaison with occupier)
- Architect

Evidence Required

- Draft Travel Plan
- Developers Letter of Intent

Assumed Score	1/1	Contribution to Final Score	0.90%

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Wat 01: Water Consumption

REQUIREMENTS

Credits are assigned based on the water efficiency of:

- WCs
- Urinals
- Taps (wash hand basins and where specified kitchen taps and waste disposal unit)
- Showers
- Baths
- Dishwashers (domestic and commercial sized)
- Washing machines (domestic and commercial or industrial sized)

BREEAM Credits Available

% Improvement	Credit Score
12.5%	1
25%	2
40%	3
50%	4
55%	5
65%	Exemplary Performance

Additional Notes

- The BREEAM Wat 01 calculator is used to identify the percentage improvement, over benchmark figures. Manufacturers literature is required for this entry
- A rainwater (BS 8515:2009+A1:2013) or greywater system (BS 8525-1:2010) can be used to offset the non potable water demand, provided that the minimum level of water efficiency has been met.

Intent

- 3 credits have been targeted for the Wat 01 sub category. The following figures have been assumed, to achieve the design stage score. This will be confirmed as the manufacturers information is produced:

Taps	3-5 litres per minute
WC's (Dual Flush)	Flush rate of 6/3 litres
Urinals	1.5 flushes per hour
Dishwashers	5-10 litres per cycle
Showers	8 litres per minute
Kitchen Taps	10 litres per minute

Responsibility

- Developer
- Manufacturer
- BREEAM Assessor (Wat 01 tool)

Evidence Required

- Developers Letter of Intent
- Manufacturers literature
- Sanitaryware schedule
- Photographic evidence

Assumed Score **3/5**

Contribution to Final Score **2.63%**

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Wat 02: Water Monitoring

REQUIREMENTS

This credit is awarded where the main water consumption is monitored and managed in line with BREEAM criteria.

Water Meter Requirements

Water Meter is to be on Main Supply	All Meters are to Have a Pulsed Output, to Enable Connection to a BMS	Water-Consuming Plant/Areas are to be Sub-Metered. These are Areas that Consume More than 10% of the Buildings Water Demand

Additional Notes

- The sub-meter requirement does not necessarily apply in the following cases, where the assessor confirms there will be no additional monitoring benefit resulting from their installation:
  - Where a building has only one or two small sources of water demand (e.g. an office with sanitary fittings and a small kitchen)
  - Where the building has two sources of water demand, one significantly larger than the other, and the water consumption for the larger demand is likely to mask the smaller demand.

Intent

- The water monitoring credit is targeted. It is assumed that water meters will be installed on all mains water supplies to the buildings.

Responsibility

- Developer
- MEP Consultant
- BREEAM Assessor (Wat 01 tool)

Evidence Required

- MEP Letter of Intent
- Manufacturers literature
- Photographic evidence

Assumed Score	1/1	Contribution to Final Score	0.88%

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Wat 03: Water Leak Detection and Prevention

REQUIREMENTS

2 credits are available and are awarded where the following systems/devices are installed:

LEAK DETECTION SYSTEM

1 Credit

- A leak detection system is installed, capable of detecting a major water leak on the mains water supply within the building and between the building and the utilities water meter
- The leak detection system must be:
  - A permanent automated water leak detection system that alerts the building occupants to the leak OR an inbuilt automated diagnostic procedure for detecting leaks is installed.
  - Activated when the flow of water passing through the water meter/data logger is at a flow rate above a pre-set maximum for a pre-set period of time.
  - Able to identify different flow and therefore leakage rates,
  - Programmable to suit the owner/occupiers' water consumption criteria.
  - Where applicable, designed to avoid false alarms caused by normal operation of large water-consuming plant.

FLOW CONTROL DEVICES

1 Credit

- 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).
- The following could be considered as types of flow control devices:
- A time controller, i.e. an automatic time switch device to switch off the water supply
- A programmed time controller,
- A volume controller
- A presence detector and controller
- A central control unit

Intent

- The Leak Detection credit is targeted. The mains supply will have the leak detection system installed for compliance
- The Flow Control Device credit is targeted and will require WC areas to have solenoid shut of valves, controlled by 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

Responsibility

- MEP Consultant

Evidence Required

- MEP Letter of Intent
- Manufacturers literature
- Photographic evidence

Assumed Score	2/2	Contribution to Final Score	1.76%

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Wat 04: Water Efficient Equipment

REQUIREMENTS

1 credit is available and are awarded where the following is adopted:

- The design team has identified all unregulated water demands that could be realistically mitigated or reduced.

+

- System(s) or processes have been identified to reduce the unregulated water demand, and demonstrate, through either good practice design or specification, a meaningful reduction in the total water demand of the building.

Additional Notes

- Where there are no vehicle washing or irrigation systems, this issue is not applicable
- The design team needs to demonstrate to the assessor that they have identified key areas of water consumption in the building and that a reduction in unregulated water consumption has been achieved using existing 'tried and tested' solutions or new innovative solutions relevant to the building and its functional requirements.

Intent

- The credits relating to this sub category are not targeted

Responsibility

Evidence Required

Assumed Score	0/1	Contribution to Final Score	0.00%

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Mat 01: Life Cycle Impacts

REQUIREMENTS

The BRE Green Guide is used to determine the credit scoring in this sub category, which looks into the materials used within the following elements:

- Walls (Internal and External)
- Windows
- Roofs
- Ground and Intermediate Floors
- Floor Finishes/Coverings.

PROCESS

Building elements given a Green Guide Rating → Ratings and Quantities are Input into the BREEAM Mat 01 Tool → Credits are Awarded

SCORE

Mat 01 Scores	**≥4**	**≥5**	**≥8**	**≥10**	**≥12**	**≥14**
Mat 01 Credits	1	2	3	4	5	6

Additional Notes

- Life cycle greenhouse gas emissions (kgCO2 eq.) for each element are also required to be reported based on a 60-year building life. Where specific data is not available for a product or element, generic data should be used

Intent

- A review of the proposals and of the Green Guide rating has been carried out and it is determined that a minimum of 3 credits are to be targeted.
- This will be updated throughout the design and construction stage.

Responsibility

- BREEAM Assessor
- Contractor

Evidence Required

- Mat 01 Tool
- Specification and drawings showing building elements
- Green Guide Ratings for Building Elements

Assumed Score **4/6**

Contribution to Final Score **3.85%**

REQUIREMENTS

Credits are scored where at least 80% of all external hard landscaping and 80% of all boundary protection (by area) in the construction zone achieves an A or A+ rating, as defined in the Green Guide to Specification

Additional Notes

- For the purpose of assessment, hard landscaping includes (but is not limited to) parking areas (including manoeuvring areas
  - Lanes
  - roads within the parking area
  - pedestrian walkways
  - Paths
  - patios.
- The definition excludes basement parking, access or approach roads and designated vehicle manoeuvring areas, balconies, roof terraces, specialist sports areas (running tracks, netball areas etc.) and retaining walls.
- Any existing or specified natural boundary protection (such as hedging or other living barrier) should be awarded with an A+ rating for the purposes of this analysis.
- Provided no more than 20% of the total area of the existing hard landscaping and boundary protection elements are subject to minor alterations, repair or maintenance, these elements can be awarded an A+ rating

Mat 02: Hard Landscaping and Boundary Protection

Intent

- The credits relating to this sub category are not targeted

Responsibility

- Contractor

Evidence Required

- Contractors Confirmation
- Photographic Evidence
- BRE Green Guide Rating of Materials Used

Assumed Score	0/1	Contribution to Final Score	0.00%

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REQUIREMENTS

Credits in this sub category are scored where new materials are being introduced into any building element. Where at least 80% of the materials that make up the building element comply with the responsible sourcing tiers below, credits can be score. An additional credit can be awarded if the principle contractor carries out a Sustainable Procurement Plan.

PROCESS

Responsible Sourcing Scheme for Relevant Materials → Ratings and Quantities are Input into the BREEAM Mat 03 Tool → Credits are Awarded Based on Number of Mat 03 Points

SCORE

% of Available Points Achieved	Credits Scored
≥ 18%	1
≥ 36%	2
≥ 54%	3
≥ 70%	Exemplary

Additional Notes

- Material Examples include bricks, concrete, glass, metals, timber, insulation, insulation materials, plastics and rubber, wood panels plasterboard plaster, building stones, and resin-based composite.

Mat 03: Responsible Sourcing of Materials

Intent

- The contractor will carry out a Sustainable Procurement Plan to ensure a minimum score credit score of 2.
- This is 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:
  - 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.
  - Aims, objectives and targets to guide sustainable procurement activities.
  - The strategic assessment of sustainably sourced materials available locally and nationally. There should be a policy to procure materials locally where possible.
  - 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.

Responsibility

- Contractor
- BREEAM Assessor

Evidence Required

- Contractors Confirmation
- Sustainable Procurement Plan
- BRE Mat 03 Tool

Assumed Score **2/3**

Contribution to Final Score **1.93%**

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Mat 04: Insulation

REQUIREMENTS

The credit in this sub category encourages the use of thermal insulation which has a low embodied environmental impact relative to its thermal properties.

PROCESS

Any new insulation specified in the following elements must be assessed

- External Wall
- Ground Floor
- Roof
- Building Services

→ Green Guide Ratings are Ascertained for all Thermal Insulation Materials → A Weighted Average Insulation Index is Gained using Mat 04 Calculator

Additional Notes

- Where more than one insulation type is present for a given element, the rating, area and conductivity for each insulation type should be entered into the BREEAM Mat 04 calculator and an average is calculated (by volume).

Intent

- The insulation credit is targeted. All new specified insulation will be assessed using the BRE Green Guide and will be A rated. The average weighted insulation index will be greater than 2.5
- Examples of A rated insulation includes but is not limited to:
  - Glass Wool Insulation
  - EPS
  - Stone Wool Insulation (density of less than 100kg/m2)
  - Corkboard
  - XPS Insulation (Zero ODP and low GWP)

Responsibility

- Architect
- MEP Consultant
- Contractor
- BREEAM Assessor

Evidence Required

- Contractors Confirmation
- Specification of Materials and Insulation Used (MEP and Architect)
- Mat 04 Tool

Assumed Score	1/1	Contribution to Final Score	0.96%

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REQUIREMENTS

The credit in this sub category encourages adequate protection of exposed elements of the building and landscape, therefore minimising the frequency of replacement and maximising materials optimisation

PROCESS

One credit is awarded if the building incorporates suitable durability and protection measures or designed features/solutions to prevent damage to vulnerable parts of the internal and external building and landscaping elements. The following is required:

- Areas where vehicular, pedestrian and trolley movement occur are to be identified
- Appropriate durability measures have been adopted, in order to protect the following areas from the following effects:

TREATMENT

Areas

- Main entrances, public areas, corridors, lifts, stairways
- within 1m of the internal building fabric in storage, delivery, corridor and kitchen areas
- External Building Façade of Car Parking Spaces and Delivery Areas
- All External Areas of the Building and Hard Landscaping

Protection From

- Effects of High Pedestrian Traffic
- Internal Vehicle/Trolley Movement
- Potential Vehicle Collision
- Environmental Factors and Materials Degradation Effects

Examples

- Hard wearing and easily washable floor finishes
- Bollards, barriers, raised kerbs, anti-corrosion treatments, waterproofing, timber treatment

Mat 05: Designing for Durability and Resilience

Intent

- The Designing for Durability and Resilience credit is targeted. The vulnerable areas of the building/site are to be identified and adequate measures are to be specified.

Responsibility

- Architect
- Contractor

Evidence Required

- Contractors confirmation
- Plan indicating areas of importance
- A schedule of applied treatments

Assumed Score	1/1	Contribution to Final Score	0.96%

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Mat 06: Material Efficiency

REQUIREMENTS

One credit is awarded where opportunities have been identified, and appropriate measures investigated and implemented, to optimise the use of materials in building design, procurement, construction, maintenance and end of life ,

PROCESS

The above is carried out by the design/construction team in consultation with the relevant parties at each of the following RIBA stages:

- Preparation and Brief
- Concept Design
- Developed Design
- Technical Design
- Construction

Additional Notes

- All parties (as relevant to the project stage) involved in the design, specification and/or construction of the building should be consulted. This includes but is not limited to, the following:
  - 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

Intent

- The credits relating to this sub category are not targeted

Responsibility

- Architect
- Contractor

Evidence Required

- Contractors confirmation
- Plan indicating areas of importance
- A schedule of applied treatments

Assumed Score	0/1	Contribution to Final Score	0.00%

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Wst 01: Construction Site Waste Management

REQUIREMENTS

Scoreable credits in this sub category are awarded where resource efficiency via the effective management and reduction of construction waste is promoted. This is split into two parts:

CONSTRUCTION RESOURCE EFFICIENCY

A Resource Management Plan (RMP) will be developed, covering the non-hazardous waste related to on-site construction and dedicated off-site manufacture or fabrication (including demolition and excavation waste), generated by the building's design and construction

The RMP procedures will be incorporated and a commitment to minimise the amount of non-hazardous construction waste per 100m2 will be sought from the contractor/developer. Scores are then based on the following:

1 Credit	2 Credits	3 Credits	Exemplar
≤ 13.3m3 or 11.1 tonnes	≤ 7.5m3 or 6.5 tonnes	≤ 3.4m3 or 3.2 tonnes	≤ 3.4m3 or 3.2 tonnes

DIVERSION OF RESOURCES FROM LANDFILL

1 Credit		Exemplar	
Demolition	Non-Demolition	Demolition	Excavation
80% Volume or 90% Weight	70% Volume or 80% Weight	85% Volume or 95% Weight	95% Volume or 95% Weight
		Non-Demolition	
		80% Volume or 90% Weight	

Intent

- The **Pre-refurbishment** Audit credit is targeted
- The Construction Resource Efficiency credit is targeted. The contractor will create a resource management plan. A Compliant RMP is one that defines:
  - A target benchmark for resource efficiency, i.e. m^3 of waste per $100m^2$ or tonnes of waste per $100m^2$
  - Procedures and commitments for minimising non-hazardous waste in line with the target benchmark
  - A waste minimisation target and details of waste minimisation actions to be undertaken
  - Procedures for estimating, monitoring, measuring and reporting hazardous and non-hazardous site waste. If waste data is obtained from licensed external waste contractors, the data needs to be reliable and verifiable, e.g. by using data from EA/SEPA/EA Wales/NIEA Waste Return Forms
  - Procedures for sorting, reusing and recycling construction waste into defined waste groups (see additional guidance section), either on-site or through a licensed external contractor
  - Procedures for reviewing and updating the plan
  - The name or job title of the individual responsible for implementing the above.
- 1 Credit is targeted in the Diversion of Resources from Landfill credit. The contractor will ensure that 80% (volume) or 90% (weight) via demolition and 70% (volume) and 80% (weight) via non-demolition of waste is diverted.

Responsibility

- Contractor

Evidence Required

- Contractors confirmation
- Resource Management Plan (RMP)

Assumed Score	3/4	Contribution to Final Score	2.31%

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Wst 02: Recycled Aggregates

REQUIREMENTS

Scoreable credits in this sub category are awarded with encouragement of using recycled and secondary aggregates, thereby reducing the demand for virgin material and optimising material efficiency in construction.

PROPORTION OF RECYCLED AND/OR SECONDARY AGGREGATE

Proportion of Recycled and/or Secondary Aggregate	Min. % 1 Credit	Min. % Exemplary
Bound		
Structural Frame	15%	30%
Bitumen or Hydraulically Bound Base, Binder and Surface Coursed for Paved Areas and Roads	30%	75%
Concrete Road Surfaces	15%	45%
Unbound		
Pipe Bedding	100%	N/A
Building Foundations	20%	35%
Granular Fill and Capping	100%	N/A

ADDITIONAL INFORMATION

The recycled or secondary aggregates are to be **EITHER**:
- Construction, demolition and excavation waste obtained on-site or off-site; OR
- Secondary aggregates obtained from a non-construction post-consumer industrial by product source

Intent

- The credits relating to this sub category are not targeted

Responsibility

Evidence Required

Assumed Score **0/1**

Contribution to Final Score **0.00%**

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Wst 03: Operational Waste

REQUIREMENTS

Scoreable credits in this sub category are awarded where the provision of dedicated storage facilities for a building's operational-related recyclable waste streams are provided, so that this waste is diverted from landfill or incineration.

DEDICATED SPACE FOR RECYCLABLE WASTE

This space should be:

- Or an appropriate capacity, based on likely waste amount
- Min.2m^2 per 1000m^2 for buildings less than 5000m^2
- At least 10m^2 per 1000m^2 for buildings greater than 5000m^2
- Provision for the extra space where catering is provided (same figures as above)
- Must be clearly labelled
- Within 20m of the building entrance
- Accessible to waste management collectors

+

Where the consistent generation in volume of the appropriate operational waste streams is likely to exist, the following facilities are to be provided:

- Static waste compactor(s) or baler(s); situated in a service area or dedicated waste management space.
- 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.
- 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.

Intent

- The **Operational Waste** credit is targeted

Responsibility

- Contractor

Evidence Required

- Contractors Confirmation
- Photographic Evidence
- BRE Green Guide Rating of Materials Used

Assumed Score	1/1	Contribution to Final Score	0.77%

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REQUIREMENTS

Scoreable credits in this sub category are awarded where measures are taken to encourage the specification and fitting of floor and ceiling finishes selected by the building occupant and therefore avoid unnecessary waste of materials. **OFFICES ONLY**

SPECULATIVE FLOOR AND CEILING FINISHES

- For tenanted areas (where the future occupant is not known), prior to full fit-out works, carpets, other floor finishes and ceiling finishes are to be installed in a show area only.
- In a building developed for a specific occupant, that occupant has selected (or agreed to) the specified floor and ceiling finishes.

Wst 04: Speculative Floor and Ceiling Finishes

Intent

- The **Speculative Floor and Ceiling Finishes** credit is targeted

Responsibility

- Contractor
- Tenant and Developer

Evidence Required

- Contractors Confirmation
- Photographic Evidence
- Specification of Finishes

Assumed Score	1/1	Contribution to Final Score	0.77%

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Wst 05: Adaptation to Climate Change

REQUIREMENTS

Scoreable credits in this sub category are awarded with the encouragement of measures taken to mitigate the impact of extreme weather conditions arising from climate change over the lifespan of the building.

STRUCTURAL AND FABRIC RESILIENCE

1 Credit

Conduct a climate change adaptation strategy appraisal for structural and fabric resilience by the end of Concept Design (RIBA Stage 2 or equivalent), in accordance with the following approach:
Carry out a systematic (structural and fabric resilience specific) risk assessment to identify and evaluate the impact on the building over its projected life cycle from expected extreme weather conditions arising from climate change and, where feasible, mitigate against these impacts. The assessment should cover the following stages:

- Hazard identification
- Hazard assessment
- Risk estimation
- Risk evaluation
- Risk management.

EXEMPLARY

1 Credit

In addition to the above, the following criteria is achieved:

- **Hea 04: Thermal Comfort -** Criterion 6
- **Ene 01: Energy Use –** Min. 8 Credits
- **Ene 04: Low Carbon Design –** Passive Design Credit Awarded
- **Wat 01: Water Consumption –** Min. 3 Credits Achieved
- **Mat 05: Design for Durability –** Criterion 2 (Material Degradation) Achieved
- **Pol 03: Surface Water Runoff –** Min. 1 Credit for Flood Risk and Min.2 for Surface Water Runoff

Intent

- The credits relating to this sub category are not targeted

Responsibility

Evidence Required

Assumed Score	0/1	Contribution to Final Score	0.00%

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Wst 06: Functional Adaptability

REQUIREMENTS

Scoreable credits in this sub category are awarded where measures are taken to accommodate future changes of use of the building over its lifespan.

FUNCTIONAL ADAPTATION STRATEGY

This should be completed by RIBA Stage 2, but the client/design team and should consider:

- The potential for major refurbishment, including replacing the façade.
- 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.
- The degree of adaptability of the internal environment to accommodate changes in working practices.
- The degree of adaptability of the internal physical space and external shell to accommodate change in-use.
- The extent of accessibility to local services

IMPLEMENTATION OF STRATEGY

The implementation will be specific to the building and scope of the project, but information should be made available to the assessor, covering:

- The feasibility for multiple/alternative building uses and area functions
- Options for multiple building uses and area functions based on design details 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.

Intent

- The credits relating to this sub category are not targeted

Responsibility

Evidence Required

Assumed Score	0/1	Contribution to Final Score	0.00%

Le01: Site Selection

REQUIREMENTS

Scoreable credits in this sub category are awarded where the use of previously occupied and/or contaminated land is encouraged, to avoid using land which has not been previously disturbed.

PREVIOUSLY DEVELOPED LAND

1 Credit

This credit can be awarded where at least 75% of the proposed development footprint is on an area of land, which had been previously occupied by building or fixed service infrastructure.

CONTAMINATED LAND

1 Credit

A contaminated land professional's site investigation, risk assessment and appraisal has deemed land within the site to be affected by contamination

+

The client or contractor confirms that remediation of the site will be carried out in accordance with the remediation strategy

Intent

- The credits relating to this sub category are not targeted

Responsibility

Evidence Required

Assumed Score	0/0	Contribution to Final Score	0.00%

REQUIREMENTS

Scoreable credits in this sub category are awarded where the land already has limited value to wildlife and the developer protects existing ecological features from substantial damage during site preparation and completion of construction works.

ECOLOGICAL VALUE OF SITE

1 Credit

Land within the assessment zone is defined as 'land of low ecological value'

- Confirmed by a Suitably Qualified Ecologist

OR

- Using the BREEAM Checklist

+

PROTECTION OF ECOLOGICAL FEATURES

1 Credit

All existing features of ecological, within the assessment zone are adequately protected from damage during clearance, site preparation and construction activities in line with BS42020: 20131. In all cases, the principal contractor is required to construct ecological protection recommended by the Suitably Qualified Ecologist (SQE), prior to any preliminary site construction or preparation works (e.g. clearing of the site or erection of temporary site facilities).

Le02: Ecological Value and Protection

Intent

- The credits relating to this sub category are not targeted

Responsibility

- Developer
- Ecologist/BREEAM Assessor

Evidence Required

- Ecology Report OR BREEAM Checklist
- Confirmation from the Contractor
- A copy of the protection strategy and implementation plan

Assumed Score	0/0	Contribution to Final Score	0.00%

REQUIREMENTS

Scoreable credits in this sub category are awarded where there is scope to minimise the impact of a building development on existing site ecology.

CHANGE IN ECOLOGICAL VALUE

1 Credit

The change in ecological value of the site is **equal to or greater than zero plant species**, i.e. no negative change, using one of the following methods:

- The BREEAM Assessor calculates the broad habitat types that define the landscape of the assessed site in its existing pre-developed state and proposed and inputs these into the BREEAM LE03/04 tool
- Where a Suitably Qualified Ecologist (SQE) has been appointed and, based on their site survey, they confirm the figure for input into the above calculator

2 Credits

The change in ecological value of the site is **less than zero but equal to or greater than minus nine** i.e. a minimal change using one of the following methods:

- The BREEAM Assessor calculates the broad habitat types that define the landscape of the assessed site in its existing pre-developed state and proposed and inputs these into the BREEAM LE03/04 tool
- Where a Suitably Qualified Ecologist (SQE) has been appointed and, based on their site survey, they confirm the figure for input into the above calculator

Le03: Minimising Impact on Existing Site Ecology

Intent

- The credits relating to this sub category are not targeted

Responsibility

- Developer
- Ecologist/BREEAM Assessor

Evidence Required

- Ecology Report
- Le03/04 BREEAM Checklist
- Confirmation from the Contractor
- Landscape Plan

Assumed Score	0/0

Contribution to Final Score	0.00%

REQUIREMENTS

Scoreable credits in this sub category are awarded where there is scope to encourage actions taken, to enhance the ecological value of the site as a result of development

ECOLOGISTS REPORT AND RECOMMENDATIONS

1 Credit

Awarded where the following is undertaken

- A suitably qualified ecologist is appointed at RIBA Stage 1
- A Site Survey is undertaken by the end of RIBA Stage 1
- An Ecology Report is prepared, with recommendations on protecting and enhancing the ecology of the site
- The recommendations listed in the above report have been implemented on site, in the final design and build.

INCREASE IN ECOLOGICAL VALUE

1 Credit

Awarded where the following is undertaken

- The above credit is scored
- The recommendations of the Ecology Report for the enhancement of site ecology have been implemented in the final design and build, and the ecologist confirms that this will result in an increase in ecological value of the site, with an increase of six plant species or greater

Le04: Enhancing Site Ecology

Intent

- The credits relating to this sub category are not targeted

Responsibility

- Developer
- Ecologist/BREEAM Assessor

Evidence Required

- Ecology Report
- Le03/04 BREEAM Checklist

Assumed Score	0/0	Contribution to Final Score	0.00%

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Le05: Long Term Impact on Biodiversity

REQUIREMENTS

Scoreable credits in this sub category are awarded where there is a strategy to minimise the long term impact of the development on the site and the surrounding area's biodiversity.

PREREQUISITE

Appointment of a suitably qualified ecologist prior to commencement of site activities	a landscape and habitat management plan appropriate to the site is produced covering at least the first five years after project completion in accordance with BS 42020:20131 Section 11.1	Confirmation by the ecologist that all relevant UK and EU legislation relating to ecology protection and enhancement are complied with

ADDITIONAL MEASURES

Commitment to Achieve:	Credits
2 of the additional measures below	1
4 of the additional measures below	2

1. A partnership has been set up by the design team with a local group that has wildlife expertise to provide advice regarding the local habitat
2. Nomination of a Bio Diversity Champion on site
3. Site staff trained by the contractor to protect site ecology
4. Action taken to protect biodiversity is recorded by the contractor
5. Where flora and/or fauna habitats exist on-site, the contractor programmes site works to minimise disturbance to wildlife

Intent

- The credits relating to this sub category are not targeted

Responsibility

Evidence Required

Assumed Score **0/0**

Contribution to Final Score **0.00%**

REQUIREMENTS

Scoreable credits in this sub category are awarded where there is a strategy to reduce the level of greenhouse gas emissions arising from the leakage of refrigerants from building systems..

NO REFRIGERANTS

3 Credits

Where the building does not require the use of refrigerants within its installed plant/systems.

OR

PREREQUISITE

All systems with electric compressors must comply with the requirements of BS EN 378:20081 (parts 2 and 3) and where refrigeration systems containing ammonia are installed, the Institute of Refrigeration Ammonia Refrigeration Systems Code of Practice

IMPACT OF REFRIGERANT

1 Credit

Where the systems using refrigerants have a (DELC CO2e) of **≤ 100 kgCO2e/kW** cooling/heating capacity.

2 Credit

systems using refrigerants have a (DELC CO2e) of **≤ 1000 kgCO2e/kW** cooling/heating capacity

LEAK DETECTION

1 Credit

- systems using refrigerants are to have a permanent automated refrigerant leak detection system or an inbuilt automated diagnostic procedure for detecting leakage
- In all instances a robust and tested refrigerant leak detection system must be installed and must be capable of continuously monitoring for leaks.
- The system must be capable of automatically isolating and containing the remaining refrigerant(s) charge in response to a leak detection incident

Pol 01: Impact of Refrigerants

Intent

- The **Leak Detection** credit is targeted.
- The **Impact of Refrigerant** credit is targeted (for 1 credit), which is to be confirmed by the MEP consultant and/or the system supplier.
- **Calculation Used to Determine DELCO2$_e$**

$$\frac{[\text{Refrigerant loss operational} + \text{refrigerant loss system retirement}] \times GWP}{\text{Cooling Capacity (kW)}}$$

Where:

Refrigerant loss operational: $(Ref_{charge} \times Sys_{op\text{-}life} \times (L1 + L2 + S1 + S2))/100$

Refrigerant loss system retirement = $Ref_{charge} \times (1 - (Ref_{RecEff}/100))$

Where:

1. Ref_{charge}: Refrigerant charge (kg)
2. $Sys_{op\text{-}life}$: System operational lifetime (years)
3. Ref_{RecEff}: Refrigerant Recovery Efficiency factor (%)
4. L1: Annual Leakage Rate (units: % Refrigerant charge)
5. L2: Annual Purge Release factor (% Refrigerant charge)
6. S1: Annual Service Release (% Refrigerant charge)
7. S2: Probability factor for catastrophic failure (% refrigerant charge loss/year)
8. GWP: Global Warming Potential of refrigerant
9. Cooling/heating capacity (kW).

Responsibility

- MEP Consultant
- Supplier
- BREEAM Assessor

Evidence Required

- Confirmation from MEP Consultant OR Supplier
- POL 01 calculator Tool
- Information supporting the assumptions in the Pol 01 tool

Assumed Score	2/3	Contribution to Final Score	1.54%

Pol 02: NO_X Emissions

REQUIREMENTS

Scoreable credits in this sub category are awarded where there is a strategy to contribute to a reduction in national NOx emission levels through the use of low emission heat sources in the building.

NO_X EMISSIONS

Dry NO_X Level	Credits
≤100	1
≤70	2
≤40	3

ADDITIONAL NOTES

- NOx emissions are pollutant gases produced by the combustion of fossil fuels and reacts with heat and sunlight to produce ozone that can cause serious respiratory problems. It also reacts with water to produce acid rain which has a detrimental effect on ecosystems. For the purposes of BREEAM, NOx emission levels are required in units of mg/kWh, measured on a dry basis at 0% excess oxygen levels.
- Heat pumps powered by grid electricity are likely to indirectly produce emission rates higher than those required by BREEAM and are therefore typically unable to achieve credits under this issue

Intent

- Electric HVAC systems proposed, therefore this credit cannot be targeted. Base electrical grid NOx levels are 1200mg/kWh

Responsibility

Evidence Required

Assumed Score **0/3**

Contribution to Final Score **0.00%**

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Pol 03: Surface Water Runoff

REQUIREMENTS

Scoreable credits in this sub category are awarded where there is a strategy to avoid, reduce and delay the discharge of rainfall to public sewers and watercourses, thereby minimising the risk and impact of localised flooding on and off-site, watercourse pollution and other environmental damage.

A Specific Flood Risk Assessment (FRA) is to be carried out

FLOOD RISK

1 Credit	2 Credits
• Medium or High annual probability of flood risk • Ground level access is to be 600mm above the floor level	• Low annual probability of flood risk from all sources

SURFACE WATER RUN OFF

An appropriate consultant is to be appointed

1 Credit	1 Credit
The peak run off rate for the 1 in 100 year event is to be no greater than it was at the pre-development stage. This includes making an allowance for climate change	**Minimising Water Course Pollution** • SUDs system • No discharge from site for rainfall up to 5mm • Drainage plan • Shut off valves for chemical storage in the building

1 Credit		
There is no flooding as a result of local drainage failure	+	• Runoff volume is no greater than the pre-development (over lifetime) and a SUDs installed to manage additional volume for the 100 year, 6 hour event **OR** • justification as to why this cannot be met, along with the limitation figures

Intent

- The **Flood Risk Management** Credit is targeted. The site is located in a Zone 3 (medium/high flood risk zone)
- The **Surface Water Run-Off** credit is targeted
- An appropriate consultant is to be appointed to target the additional credits
- The **Minimising Watercourse Pollution** credit is targeted

Responsibility

- Developer
- Suitably Qualified Specialist

Evidence Required

- Flood Risk Assessment with appropriate calculations
- Letter of Appointment (to the appropriate consultant)
- Confirmation of actions taken for credit scoring (i.e. a SUDs layout)

Assumed Score	3/5	Contribution to Final Score	2.31%

TPS. TAYLOR PROJECT SERVICES LLP BUILDING SERVICES CONSULTANTS

REQUIREMENTS

Scoreable credits in this sub category are awarded where there is a strategy to ensure that external lighting is concentrated in the appropriate areas and that upward lighting is minimised, reducing unnecessary light pollution, energy consumption and nuisance to neighbouring properties.

EXTERNAL LIGHTING STRATEGY

- External lighting is to be designed in accordance with the ILP Guidance notes for the reduction of obtrusive light, 2011, table 2

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CONTROLS

- All external lighting except for safety and security lighting can be automatically switched off between 23:00 and 07:00.
- If safety or security lighting is provided and will be used between 23:00 and 07:00, this part of the lighting system complies with the lower levels of lighting recommended during these hours in Table 2 of the ILP's Guidance notes.

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ILLUMINATED ADVERTISEMENTS

- Illuminated advertisements, where specified, must be designed in compliance with ILP PLG 05 The Brightness of Illuminated Advertisements

Pol 04: Reduction of Night-time Light Pollution

Intent

- The credits relating to this sub category are not targeted

Responsibility

- MEP Consultant
- Contractor

Evidence Required

- External Lighting Layout
- Specification of Controls and Sensors
- Developers Letter of Confirmation

Assumed Score	0/0	Contribution to Final Score	0.00%

TPS. TAYLOR PROJECT SERVICES LLP BUILDING SERVICES CONSULTANTS

REQUIREMENTS

Scoreable credits in this sub category are awarded where there is a strategy to reduce the likelihood of noise arising from fixed installations on the new development affecting nearby noise-sensitive buildings

REDUCTION OF NOISE POLLUTION

1 Credit

- Where there are, or will be, no noise-sensitive areas or buildings within 800m radius of the assessed site.

OR

1 Credit

Where the building does have noise-sensitive areas or buildings within 800m radius of the site:

- A noise impact assessment in compliance with BS 74451 has been carried out and the following noise levels measured/determined:
    - Existing background noise levels at the nearest or most exposed noise-sensitive development to the proposed development or at a location where background conditions can be argued to be similar.
    - The rating noise level resulting from the new noise source
- The noise impact assessment must be carried out by a suitably qualified acoustic consultant holding a recognised acoustic qualification and membership of an appropriate professional body
- The noise level from the proposed site/building, as measured in the locality of the nearest or most exposed noise-sensitive development, is a difference no greater than +5dB during the day (07:00 to 23:00) and +3dB at night (23:00 to 07:00) compared to the background noise level.
- Where this doesn't comply, measures have been installed to attenuate the noise at its source to a level where it will comply with criterion 4..

Pol 05: Reduction of Noise Pollution

Intent

- This credit is targeted. The Acoustician and contractor are to confirm that the adjacent measures have been adopted.

Responsibility

- Acoustic Engineer
- Contractor
- Developer

Evidence Required

- Acoustic Report
- Developer/Contractor Confirmation

Assumed Score	1/1	Contribution to Final Score	0.77%

TPS.
TAYLOR PROJECT SERVICES LLP
BUILDING SERVICES CONSULTANTS

REQUIREMENTS

A maximum of 10 credits are available, where the following (where applicable) measures are met:

EXEMPLARY LEVEL OF PERFORMANCE

Man 03	Responsible Construction Practices
Man 05	Aftercare
Hea 01	Visual Comfort
Hea 02	Indoor Air Quality
Ene 01	Reduction of CO_2 Emissions
Wat 01	Water Consumptions
Mat 01	Life Cycle Impacts
Mat 03	Responsible Sourcing of Materials
Wst 01	Construction Site Waste Management
Wst 02	Recycled Aggregates
Wst 05	Adaptation to climate Change

INNOVATION

One innovation credit can be awarded for each innovation application approved by BRE Global, where the building complies with the criteria defined within an Approved Innovation Application Form.

Inn 01: Approved Innovations

Intent

- The following credits are targeted

Man 03	Responsible Construction Practices

Exemplary level performance
- CCS score of 40 or more, with at least 7 in each of each of the five sections must be achieved.
- A site can be visited by a CCS Monitor more than once and the CCS Certificate will be awarded based on the results of the CCS Monitor's final visit.
- At the final stage of the BREEAM assessment, the number of BREEAM credits awarded should therefore be based on the final visit and the subsequent Monitor's report and certified CCS score.

Responsibility

- Contractor

Evidence Required

- CCS Reports at each stage

Assumed Score **1/10**

Contribution to Final Score **1.00%**

PRE ASSESSMENT CALCULATORS

APPENDICES