HOARE LEA

Station Hill - Phase 1.
Reading.
Lincoln MGT.

SUSTAINABILITY STATEMENT

14 FEBRUARY 2019

Audit Sheet.

Rev.	Date	Description	Prepared	Verified
0	07/12/2018	Draft Issue for Comment	LH	AB/MW
1	14/02/2019	Final Issue for Planning Submission	LH	AB/MW

This document has been prepared for Lincoln MGT only and solely for the purposes expressly defined herein. We owe no duty of care to any third parties in respect of its content. Therefore, unless expressly agreed by us in signed writing, we hereby exclude all liability to third parties, including liability for negligence, save only for liabilities that cannot be so excluded by operation of applicable law. The consequences of climate change and the effects of future changes in climatic conditions cannot be accurately predicted. This report has been based solely on the specific design assumptions and criteria stated herein.

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Executive Summary.

This report describes how Phase 1 of the proposed Station Hill development in Reading, will implement sustainable measures by taking a holistic approach to sustainability. Matters ranging from management, energy and water savings, sourcing of materials, waste management, transport and more will be addressed throughout this report. The purpose of this statement is to promote sustainable development and to integrate the principles of sustainability into the preparation and adoption of plans.

The wider site is bound by Reading Station and Station Hill to the North, hotels and retail to the East and West and Reading Town Centre, Friar Street to the South.

Phase 1 consists of two blocks, E and F, both 12 storeys and connected by two levels of basement below ground. There are a total 538 residential units proposed (370 in Block E and 168 in Block F) with residents' amenity and retail on the ground floor and a community space and car park below.

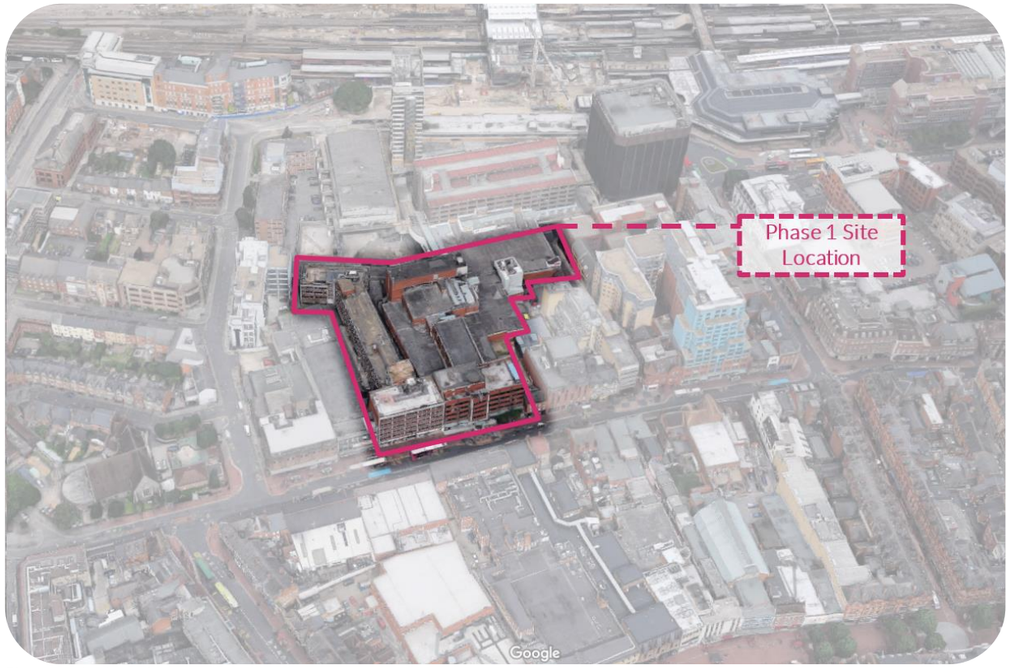


Figure 1 Site Location

This sustainability statement responds specifically to:

- UK National Sustainable Development Policy;
- The Reading Borough Core Strategy and the Supplementary Planning Guidance on Sustainable Design and Construction
- The Reading Borough Draft Local Plan.

A demonstration of the commitment to sustainable design and construction, the commercial spaces will be designed to achieve a BREEAM New Construction 2018 'Excellent' rating as a minimum planning requirement.

The dwellings' target is to achieve reduction in carbon emissions in line with the Draft Local Plan, alongside achieving compliance with the requirements for water consumption in line with Building Regulations Part G.

Among the key sustainability measures which have been incorporated into the design, and the key performance levels targeted, the following should be noted.

- The main contractor will conform to the Considerate Contractors Scheme as well as ensure responsible construction management practices are implemented on site identifying associated risks such as vehicle movement, pollution management, tidiness, health and wellbeing and security.
- A building user guide will be committed to and provided on handover. The guide will provide guidance to help building users access, understand and operate the building efficiently and in a manner in keeping with the original design intent.
- The building services will ensure the sub-metering of major energy consuming systems throughout the building. This will provide efficient monitoring of operational energy consumption, and help identify end uses with a higher energy demand with the intention to reduce consumption where possible.
- Materials used in the development will be responsibly and sustainably sourced and recycled where feasible, and will be chosen with focus on achieving a low overall environmental impact.
- The development will identify the most efficient sanitary fittings available in relation to reducing potable water demand. To achieve BREEAM Excellent, a minimum requirement of at least a 12.5% improvement from baseline performance is required.
- External light pollution mitigation will be addressed on this development.
- The development will improve site ecological biodiversity.
- A construction waste management strategy will be implemented to limit construction waste sent to landfill and encourage the reuse, recovery and best practice waste management techniques.

1. Introduction.

1.1 Proposed Development

This Sustainability Statement has been prepared to address the requirement of Condition 19 & 20 attached to the Outline Planning Permission ref. – 151427 which requires the submission of an Energy & Sustainability Assessment concurrently with the submission of reserved matters for each plot. This document looks at the Sustainability Statement for Phase 1 of the proposed Station Hill development in Reading. The wider site is bound by Reading Station and Station Hill to the North, Hotels and Retail to the East and West and Reading Town Centre, Friar Street to the South.

Phase 1 consists of two blocks, E and F, both 12 storeys and connected by two levels of basement below ground. There are a total 538 residential units proposed (370 in Block E and 168 in Block F) with residents' amenity and retail on the ground floor and a community space and car park below.

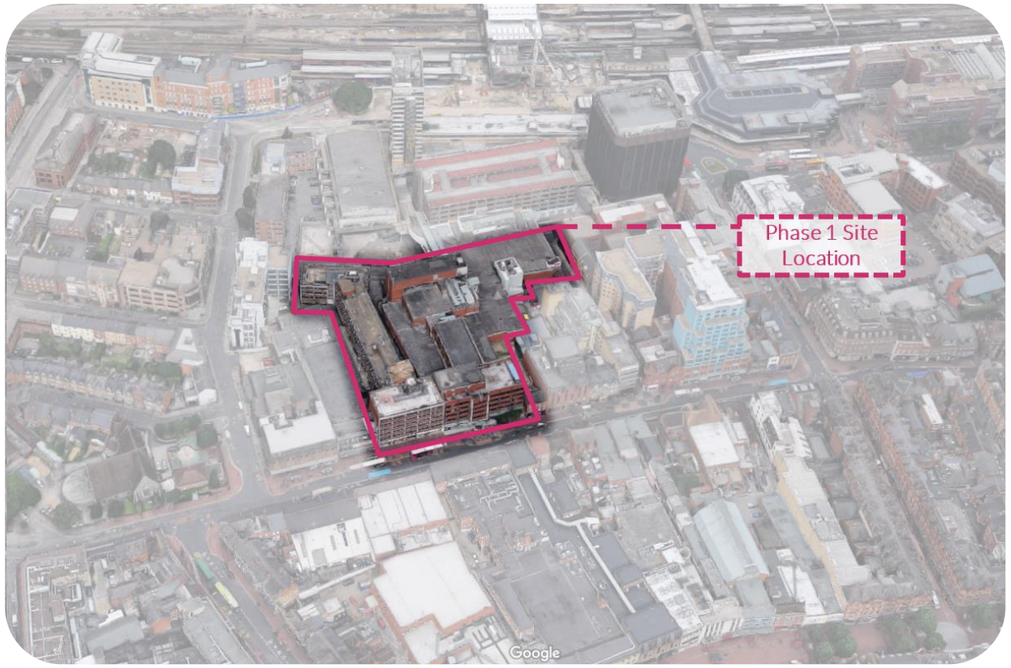


Figure 2 Site location

This sustainability statement responds specifically to:

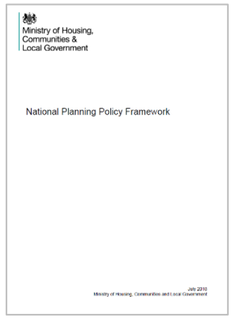
- UK National Sustainable Development Policy;
- The Reading Borough Core Strategy and the Supplementary Planning Guidance on Sustainable Design and Construction
- The Reading Borough Draft Local Plan.

A demonstration of the commitment to sustainable design and construction, the retail and leisure spaces will be designed to achieve a BREEAM New Construction 2018 'Excellent' rating as a minimum planning requirement.

The dwellings' target is to achieve reduction in carbon emissions in line with the Draft Local Plan, alongside achieving compliance with the requirements for water consumption in line with Building Regulations Part G.

2. Policy Review.

2.1 National Planning Guidance



The National Planning Policy Framework, July 2018

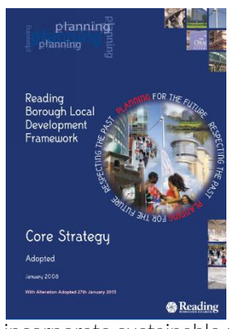
The National Planning Policy Framework (NPPF) was published in July 2018. The NPPF sets out the Government's strategy on the delivery of sustainable development through the planning system. It provides a framework within which locally-prepared plans for housing and other development can be produced.

Planning law requires that applications for planning permission be determined in accordance with the development plan, unless material considerations indicate otherwise. The NPPF must be considered in preparing the development plan, and is a material consideration in planning decisions. Planning policies and decisions must also reflect relevant international obligations and statutory requirements.

The purpose of the planning system is to contribute to the achievement of sustainable development. At a very high level, the objective of sustainable development can be summarised as meeting the needs of the present without compromising the ability of future generations to meet their own needs.

The applicable Development Plan for the Proposed Development is the Reading Borough Draft Local Plan (2018), together with the current Reading Borough Core Strategy (2008). Please refer to the following sections for further details.

2.2 Local Planning Guidance

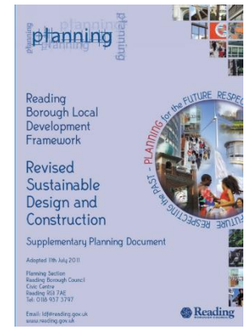


Core Strategy, Reading Borough (2008, with alteration adopted 2015)

The Core Strategy sets out the Council's adopted planning strategy for the Borough. It sets out how planning and development will achieve the Reading 2020 vision for the town. It provides a framework for how Reading can grow in a sustainable way in the future. It also sets out how Reading will accommodate the growth expected of it in the emerging South East Plan and through the council's commitment to New Growth Point status.

Policy CS1 "Sustainable Construction and Design" states that on larges developments, 50% of the provision meets the most up to date BREEAM 'Excellent' standards. All developments should also reduce mains water use and demonstrate that water conservation measures are incorporated. Further to this, developments should incorporate sustainable urban drainage facilities and techniques.

Policy CS2 "Waste Minimisation" states that developments should demonstrate measures to minimise the generation of waste in the construction, use and life of buildings and promote more sustainable approaches to waste management.



Supplementary Planning Document (SPD) – Revised Sustainable Design and Construction (2011)

This Supplementary Planning Document (SPD) aims to promote high standards of Sustainable Design and Construction, providing detail on how to comply with development plan policies set out in the Reading Borough Local Development Framework Core Strategy (2008).

It also provides practical advice on the forms of sustainable design and construction and how these policy requirements are applied at the local level through policy CS1: Sustainable Construction and Design of the adopted Core Strategy.

This document explains further details about Core Strategy's Policy CS1.

Submission Draft Local Plan, Reading Borough (2018)

This Draft Local Plan identifies the amount of development that will take place, the areas and sites where development is expected to be accommodated, and where it will be restricted, and sets out policies for how planning applications will be decided.

This plan has been prepared in accordance with the National Planning Policy Framework (NPPF) which sets out the overall national approach to planning.

Policy CC2 "Sustainable Design and Construction" states that all major non-residential developments are required to meet the most up-to-date BREEAM 'Excellent' standards where possible. In line with this, this policy supersedes the requirement in the Core Strategy's Policy CS1 stating that 50% should meeting BREEAM 'Excellent'.

Policy CC3 "Adaption to Climate Change" states that all development shall minimise the impact of surface water runoff from the development in the design of the drainage system, and where possible incorporate mitigation and resilience measures for any increases in river flooring levels as a result of climate change.

This plan will also replace all existing development plans in Reading once it is adopted. For this planning application, the Core Strategy is still the current development plan, however the Local Plan will also be followed.

3. Strategy.

Sustainability has been a key consideration for this development from a very early stage and consideration of the impact of design proposals and measures on the sustainable credentials of the development has been made throughout the design development to date, and will continue throughout the design and construction process.

Showing a demonstration of the commitment to sustainable design and construction, the commercial spaces will be designed to achieve a BREEAM New Construction 2018 'Excellent' rating as per policy CC2 of the Draft Local Plan 2018.

The BREEAM 2018 Pre-Assessment is included in Appendix A.

The dwellings' target is to achieve reduction in carbon emissions in line with the Draft Local Plan, alongside achieving compliance with the requirements for water consumption in line with Building Regulations Part G.

The following is a summary of the key sustainability issues derived from Reading Borough's Draft Local Plan policies and Development Management policies on Energy and Sustainable Design and Construction form the overall strategy for the project.

3.1 Management

To encourage an integrated design process, the project delivery stakeholders will meet to identify and define roles, responsibilities for each of the key phases of project delivery. In addition, all relevant third-party stakeholders have been consulted by the design team to influence concept design. This also included statement of community involvement.

To ensure that the construction site is managed in an environmentally and socially considerate, responsible and accountable manner, the contractor will be selected with consideration of their ability to comply with the Considerate Constructors Scheme. The contractor will be required to significantly exceed 'compliance' with the criteria of the scheme. The principal contractors and subcontractors' energy and potable water consumption will be monitored and recorded, and all site timber will be legally harvested and traded.

To ensure that commissioning of building services and building management systems (BMS) is managed in a compliant and an efficient manner, a specialist commissioning manager will be appointed during design stage. The contractor will provide a schedule of commissioning and will ensure that all commissioning is done in accordance with current Building Regulations, BSRIA and CIBSE guidelines.

To ensure a properly planned handover that reflects the needs of the building occupants, a Building User Guide and training schedule will be provided to building occupiers and premises managers.

3.2 Health and Wellbeing

The development will be designed to encourage a healthy and safe internal and external environment.

To ensure best practice in visual performance and comfort, artificial internal and external lighting levels and occupant controls will be considered at the design stage. This will ensure a high standard in visual performance is achieved as well as overall comfort for the building occupants.

The buildings acoustic performance will meet the appropriate standards for the type of buildings assessed as defined in Part E of the Building Regulations.

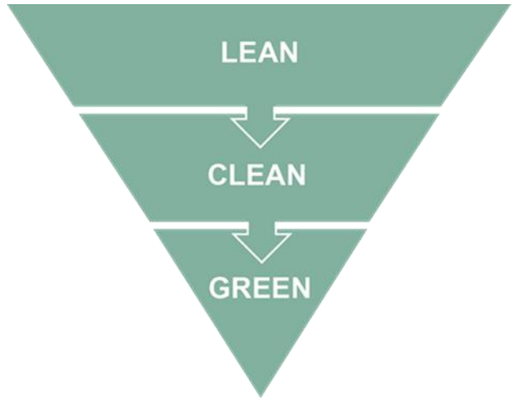
Appropriate acoustic standards, daylighting levels and artificial lighting will also benefit adequate space within the apartment to allow the residents to work from home. Power and data will be provided as per SPG Appendix 4.

Consultation with the Designing Out of Crime Officer will include recommendations which will be considered during the design process.

3.3 Energy

As part of the requirements of the Draft Local Plan the regulated carbon dioxide emissions reduction target for domestic elements is zero carbon.

The Energy Strategy will separately indicate the energy performance of domestic elements of the Proposed Development. Please refer to the Energy Strategy for further details on the performance.



To encourage and facilitate the monitoring of operational energy consumption, all major energy consuming systems will be sub-metered with pulsed output to proposed BMS.

Where applicable, energy efficient light fittings will be installed for all external areas of the development. In addition, they will be automatically controlled for the prevention of operation during daylight hours.

Vertical transportation demand and usage pattern analysis will be carried out and energy efficient features that offer the greatest potential energy savings to lifts will be specified.

3.4 Transport

Phase 1 forms the southern half of the larger Station Hill development site. The northern site is located opposite the southern entrance to Reading mainline station with Phase 1 only 200m walk from the station entrance.

Further to these facilities, the site has easy access to a plethora of bus facilities surrounding the development, served by at least 36 different routes. These facilities, as well as the train line can be identified in Figure 4.

Cycle storage will be provided at the mezzanine and ground floor levels. Car parking spaces will be provided at lower ground and mezzanine level.

The site itself is in a well-connected location providing a wide range of transport facilities and easy access to local services such as recreation/leisure facilities, food outlets, banks and schools.

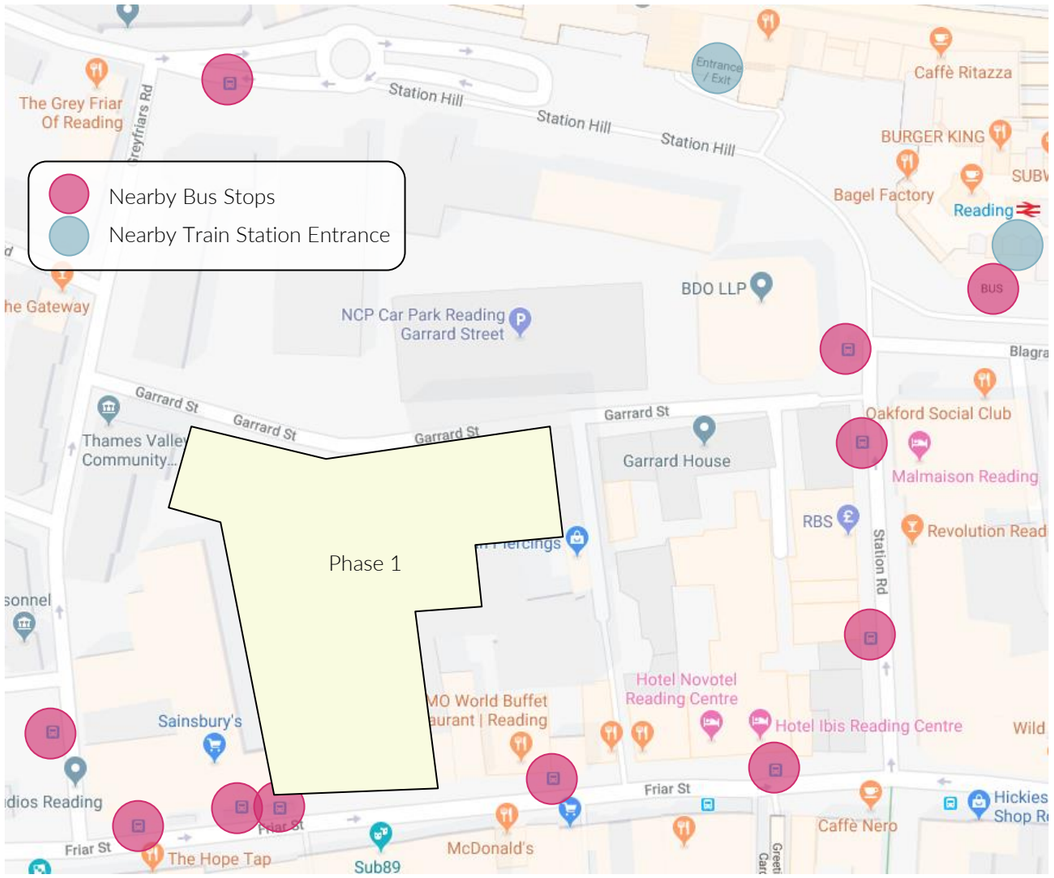


Figure 3 - Nearby bus and train facilities

3.5 Water

Reducing the consumption of potable water will be a significant consideration in the design process. Water use will be reduced as much as possible mainly through the specification of efficient sanitary ware and water efficient fittings. All dwellings will be designed to comply with the requirements of Building Regulations Part G.

A water meter will be supplied on the mains water supply to each of the buildings. This will ensure that water consumption can be monitored and managed and therefore encourage reductions.

A water leak detection system which can detect a major water leak on the mains water supply within the building will be specified.

3.6 Materials

Materials with low environmental impact will be implemented were feasible. Recycled, sustainable and locally sourced materials will be used where possible. All timber and timber based products used will be legally harvested and traded. A full review of the materials specified for the development will be undertaken during the detailed design development stages using the BRE's Green Guide to Specification. Please refer to Figure 5.

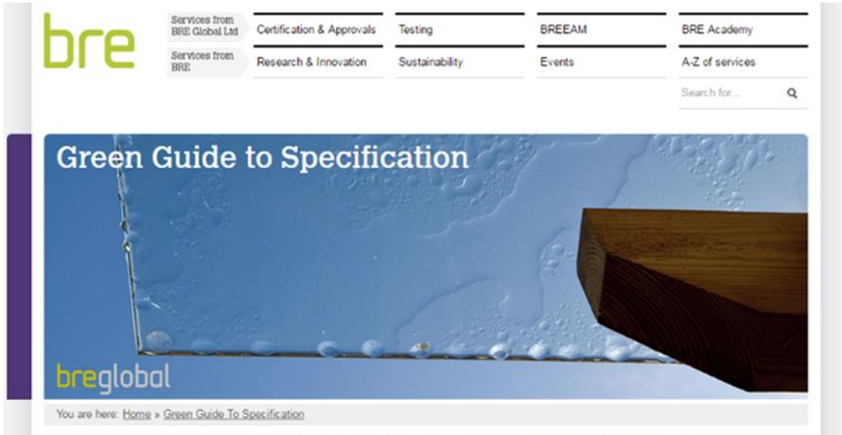


Figure 4 BRE Green Guide to Specification

Thermal insulation used in the building fabric and services will be selected with consideration of their embodied environmental impact relative to its thermal properties.

As part of the design, vulnerable parts of the building will be protected from damage, for example doors in areas of high pedestrian traffic.

3.7 Waste

A pre-demolition audit will be undertaken to maximise the recovery of materials from demolition for subsequent high grade / value applications. The principal contractor will develop a Resource Management Plan (RMP) covering non-hazardous waste related to on-site construction and dedicated off-site manufacture or fabrication generated by building's design and construction. A commitment to achieving a reduction in construction waste per 100m^2 (GIA) will be made.

Communal refuse and recyclable stores will be easily accessible to all users, and sized to cater the segregation and storage of operational recyclable waste volumes by the assessed building, its occupants and activities. Where organic waste is to be stored, a water outlet is provided within the facility for cleaning and hygiene purpose.

3.8 Land Use and Ecology

The landscape and public realm have been designed to ensure full utilisation of the surrounding areas. Figure 5 shows the landscape strategy along Friars Walk.

Figure 5 Proposed Masterplan - Landscaped Areas (Credit – LDA Design)

A suitably qualified ecologist will be appointed to report the ecological value of the site, to recommend protection of any existing ecological features during site clearance and construction, to confirm the change in ecological value, and to provide recommendations and a landscape/habitat management plan to enhance site ecology and long-term impact on biodiversity.

The principal contractor will follow the ecologist's recommendations to protect ecological features, to minimise the impact on existing site ecology and to ensure a long-term impact on biodiversity of the development.

3.9 Pollution

The site is in Flood Zone 1 and will not lead to an increase in surface water run-off; this principal will be followed as far as possible within the drainage design.

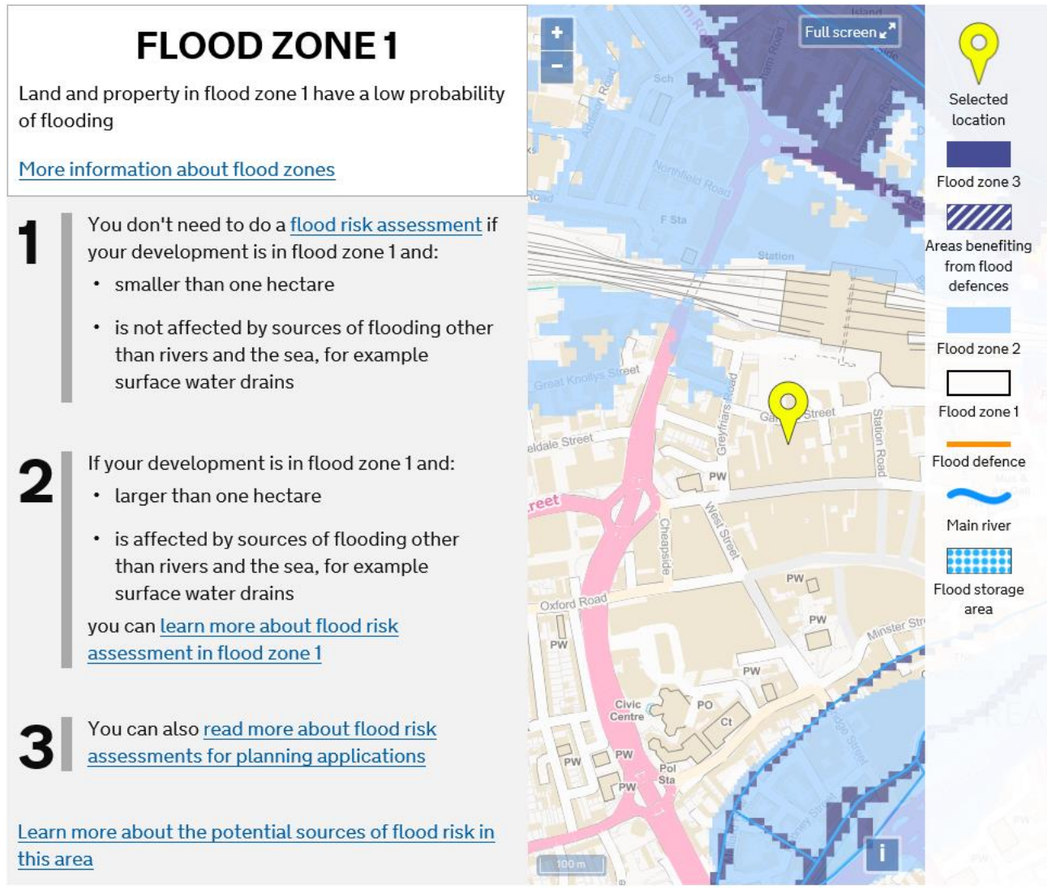


Figure 6 Station Hill - Environment Agency Flood Map

Any external lighting provided will be designed with the consideration of reducing night time light pollution.

4. Conclusion.

The proposals summarised within this report promote a design centred on a low energy and sustainable development with an ambitious carbon performance and sustainable measures benchmarked against the Housing Supplementary Planning Guidance and BREEAM 2018 targets.

A BREEAM Excellent Pre-Assessment has been completed as per policy CC2 of the Draft Local Plan 2018. The Pre-Assessment has provided a design strategy which ensures that a range of sustainable measures, such as those highlighted below, are incorporated into this development.

- The main contractor will conform to the Considerate Contractors Scheme as well as ensure responsible construction management practices are implemented on site identifying associated risks such as vehicle movement, pollution management, tidiness, health and wellbeing and security.
- A building user guide will be committed to and provided on handover. The guide will provide guidance to help building users access, understand and operate the building efficiently and in a manner in keeping with the original design intent.
- The building services will ensure the sub-metering of major energy consuming systems throughout the building. This will provide efficient monitoring of operational energy consumption, and help identify end uses with a higher energy demand with the intention to reduce consumption where possible.
- Materials used in the development will be responsibly and sustainably sourced and recycled where feasible, and will be chosen with focus on achieving a low overall environmental impact.
- The development will identify the most efficient sanitary fittings available in relation to reducing potable water demand. To achieve BREEAM Excellent, a minimum requirement of at least a 12.5% improvement from baseline performance is required and will be achieved.
- External light pollution mitigation will be addressed on this development.
- The development will improve site ecological biodiversity.
- A construction waste management strategy will be implemented to limit construction waste sent to landfill and encourage the reuse, recovery and best practice waste management techniques.

Appendix A: Retail BREEAM 2018 Pre-Assessment.

HOARE LEA

Station Hill - Phase 1.
Reading.
Lincoln MGT.

BREEAM NEW CONSTRUCTION 2018
BREEAM PRE-ASSESSMENT REPORT (RETAIL - SHELL & CORE
14 FEBRUARY 2019

Audit sheet.

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00	07/12/2018	Draft Issue for comment	AB	JD
01	14/02/2019	Final Issue for Planning Submission	AB	JD

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BREEAM Audit box.

BRE registration number	TBC
Licensed assessor	Alexandra Bryant
Assessor support	N/A
BREEAM scheme	BREEEAM New Construction 2018
BREEAM scheme version	1.0
Assessment stage	Pre-Assessment
Technical manual version	0.0

BREEAM Credit filtering box.

Building type and sub-group	Retail
Building floor area	329m^2
Building services (heating)	VRF
Building services (cooling)	VRF
Building services (DHW system)	Electric
Building services (controls)	Standard times/controls
Commercial cold storage systems	N/A
Transportation systems	N/A
Unregulated water uses	Yes (Irrigation – TBC)

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1. Executive Summary.

This report provides an indicative BREEAM 2018 New Construction pre-assessment for the proposed Phase 1 retail unit in the proposed Station Hill development in Reading, Berkshire.

The development falls under the BREEAM Retail category and a 'Shell and Core' pre-assessment has been conducted. The proposed development is targeting a BREEAM 'Excellent' rating as a minimum requirement.

The current anticipated baseline score is 75.80%, is equivalent to a BREEAM 'Excellent' rating, exceeding the minimum required score for a BREEAM 'Excellent' of 70% by 5.50%.

A margin of at least 5% – 7% is recommended above the minimum required score at this stage to secure the target rating taking into account contingency for design changes and potential constraints identified during the construction stage.

Figure 1 summarises the current anticipated 'baseline' score relative to the minimum required score for each BREEAM rating threshold.

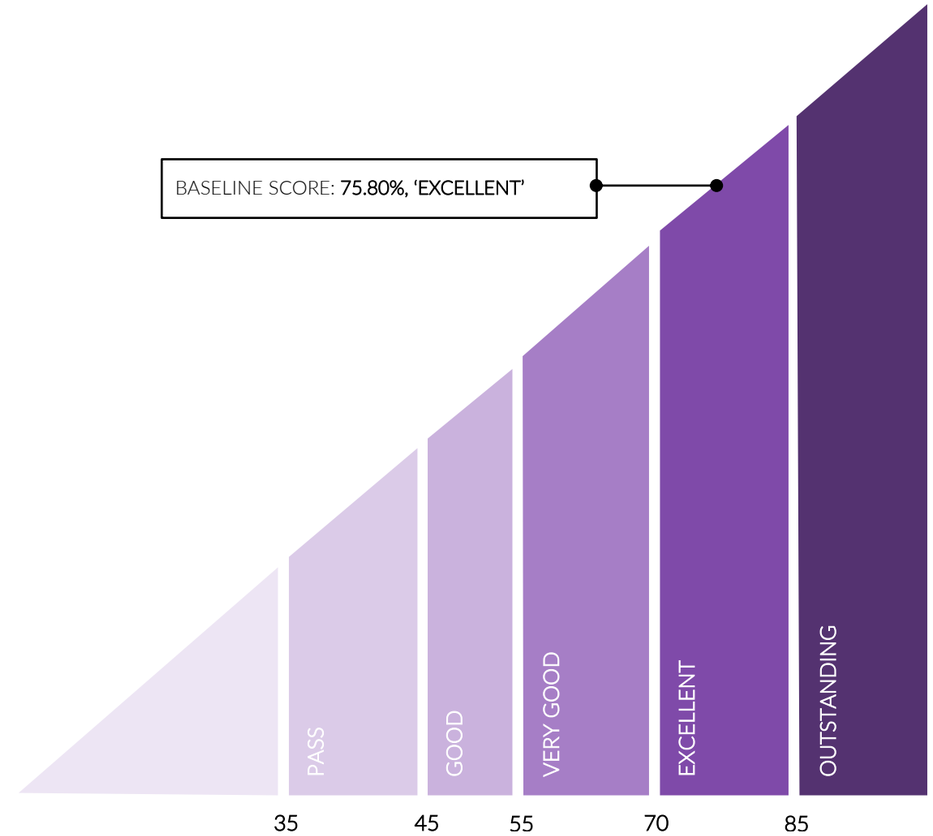

Figure 1: BREEAM 2018 Scale and Anticipated Performance Scores.

2. BREEAM Pre-Assessment.

2.1 Introduction.

This report relates to the proposed new retail areas in the Phase 1 development of Station Hill in Reading, Berkshire. It is recommended the building should be registered under the BREEAM 2018 New Construction (NC) scheme and assessed using the Retail buildings criteria. The building is currently considered to be most suitable to be assessed using a 'Shell and Core' assessment type. The assessment will be targeting a BREEAM 'Excellent' (minimum score 70%) rating as a minimum with an aspiration to achieve greater score where feasible.

2.2 Initial Pre-Assessment.

This pre-assessment has been carried out independently by a qualified BREEAM assessor prior to a review by the project design team. This report sets out a route to achieving the target rating, and highlights the design team members responsible for each credit issue. Credits currently included in the credit score should be reviewed by the design team, and each team member is expected to provide feedback regarding credits under their responsibility, identifying any relevant issues. Once comments have been raised by the project team, the report and the predicted scores will be updated.

The following predicted score has been calculated based upon experience with similar buildings and Hoare Lea's current understanding of the proposed development:

- Baseline score / rating: 75.80% equivalent to a BREEAM 'Excellent'.

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

Refer to Appendix B for detailed credit requirements.

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3. Project Team Members.

The following are members of the design team responsible for the delivery of the proposed development.

Discipline	Organisation
Client / Developer	Lincoln MGT
Workplace Design	TBC
Project Manager	Ramboll
Architect	CallisonRTKL
Building Services Consultant	Hoare Lea
Civils / Drainage / Structural Consultant	Ramboll
Cost Consultant	TBC
Vertical Transportation Consultant	Hoare Lea
Daylighting Consultant	TBC
Air Quality Consultant	Hoare Lea
Energy Assessor	Hoare Lea
Ecologist	TBC
Acoustician	Hoare Lea
Planning Consultant	TBC
Transport Consultant	TBC
Demolition Contractor	TBC

Table 2: Project Team Members.

4. Additional Appointment Confirmation.

In order to achieve the targeted score as outlined in this report a number of additional appointments are required. The relevant consultants/client should confirm their appointment to produce the BREEAM specific evidence requirements. A summary of these credits is provided in the table below.

Table 1: Additional Appointments.

Credits	RIBA Stage	Evidence Required	Responsibility
Man 02: Lifecycle cost and service life planning	RIBA STAGE 2 & RIBA STAGE 4	Elemental life cycle cost plan to be completed at Concept design stage (RIBA Stage 2) AND, Component level life cycle cost plan to be completed by Technical design stage (RIBA Stage 4).	Cost Consultant
Hea 01: Visual comfort	RIBA STAGE 4	2nd /3rd Credit: Daylighting – Daylighting calculations to be provided by daylighting consultant confirming all relevant building areas have complied with lighting levels as outlined in Table 5.1 Minimum values of average daylight factor required AND Table 5.2 Daylight uniformity criteria. OR Table 5.3 Space type and illuminance requirements – both criteria (average illuminance and minimum point illuminance).	Daylighting consultant
Hea 02: Indoor air quality	RIBA STAGE 4	Pre- Requisite: Indoor air quality plan to be produced by Indoor Air Quality consultant considering removal of contaminant sources, dilution and control of contaminant sources, procedures for pre- occupancy flush out, third party testing and analysis, maintain indoor air quality in use. 2nd /3rd Credit: Indoor air quality plan must also consider Emissions from construction products. All the product types listed must meet the emissions limits, testing requirements and any additional requirements listed in Table 5.11: Emission criteria by product type.	Indoor Air Quality Consultant
Hea 04: Thermal comfort	RIBA STAGE 2	Thermal modelling report to be completed prior to (RIBA Stage 2) to assist with the Passive design analysis and Feasibility study	Energy Assessor
Hea 06: Safety	RIBA STAGE 2	A Suitably Qualified Security Specialist (SQSS), conducts an evidence-based security needs assessment (SNA) during or prior to concept design (RIBA Stage 2). Recommendations to be provided detailing effective measures that provide an appropriate level of security to the building and site.	SQSS
Ene 01: Reduction of energy use and CO_2 emissions	RIBA STAGE 2	TM59 Modelling prediction of operational energy performance to be completed.	Energy Assessor
Ene 04: Low carbon design	RIBA STAGE 2	Passive design analysis and Feasibility study to be completed prior to concept design (RIBA Stage 2).	Energy Assessor
Tra 01: Transport assessment and travel plan	RIBA STAGE 1/2	During the feasibility and design stages, a travel plan based on site-specific travel assessment or statement is provided covering the BREEAM criteria as a minimum requirement.	Transport Consultant
Mat 01: Environmental impacts from construction products - Building life cycle assessment	RIBA STAGE 1/2	BREEAM Compliant LCA tool to be submitted demonstrating an assessment of all applicable building elements as identified in the BREEAM NC 2018 Guidance Manual.	Life Cycle Assessment Consultant
Mat 03: Responsible sourcing of construction products	RIBA STAGE 2	A sustainable procurement plan must be used by the design team to guide specification towards sustainable construction products. The plan must be in place before concept design (RIBA Stage 2).	Architect + Structural Consultant + Client
Wst 01: Construction waste management.	RIBA STAGE 2	A pre-demolition audit of any existing buildings, structures or hard surfaces being considered for demolition. This must be used to determine whether refurbishment or reuse is feasible and, in the case of demolition, to maximise the recovery of material for subsequent high grade or value applications.	Demolition Contractor
Land Use and Ecology: (LE 02, LE 03, LE 04: LE 05)	RIBA STAGE 2 & RIBA STAGE 4	Suitably Qualified Ecologist (SQE) to be appointed by RIBA Stage 2 to provide a BREEAM NC 2018 Ecology report for items (LE 02-LE 05) demonstrating compliance is monitored against all relevant UK and EU or internal legislation relating to the ecology of the site. Report to be provided by RIBA Stage 4 LE 05 Only: Landscape and ecology management plan to be provided detailing accordance with appropriate British Standards, as well as the management plan for the site for the first five years after project completion.	Suitably Qualified Ecologist
Pol 03: Flood and surface water management	RIBA STAGE 4	BREEAM Compliant Flood Risk Assessment report to be provided.	Flood Risk Consultant

5. Summary Score Sheet.

The summary table below highlights the list of targeted credits for the current BREEAM NC 2018 pre-assessment. Mandatory credits to achieve a 'Very Good' rating and above are highlighted by **(M).** Additional mandatory credits for an 'Excellent' or 'Outstanding' rating are highlighted by **(M_e) and (M_o)** respectively. Exemplary (innovation) credits are written in brackets; e.g. (+1).

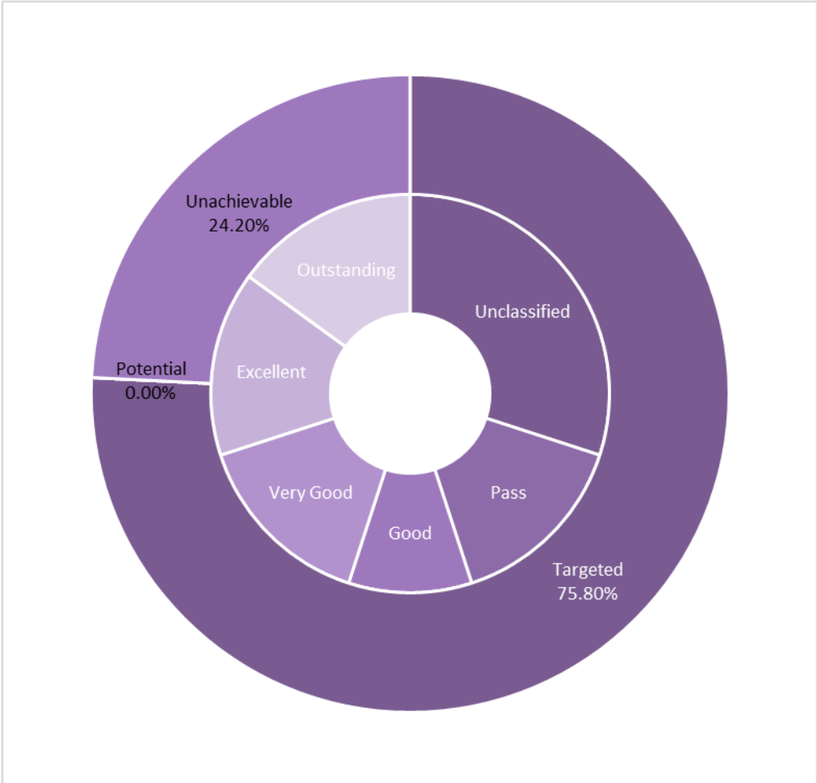
Table 2: BREEAM Target Summary.

Category	Issue	Credits	
		Available	Targeted
Management	Man 01: Project brief and design	4	2
	Man 02: Lifecycle cost and service life planning	4	4
	Man 03: Responsible construction practices (M_e), (M_o)	6	6
	Man 04: Commissioning and handover (M_e), (M_o)	4	3
	Man 05: Aftercare (M_e), (M_o)	N/A	N/A
Health & Wellbeing	Hea 01: Visual comfort	4	4
	Hea 02: Indoor air quality	1	0
	Hea 04: Thermal comfort	2	2
	Hea 05: Acoustic performance	1	1
	Hea 06: Safety	1	1
	Hea 07 Safe and healthy surroundings	2	2
Energy	Ene 01: Reduction of energy use and CO_2 emissions (M_e) (M_o)	12	8
	Ene 02: Energy monitoring (M) (M_e) (M_o)	2	2
	Ene 03: External lighting	1	1
	Ene 04: Low carbon design	3	2
	Ene 05: Energy efficient cold storage	N/A	N/A
	Ene 06: Energy efficient transportation systems	N/A	N/A
	Ene 07 Energy efficient laboratory systems	N/A	N/A
	Ene 08: Energy efficient equipment	N/A	N/A
Transport	Tra 01: Transport assessment and travel plan	2	2
	Tra 02: Sustainable transport measures	10	9
Water	Wat 01: Water consumption (M) (M_e) (M_o)	5	0
	Wat 02: Water monitoring (M) (M_e) (M_o)	1	1
	Wat 03: Water leak detection and prevention	2	1
	Wat 04: Water efficient equipment	1	1
Materials	Mat 01: Environmental impacts from construction products - Building life cycle assessment	7	4
	Mat 02: Environmental impacts from construction products	1	1
	Mat 03: Responsible sourcing of materials (M) (M_e) (M_o)	4	3
	Mat 05: Designing for durability and resilience	1	1
	Mat 06: Material efficiency	1	1
Waste	Wst 01: Construction waste management (M_o)	5	4
	Wst 02: Use of recycled and sustainably sourced aggregates	1	0
	Wst 03: Operational waste (M_e), (M_o)	1	1
	Wst 04 Speculative floor and ceiling finishes	N/A	N/A
	Wst 05: Adaptation to climate change	1	1
	Wst 06: Design for disassembly and adaptability	2	2
Land Use and Ecology	LE 01: Site selection	2	1
	LE 02: Identifying and understanding the risks and opportunities for the project	2	2
	LE 03: Managing negative impacts on ecology	3	3
	LE 04: Change and enhancement of ecological value	4	4
	LE 05: Long term ecology management and maintenance	2	2
Pollution	Pol 01: Impact of refrigerants	3	1
	Pol 02: Local air quality	2	1
	Pol 03: Flood and surface water management	5	4
	Pol 04: Reduction of night time light pollution	1	1
	Pol 05: Reduction of noise pollution	1	1
Innovation	Inn 01: Approved Innovation and Exemplary Level Credits	10	1
Totals	Targeted weighted score rating:	75.80% BREEAM Excellent	

6. Conclusion.

Based upon an initial credit review independent of the project design team, it is anticipated that the Proposed Development could achieve a score of 75.80%, equivalent to a BREEAM 'Excellent' rating.

Figure 2 outlines the Proposed Development scores in each category.



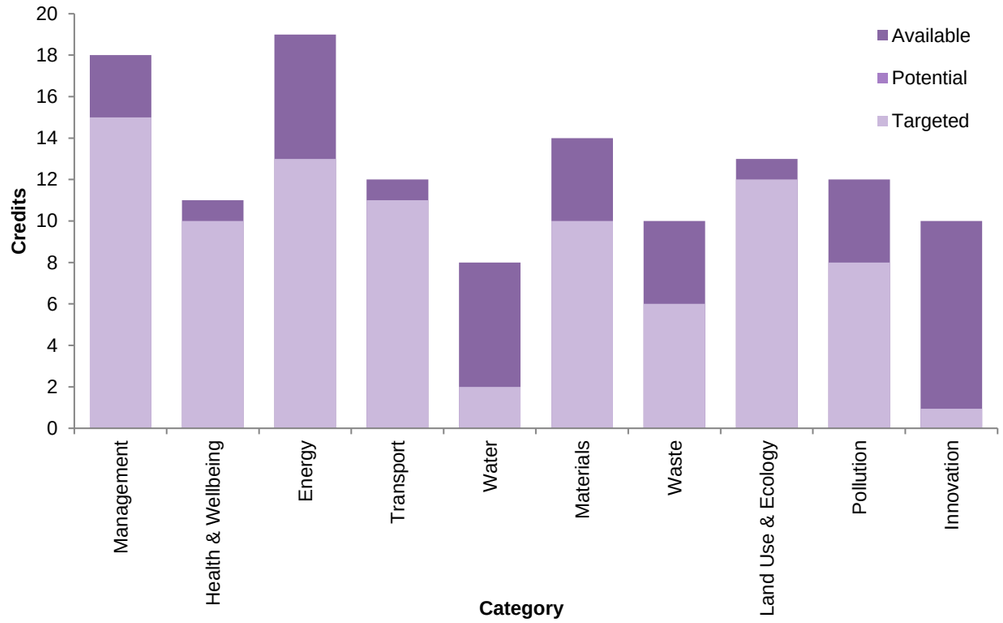


Figure 2: BREEAM Performance Summary and Targeted Credits.

7. Appendix A: Early Action Credits.

Under the BREEAM, there are a number of credits that are time critical and require early action by the design team in order for the credits to be achieved. For these credits, the actions required prior to end of RIBA Stages 1 and 2; and the members of the design team responsible for these are listed below:

Table 3 BREEAM 2018 Early Action Credits (RIBA Stage 1)

Credit Issues	RIBA Stage 1 Actions	Owner
Man 01 Project brief and design	– First credit: Stakeholder consultation: By the end of Stage 1 – definition and engagement of key stakeholders (incl. team member with significant construction experience) and their roles and responsibilities. – Third Credit: Sustainability Champion to be appointed to facilitate the setting and achievement of BREEAM performance targets for the project by Stage 2.	Project Manager BREEAM AP
Ene 07 Energy efficiency laboratory systems	NOT APPLICABLE TO ASSESSMENT – Client engagement during preparation of the brief to determine occupant requirements and define laboratory performance criteria	Client
Mat 06 Material efficiency	Consult with relevant design team members to identify and implement measures for efficient use of materials throughout all key stages. Suggested actions include: – Provide details outlining activities relating to material efficiency – Provide drawings or building integrated model (BIM) calculations showing reduction of material use through design. – Collate meeting notes, construction programme, and responsibilities schedule (indicating parties consulted).	Architect & Structural Engineer & MEP.
LE 04 Enhancing site ecology	The ecologist must be appointed by RIBA Stage 1 to carry out initial surveys, and subsequently provide recommendations in a report at RIBA Stage 2.	Ecologist
LE 05 Long term impact on biodiversity		

Table 4 BREEAM 2018 Early Action Credits (RIBA Stage 2)

Credit Issues	RIBA Stage 2 Actions	Owner
Man 01 Project brief and design	– First credit: Develop roles, responsibilities and contributions schedule detailing relevant roles throughout the project. – Second Credit: Stakeholder consultation by completion of Concept Design – Advisory Professional: BREEAM performance targets to be formally agreed between the client and design/project team no later than Concept Design stage (RIBA Stage 2)	Project Manager Client BREEAM AP
Man 02: Life cycle costing and service life planning	– An elemental level Life Cycle Cost (LCC) analysis has been carried out based on the proposals developed during RIBA Work Stage 2	Cost Consultant
Hea 02 Indoor Air Quality	– Production of an indoor air quality plan (this is a prerequisite item and may block several related credits being achieved)	Air Quality & MEP
Hea 06 Security	– Appoint a Suitability Qualified Security Specialist (SQSS) to conduct a Security Needs Assessment (SNA).	Architect & SQSS
Ene 01 Prediction of operational energy consumption	– Prior to completion of the Concept Design, relevant members of the design team hold a preliminary design workshop focusing on operational energy performance.	Sustainability & MEP
Ene 04 Low carbon design	– Carry out a passive design analysis and a renewable energy systems feasibility study	MEP & Sustainability Consultant
Mat 01 Environmental impacts from construction products - Building life cycle assessment	– Conduct an outline design LCA assessment and options appraisal. This LCA must be submitted to BRE Global prior to planning application submission.	Architect & Civil & Structural Engineer & Cost Consultant
Mat 03 Responsible sourcing of materials	– Development and use a project Sustainable Procurement Plan for the project.	Project Manager & Sustainability Consultant
Mat 06 Material efficiency	– Set targets and report on opportunities and methods to optimise the use of materials. Develop and record the implementation of material efficiency	Architect & Structural Engineer & Civil Engineer
Wst 01 Construction waste management	– Carry out (where relevant) a pre-demolition audit.	Demolition Contractor & Client
Wst 05 Adaptation to climate change	– Conduct a climate change adaption strategy appraisal for structural and fabric resistance	Architect & Structural Engineer
Wst 06 Design for disassembly and adaptability	– Undertake a building-specific disassembly assessment and functional adaptation strategy study. – Subsequently incorporate adaption measures into the design where practical and cost effective at RIBA Stage 4	Architect & Structural Engineer
LE 02 Identifying and understanding the risks and opportunities for the project	– The project team is required to liaise and collaborate with representative stakeholders to identify and consider the ecological outcome for the site.	Ecologist & Project Manager
LE 03 Managing negative impacts on ecology	– Roles and responsibilities have been clearly defined, allocated and implemented to support successful delivery of project outcomes at an early enough stage to influence the concept design or design brief.	Ecologist & Project Manager

Table 4: BREEAM 2018 Early Action Credits (RIBA Stage 2)

8. Appendix B: Detailed Credit Assessment.

Issue	Credit Requirements	Credits		Comments / Actions	Responsible Team Member
		Available	Targeted (Potential)		
Management					
Man 01 Project Brief and Design	First credit - Stakeholder consultation (project delivery): Where evidence provided demonstrated that from RIBA stage 2 (Design Brief) or equivalent the client, building occupier, design team and contractor have met and are involved in contributing to the decision-making process for the project. As a minimum this includes meeting to identify and define their roles, responsibilities and contributions during each key phase. Consideration of contributions must meet specified minimum requirements The project team demonstrates how the project delivery stakeholder contributions and consultation process outcomes influence the following: – Initial Project Brief – Project Execution Plan – Communication Strategy – Concept Design	1	1		Project Manager
	Second credit - Stakeholder consultation (interested parties): Prior to completion of the concept design, the design team must consult with all interested p-arties on matters that cover the minimum consultation content. Furthermore, evidence must be provided demonstrating how the stakeholder contributions and consultation exercise o0utcomes have influences the initial project brief and design. Prior to the completion of RIBA Stage 4, Technical design or equivalent, all interested parties must be provided with consultation feedback in regard to their comments on the design.	1	1		Project Manager
	Pre-Requisite The project team, early in the design process formally agrees strategic performance targets for the project. Third credit – BREEAM AP (concept design): Where evidence provided demonstrates that a BREEAM AP has been appointed to facilitate the setting and achievement of BREEAM performance target(s) for the project and evidence shows that the designed BREEAM performance target(s) has been contractually agreed and demonstrably achieved by project design. The BREEAM AP appointment must be separate to the appointed assessor.	1	-		BREEAM AP
	Fourth credit – BREEAM AP (developed design): Where evidence provided demonstrates that the Third credit is achieved and a BREEAM AP is appointed to monitor progress against the agreed BREEAM performance target(s). This is done by attending key project/design team meetings during the developed design and reporting to the client throughout the process.	1	-		BREEAM AP
Man 02 Life Cycle Impacts	First and second credit - Elemental life cycle cost (LCC): Where evidence provided demonstrates that an elemental Life Cycle Cost (LCC) analysis has been carried out based on the proposals developed during Process Stage 2 (concept design/RIBA Stage 2) or equivalent. The LCC analysis shows an outline LCC plan for the project, appraising a range of options based on multiple cash flow scenarios e.g. 20, 30, 50, or 60 years and a fabric and servicing strategy for the project outlining services component and fit-out options.	2	2	Additional Appointment could be required to include report in cost consultants scope of works. Cost Consultant to confirm.	Client + Cost Consultant

Issue	Credit Requirements	Credits		Comments / Actions	Responsible Team Member
		Available	Targeted (Potential)		
	Third credit - Component level LCC option appraisal: Where evidence provided demonstrates that a component level LCC plan has been developed by end of Process Stage 4 (RIBA Stage 4) including the following component types: – 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 – External spaces Demonstrate using appropriate examples provided by the design team, how the component level LCC plan has been used to influence building and systems design/specification to minimise life cycle costs and maximise critical value.	1	1	As above.	Client + Cost Consultant
	Fourth credit - Capital cost reporting: Where evidence provided demonstrates reporting of the capital cost for the building in pounds per square metre (£/m^2) via the BREEAM Assessment Scoring and Reporting tool, Assessment Issue Scoring tab, Management section.	1	1	As above.	Client + Cost Consultant
Man 03 (M_e, M_o) Responsible Construction Practices Mandatory: – One credit (considerate construction management) for Excellent – Two credits (considerate construction management) for Outstanding	Pre-Requisite All timber and timber based products used on the project is 'legally' harvested and traded timber First credit - Environmental management: Evidence which demonstrates that the principle contractor operates an environmental management system (EMS) covering main operations e.g. third party certified to ISO 14001/EMAS or equivalent standard or have a structure that is in compliance with BS 8555-2003 and has reached stage 4 of implemented stage. Evidence that the principle contractor implements best practice pollution policies and procedures on-site in accordance with Pollution Prevention Guidelines.	1	1		Client + Contractor
	Pre-Requisite The client and the contractor must formally agree performance targets. Second credit – BREEAM AP (site): Evidence which demonstrates that a BREEAM AP is appointed to monitor the project to ensure ongoing compliance with relevant sustainability performance/process criteria. The defined BREEAM performance target forms a requirement of the principal contractor's contract, and to achieve this credit in final post construction phase of assessment the BREEAM-related performance target must be demonstrably achieved by the project.	1	1	Note: This does not form part of the BREEAM assessor's standard scope of works and would need to be an additional appointment by the Client or Contractor. To be included as part of the Contractor's Requirements.	Client + Contractor
	Third and fourth credit – Responsible construction management: Route one: Using the BREEAM checklist - up to two credits: One credit – Risk evaluation and implementation Appoint a dedicated person to be responsible for monitoring and reporting on activities against risk evaluation documents collected. The principal contractor evaluates the risks (on-site and off-site), plans and implements actions to minimise the identified risks, covering the following, where appropriate: – Vehicle movement on and near site – Pollution management – Tidiness – Health and wellbeing – Security processes One credit – Training, awareness, monitoring and reporting Achieve criteria related to either providing specific training awareness or training activities, OR, specific monitoring and reporting exercises, including accidents, near misses and community feedback.	2	2		Client + Contractor

Issue	Credit Requirements	Credits		Comments / Actions	Responsible Team Member
		Available	Targeted (Potential)		
	An exemplary level credit is available for achieving both of the above. Route two: Using a compliant considerate construction scheme - one credit (maximum): The principal contractor complies with the criteria of a 'compliant' organisational, local or national considerate construction scheme and their performance against the scheme has been confirmed by independent assessment and verification				
	Fifth and sixth credit - Monitoring of construction-site impacts: Where evidence provided demonstrates the responsibility has been assigned to an individual for monitoring, recording and reporting energy use, water consumption and transport data from all on-site construction processes throughout the build programme.	2	2		Client + Contractor
Man 04 (M), (M_e), (M_o) Commissioning and Handover ⚠ Mandatory: – One credit (commissioning test schedule and responsibilities) and criterion 11 (Building User Guide for for Very Good and above	First credit - Commissioning and testing schedule and responsibilities: Where evidence provided demonstrates a schedule of commissioning and testing that identifies and includes a suitable timescale for commissioning and re-commissioning of all complex and non-complex building services and control systems and testing and inspecting building fabric, and that all commissioning is done in accordance with current Building Regulations, BSRIA and CIBSE guidelines. An appropriate project team member(s) is appointed to monitor and programme pre-commissioning, testing, and where necessary, re-commissioning on behalf of the client The principal contractor accounts for the commissioning and testing programmes, responsibilities and criteria within their budget and main programme of works, allowing for sufficient time to complete commissioning and testing prior to handover. Specific requirements relate to BMS commissioning	1	1		Contractor
	Second credit - Commissioning - design and preparation: Where evidence provided demonstrates a specialist commissioning manager is appointed during the design stage with responsibility for: – Undertaking design reviews – Providing commissioning management input – Management of commissioning and performance testing.	1	1	Additional appointment could be required to ensure a specialist commissioning manager will undertake the outlined responsibilities. Client / Project Manager to confirm.	Client + Project Manager + Contractor
	Third credit - Testing and inspecting building fabric: Where credit 1 is achieved and evidence provided demonstrates that the integrity of the building fabric is quality assured through compliant post construction testing and inspection. Any defects identified in the thermographic survey or airtightness testing reports are rectified prior to building handover and close out.	1	-		Contractor
	Fourth credit - Handover: Where evidence provided demonstrates that Building User Guides are provided and are appropriate to all users of the building (general users including staff and if applicable residents, as well as the non-technical facilities management team/building manager). This must be presented to the building user first and amended to suit the occupier's needs. A training schedule is prepared for building occupiers/premises mangers, timed appropriately around handover and proposed occupation plans in addition to training for building occupiers (non-technical building users).	1	1		Contractor

Issue	Credit Requirements	Credits		Comments / Actions	Responsible Team Member
		Available	Targeted (Potential)		
Man 05 (M_e), (M_o) Aftercare Mandatory: – One credit (commissioning implementation) for Excellent – One credit (commissioning implementation) for Outstanding	First credit - Aftercare support There is (or will be) operational infrastructure and resources in place to provide aftercare support to the building occupier(s), which includes the following as a minimum: a. A meeting programmed to occur between the aftercare team/individual and the building occupier/management (prior to initial occupation, or as soon as possible thereafter) to: i. Introduce the aftercare team or individual to the aftercare support available, including the Building User Guide (where existing) and training schedule/content. ii. Present key information about the building including the design intent and how to use the building to ensure it operates as efficiently and effectively as possible. iii. On-site facilities management training, to include a walkabout of the building and introduction to and familiarisation with the building systems, their controls and how to operate them in accordance with the design intent and operational demands. b. Initial aftercare support provision for at least the first month of building occupation, e.g. on-site attendance on a weekly basis to support building users and management (this could be more or less frequent depending on the complexity of the building and building operations). c. Longer term aftercare support provision for occupants for at least the first 12 months from occupation, e.g. a helpline, nominated individual or other appropriate system to support building users/management. There is (or will be) operational infrastructure and resources in place to coordinate the collection and monitoring of energy and water consumption data for a minimum of 12 months, once the building is occupied. This is done to facilitate analysis of discrepancies between actual and predicted performance with a view to adjusting systems and/or user behaviours accordingly.	N/A	N/A		Client + Occupant + Contractor
	Second credit - Commissioning - implementation The following seasonal commissioning activities will be completed over a minimum 12-month period, once the building becomes substantially occupied: a. Complex systems - Specialist Commissioning Manager: i. Testing of all building services under full load conditions, i.e. heating equipment in mid-winter, cooling/ventilation equipment in mid-summer, and under part load conditions (spring/autumn). ii. Where applicable, testing should also be carried out during period of extreme (high or low) occupancy. iii. Interviews with building occupants (where they are affected by the complex services) to identify problems or concerns regarding the effectiveness of the systems. iv. Produce monthly reports comparing sub-metered energy performance to the predicted b. Re-commissioning of systems (following any work needed to serve revised loads), and incorporating any revisions in operating procedures into the operations and maintenance (O&M) manuals. c. Simple systems (naturally ventilated) - external consultant/aftercare team/facilities manager: i. Review thermal comfort, ventilation, and lighting, at three, six and nine-month intervals after initial occupation, either by measurement or occupant feedback. ii. Take all reasonable steps to re-commission systems following the review to take account of deficiencies identified and incorporate any relevant revisions in operating procedures into the O&M manuals.	N/A	N/A		Client + Occupant + Contractor + MEP
	Third credit - Post Occupancy Evaluation The client or building occupier makes a commitment to carry out a post occupancy evaluation (POE) exercise one year after initial building occupation. The POE is carried out by an independent third party and needs to cover: a. A review of the design intent and construction process (review of design, procurement, construction and handover processes). b. Feedback from a wide range of building users including Facilities Management on the design and environmental conditions of the building covering:	N/A	N/A		Client + Occupant + Contractor

Issue	Credit Requirements	Credits		Comments / Actions	Responsible Team Member
		Available	Targeted (Potential)		
	i. Internal environmental conditions (light, noise, temperature, air quality) ii. Control, operation and maintenance iii. Facilities and amenities iv. Access and layout v. Other relevant issues vi. Sustainability performance (energy/water consumption, performance of any sustainable features or technologies e.g. materials, renewable energy, rainwater harvesting etc.) The client or building occupier makes a commitment to carry out the appropriate dissemination of information on the building's post occupancy performance. This is done to share good practice and lessons learned and inform changes in user behaviour, building operational processes and procedures, and system controls.				
Health and Wellbeing					
Hea 01 Visual Comfort	First credit - Control of glare from sunlight Glare control assessment is developed to identify how areas at risk of glare are protected. The glare control assessment would also identify where areas deemed not at risk are located. In addition, a glare control strategy should be developed in tandem with the lighting strategy to ensure that glare is minimised whilst avoiding potential conflict with the lighting control systems, therefore avoiding higher than expected energy consumption.	N/A	N/A	Not applicable to shell and core assessments.	Client + Architect + MEP + Energy Assessor
	Second and third credits – Average daylighting: – Where evidence provided demonstrates that the relevant building areas meet good practice daylighting criteria as outlined below, in addition to room depth criterion, daylight uniformity or annual illuminance levels. Retail Buildings (2 credits) - Sales area to ensure at least 35% of the area achieves a 200-lux point daylight illuminance for 2650 hours per year or more AND, - At least 80% of the area achieves at least 200 lux for 2650 hours per year or more OR at least 60 lux for 2650 hours per year or more.	2	2	Additional appointment is normally required to ensure BREEAM 2018 daylighting criteria is complied with. Daylighting Consultant to confirm.	Architect + Daylight Consultant
	Fourth credit - View out: Where evidence provided demonstrates that 95% of floor areas in relevant building areas are within 7m of a wall which has a window or permanent opening that provides an adequate view out. The window/opening must be ≥20% of the surrounding wall area.	1	1		Architect
	Fifth credit - Lighting Levels and Controls: Where evidence provided demonstrates that internal and external lighting is designed in accordance with the required standard. – All fluorescent and compact fluorescent lamps are fitted with high frequency ballasts. – Internal lighting in all relevant areas of the building is designed to provide an illuminance (lux) level appropriate to the tasks undertaken. This can be demonstrated through a lighting design strategy that provides illuminance levels in accordance with the SLL Code for Lighting 2012 and any other relevant industry standard. – For areas where computer screens are regularly used, the lighting design complies with CIBSE Lighting Guide 7 sections 3.3, 4.6, 4.7, 4.8 and 4.9. – For external areas, lighting provided is specified in accordance with BS 5489-1:2013 Lighting of roads and public amenity areas , Code of Practice for the design of road lighting, BSI, 2013 and BS EN 12464-2:2014. Light and lighting – lighting of work places – Part 2: Outdoor work places, External lighting should provide illuminance levels that enable users to perform outdoor visual tasks efficiently and accurately, especially during the night.	1	1		MEP

Issue	Credit Requirements	Credits		Comments / Actions	Responsible Team Member
		Available	Targeted (Potential)		
	Lighting should be zoned as follows: – In office areas, zones of no more than four workplaces – Workstations adjacent to windows/atria and other building areas separately zoned and controlled – Seminar and lecture rooms: zoned for presentation and audience areas – Library spaces: separate zoning of stacks, reading and counter areas – Teaching space or demonstration area – Whiteboard or display screen – Auditoria: zoning of seating areas, circulation space and lectern area – Dining, restaurant, café areas: separate zoning of servery and seating/dining areas – Retail: separate zoning of display and counter areas – Bar areas: separate zoning of bar and seating areas – Wards or bedded areas: zoned lighting control for individual bed spaces and control for staff over groups of bed spaces – Treatment areas, dayrooms, waiting areas: zoning of seating and activity areas and circulation space with controls accessible to staff.				
	Exemplary credit - Daylighting Where evidence is provided which demonstrates that the exemplary level daylight requirements are achieved, as outlined below, in addition to the exemplary level daylight illuminance levels: All building types (excluding retail): one credit – Functions as identified in the standard criteria (multi storey buildings) All building types (single storey buildings): 3.0%, 80% area – Functions as identified in the standard criteria (single storey buildings): 4.0%, 80% area – Prisons and court cells: 2.0%, 80% area – Prison internal association/atrium area: 5.0%, 80% area	1	0		Architect + Daylight Consultant
	Exemplary credit - Internal and external lighting levels, zoning and control To achieve an exemplary performance credit for internal and external lighting levels, zoning and control lighting in each zone can be manually dimmed by occupants down to 20% of the maximum light output using dimmer switches positioned in accessible locations. Dimming and control gear should avoid flicker and noise.	1	0		MEP
Hea 02 Indoor Air Quality	Prerequisite - Indoor Air Quality (IAQ) plan: Where evidence provided demonstrates that an indoor air quality plan has been produced with the objective of facilitating a process that leads to design, specification and installation decisions and actions that minimise indoor air pollution during occupation of the building.	✓	×	Additional appointment required if criteria are targeted.	IAQ specialist
	First credit - Ventilation: For air-conditioned and mixed-mode buildings: the building's air intakes and exhausts are over 10m apart to minimise recirculation and intakes are over 20m from sources of external pollution or designed in accordance with BS EN 13779:2007 Annex A2. In addition, the building must be designed to provide fresh air and minimise internal pollutants (and ingress of external polluted air into the building) in accordance with the criteria of the relevant standard for ventilation. If naturally ventilated the openable windows/ventilators must be over 10m from sources of external pollution. Not applicable to 'Shell and Core' route. Areas of the building subject to large and unpredictable or variable occupancy patterns have CO_2 or air quality sensors specified and: – In mechanically ventilated spaces, the sensor(s) are linked to the mechanical ventilation system and provide demand-controlled ventilation to the space.	1	0	MEP to confirm if this credit is achievable.	Architect + MEP

Issue	Credit Requirements	Credits		Comments / Actions	Responsible Team Member
		Available	Targeted (Potential)		
	– In naturally ventilated spaces, the sensors either have the ability to alert the building owner/manager when CO_2 levels exceed the recommended set point, or are linked to controls with the ability to adjust the quantity of fresh air, i.e. automatic opening windows/roof vents.				
	Second and Third credit - Emissions from construction products Where evidence provided demonstrates that the indoor air quality plan has been developed and all decorative paints and varnishes meet the emission requirements with regards to VOCs.	N/A	N/A		Architect + Interior Designer
	Fourth credit – Post Construction indoor air quality measurement Where evidence provided demonstrates that the indoor air quality plan has been developed and that formaldehyde concentration levels is measured at post construction (but pre-occupancy) are found to be less than or equal to 100µg/m^3. The total volatile organic compound (TVOC) concentration is measured post construction (but pre-occupancy) and found to be less than 300µg/m^3 over 8 hours, in line with the Building Regulation requirements. Where levels are found to exceed these limits, the project team confirms the measures that have or will be/been undertaken in accordance with the IAQ plan to reduce the TVOC and formaldehyde levels to within the above limits.	N/A	N/A		Contractor + IAQ Consultant
	Exemplary credit: One credit – All product categories listed meet the testing requirements and emission levels criteria for Volatile Organic Compound (VOC) emissions (listed in the table in BRE guidance). – For products B – F, listed the formaldehyde emission levels have been measured and found to be less than or equal to 0.06mg/m^3 air in accordance with the approved testing standards in Table 20.	N/A	N/A		Contractor + IAQ Consultant
Hea 04 Thermal Comfort	First credit: Thermal modelling Where evidence provided demonstrates that thermal modelling has been carried out using software in accordance with CIBSE AM11. The modelling demonstrates that the building design and services strategy can deliver thermal comfort levels in occupied spaces in accordance with the criteria set out in CIBSE Guide A Environmental Design.	1	1	BREEAM specific thermal modelling and report is required. Additional fee is required.	Energy Assessor
	Second credit: Design for future thermal comfort Where credit 1 is achieved and evidence provided outlines that the thermal modelling demonstrates that the building design and services strategy can deliver thermal comfort levels in occupied spaces in accordance with the criteria set out in CIBSE Guide A Environmental Design for a projected climate change environment. Where these levels are not met the project, team demonstrates how the building has been adapted or designed to be easily adapted in future using passive design solutions. Additionally, evidence is provided for air-conditioned buildings, the PMV and PPD indices based on the modelling are reported via the BREEAM assessment scoring and reporting tool.	1	1	BREEAM specific thermal modelling and report is required. Additional fee is required	Energy Assessor
	Third credit: Thermal zoning and controls The thermal modelling analysis has informed the temperature control strategy for the building and its users. The strategy for proposed heating/cooling system(s) demonstrates that it has addressed the following: – Zones within the building and how the building services could efficiently and appropriately heat or cool these areas. For example, consider the different requirements for the central core of a building compared with the external perimeter adjacent to the windows. – The degree of occupant control required for these zones, based on discussions with the end user (or alternatively building type or use specific design guidance, case studies, feedback) considers: – User knowledge of building services	N/A	N/A		MEP

Issue	Credit Requirements	Credits		Comments / Actions	Responsible Team Member
		Available	Targeted (Potential)		
	– Occupancy type, patterns and room functions (and therefore appropriate level of control required) – How the user is likely to operate or interact with the system(s), e.g. are they likely to open windows, access thermostatic radiator valves (TRV) on radiators, change air-conditioning settings etc. – The user expectations (this may differ in the summer and winter) and degree of individual control (i.e. obtaining the balance between occupant preferences, for example some occupants like fresh air and others dislike draughts). – How the proposed systems will interact with each other (where there is more than one system) and how this may affect the thermal comfort of the building occupants. – The need or otherwise for an accessible building user actuated manual override for any automatic systems.				
Hea 05 Acoustic Performance	Once credit available for shell and core retail development. Up to four credits can be awarded where the following criteria is met. Internal indoor ambient noise levels – One credit. Achieve indoor ambient noise levels that comply with the design ranges given in section 7 of BS8233:2014. A programme of pre-completion acoustic testing is carried out by a compliant test body in accordance with the acoustic testing and measurement procedures as outlined in the BREEAM NC 2018 Guidance Manual.	1	1	Acoustician to confirm compliance with the credit.	Acoustician + Architect
Hea 06 Security	One credit - Safe access: Where evidence provided demonstrates that a Suitably Qualified Security Specialist (SQSS) conducts an evidence-based Security Needs Assessment during or prior to Concept Design (RIBA Stage 2). The recommendations from the SQSS must be implemented into the design.	1	1	Security Needs Assessment is required.	Architect + SQSS
	Exemplary level criteria A compliant risk based security rating scheme has been used e.g. SABRE. The performance against the scheme has been confirmed by independent assessment and verification.	1	0		SQSS

Hea 07
Safe and healthy surroundings
	First credit - Safe and healthy surroundings:
	Where external site areas form part of the assessed development the following apply:
	– Dedicated and safe cycle paths are provided from the site entrance to any cycle storage, and connect to offsite cycle paths where applicable.
	– Dedicated and safe footpaths are provided on and around the site providing suitable links for the following:
	  – The site entrance to the building entrance,
	  – Car parks (where present) to the building entrance
	  – The building to outdoor space
	  – Connecting to off-site paths where applicable.
	– Pedestrian drop-off areas are designed off, or adjoining to, the access road and should provide direct access to other footpaths.
	
	Where vehicle delivery access and drop-off areas form part of the assessed development, the following apply:
	– Delivery areas are not accessed through general parking areas and do not cross or share the following:
	  – pedestrian and cyclist paths
	  – outside amenity areas accessible to building users and general public.
	– There is a dedicated parking or waiting area for goods vehicles with appropriate separation from the manoeuvring area and staff and visitor car parking.
	– Parking and turning areas are designed for simple manoeuvring according to the type of delivery vehicle likely to access the site, thus avoiding the need for repeated shunting.
	
	Second credit - Outside space
		2	2		Architect

<table>
<tr><th rowspan="2">Issue</th><th rowspan="2">Credit Requirements</th><th colspan="2">Credits</th><th rowspan="2">Comments / Actions</th><th rowspan="2">Responsible Team Member</th></tr>
<tr><th>Available</th><th>Targeted (Potential)</th></tr>
<tr><td></td><td>There is an outside space providing building users with an external amenity area.</td><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="6">Energy</td></tr>
<tr><td>Ene 01 (M_e) (M_o)
Reduction of CO_2 emissions
Mandatory:
– Four credits for Excellent
– Six credits (energy performance) and 4 credits (energy modelling and reporting) for Outstanding</td><td>
<table>
<tr><th></th><th></th><th colspan="2">Minimum Standards</th></tr>
<tr><th>BREEAM credits</th><th>EPR_{NC}</th><th>Rating</th><th>Minimum Requirements</th></tr>
<tr><td>1</td><td>0.1</td><td rowspan="3"></td><td rowspan="3">Requires a performance improvement progressively better than the relevant national building regulations compliant standard</td></tr>
<tr><td>2</td><td>0.2</td></tr>
<tr><td>3</td><td>0.3</td></tr>
<tr><td>4</td><td>0.4</td><td rowspan="2">Excellent</td><td rowspan="2">Requires 4 credits to be achieved (equivalent to an EPRNC of at least 0.4).</td></tr>
<tr><td>5</td><td>0.5</td></tr>
<tr><td>6</td><td>0.6</td><td rowspan="4">Outstanding</td><td rowspan="4">Requires 6 credits to be achieved (equivalent to an EPRNC of at least 0.6) and 4 credits for Energy Modelling and reporting.</td></tr>
<tr><td>7</td><td>0.7</td></tr>
<tr><td>8</td><td>0.8</td></tr>
<tr><td>9</td><td>0.9</td></tr>
</table>
One - nine credits:
Where evidence provided demonstrates an improvement in the energy efficiency of the building's fabric and services and therefore achieves lower building operational related CO_2 emissions.
The number of credits achieved is determined by comparing the Energy Performance Ratio for New Construction (EPR_{NC}) with the benchmarks in the table above.</td><td>9</td><td>4</td><td>To achieve outstanding performance, a minimum of 6 credits is required to be achieved for the buildings Energy Performance Ratio.</td><td>MEP/ Energy Assessor</td></tr>
<tr><td></td><td>Four credits - Prediction of operational energy consumption
Prerequisite
Prior to completion of the Concept Design, relevant members of the design team hold a preliminary design workshop focusing on operational energy performance.

Four credits – Energy modelling and reporting
Undertake additional energy modelling during the design and post-construction stage to generate predicted operational energy consumption figures and report predicted energy consumption targets by end use, design assumptions and input data (with justifications). In addition, credits are achieved for completing a risk assessment to highlight any significant design, technical, and process risks that should be monitored and managed throughout the construction and commissioning process.</td><td>4</td><td>4</td><td>Additional modelling is normally required in order for criteria to be undertaken by an energy assessor.</td><td>MEP/ Energy Assessor</td></tr>
<tr><td></td><td>Exemplary level criteria Up to two credits - Beyond zero net regulated carbon
The building achieves an EPR NC ≥ 0.9 and zero net regulated CO_2 emissions.

Energy generation from on-site and near-site LZC sources is sufficient to offset carbon emissions from regulated energy use plus a percentage of emissions from unregulated energy use. Credits are achieved based on the percentage of additional emissions from unregulated energy that are offset by LZC sources.</td><td>3</td><td>0</td><td></td><td>MEP/ Energy Assessor</td></tr>
</table>

<table>
<tr><th rowspan="2">Issue</th><th rowspan="2">Credit Requirements</th><th colspan="2">Credits</th><th rowspan="2">Comments / Actions</th><th rowspan="2">Responsible Team Member</th></tr>
<tr><th>Available</th><th>Targeted (Potential)</th></tr>
<tr><td rowspan="2"></td><td>Exemplary Criteria Three credits - Carbon negative
The building is deemed carbon negative where > 100% (see Table 6.2 below) of carbon emissions from unregulated (and regulated) energy use are offset by energy generated from on-site and near-site LZC sources
<table><tr><th>Exemplary performance credits</th><th>Equivalent % criteria</th></tr><tr><td>1</td><td>10%</td></tr><tr><td>2</td><td>50%</td></tr><tr><td>3</td><td>>100%</td></tr></table></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Exemplary Criteria Two credits – Post-occupancy stage
Achieve maximum available credits in Ene02 Energy monitoring. In addition, preschools, primary schools, law courts, prisons and multi-residential buildings must separately monitor relevant function areas or departments in accordance with Assessment scope - Criterion 4.

The client or building occupier commits funds to pay for the post occupancy stage. This requires an assessor to be appointed and to report on the actual energy consumption compared with the targets set in criterion 4 above.

The energy model (criterion 3 above) is:
i. Submitted to BRE and
ii. Retained by the building owner.</td><td>2</td><td>0</td><td></td><td>MEP/ Sustainability</td></tr>
<tr><td rowspan="2">Ene 02 (M), (M_e), (M_o)
Energy monitoring
⚠
Mandatory:
One credit for Very Good and above.</td><td>First credit: Sub-metering of major energy consuming systems
Where evidence provided demonstrates that the energy metering systems are installed that enable 90% of the estimated annual energy consumption of each fuel to be assigned to the various end-use categories of energy consuming systems. For buildings with a total useful floor area >1000m^2 are metered using an appropriate energy monitoring and management system and systems in smaller buildings are metered either with an energy monitoring and management system or separate assessable energy sub-meters with pulsed or other open protocol communication outputs, to enable future connection to an energy monitoring and management system.

The end energy consuming use is identifiable to the building user through labelling or data outputs.

Large-scale medical equipment/systems can be excluded when assessing compliance with this issue (although it is recommended that sub-metering is considered in such instances).</td><td>1</td><td>1</td><td></td><td>MEP</td></tr>
<tr><td>Second credit: Sub-metering of high energy load and tenancy areas
An accessible energy monitoring and management system, or separate accessible energy sub-meters with pulsed or other open protocol communication outputs, to enable future connection to an energy monitoring and management system are provided, covering a significant majority of the energy supply to tenanted areas or, in the case of single occupancy buildings, relevant function areas or departments within the building/unit.</td><td>1</td><td>1</td><td></td><td>MEP</td></tr>
<tr><td>Ene 03
External Lighting</td><td>One credit:
Where evidence provided demonstrates that the external lighting has an average initial luminous efficacy of the external light fittings within the construction zone is not less than 70 luminaire lumens per circuit watt and that all external light fittings are automatically controlled for prevention of operation during daylight hours and presence detection in areas of intermittent pedestrian traffic.</td><td>1</td><td>1</td><td></td><td>MEP</td></tr>
</table>

Issue	Credit Requirements	Credits		Comments / Actions	Responsible Team Member
		Available	Targeted (Potential)		
Ene 04 Low Carbon Design	First credit - Passive design analysis: Where the first credit of Hea 04 (Thermal comfort) is achieved and the project team carries out an analysis of the design to identify opportunities for the implementation of passive design solutions that reduce demands for energy consuming building services, and that these solutions are implemented meaningfully into the design.	1	1		Energy Assessor
	Second credit - Free cooling: Where the first credit is achieved, the passive design analysis includes an analysis of free cooling and identifies opportunities for the implementation of free cooling solutions. Free cooling solutions might include night time cooling, ground coupled air cooling or surface water cooling; i.e. does not use active cooling.	1	0		MEP
	Third credit - Low zero carbon feasibility study: Where evidence provided demonstrates that a feasibility study has been carried out by the completion of the Concept Design stage (RIBA Stage 2) by an energy specialist to establish the most appropriate recognised local (on- or near-site) low or zero carbon energy source(s) for the development. A local LZC technology/ies has been specified for the building in line with the recommendations of this feasibility study and this method of supply results in a meaningful reduction in regulated CO_2 emissions.	1	1	Low Zero Carbon feasibility study is required.	Energy Assessor
Ene 05 Energy efficient cold storage	One credit: The refrigeration system, its controls and components have been designed, installed and commissioned as follows: a. In accordance with the Code of Conduct for carbon reduction in the refrigeration retail sector1 (see Other information) and BS EN 378-2 Refrigeration systems and heat pumps - Safety and environmental requirements. b. Using robust and tested refrigeration systems/components, normally defined as those included on the Enhanced Capital Allowance (ECA) Energy Technology Product List (ETPL) 2 or an equivalent list (see CN3.2 for a list of components). 2. The refrigeration plant has been commissioned to comply with the criteria for commissioning outlined in BREEAM issue Man 04 Commissioning and handover. Two credits: The installed refrigeration system demonstrates a saving in indirect greenhouse gas emissions (CO2 eq.) over the course of its operational life.	N/A	N/A		MEP
Ene 06 Energy efficient transportation systems	First credit - Energy consumption: Where evidence provided demonstrates that where either lift, escalators or moving walks are required: – 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 (including counter-balancing ratio), escalators and/or moving walks. – The energy consumption has been estimated for different types and the lift/escalator/moving walk system/strategy with the lowest energy consumption has been specified. – Regenerative drives should be considered. – The transportation system with the lowest energy consumption is specified.	N/A	N/A		MEP + Vertical Transportation Consultant
	Second credit - Energy efficient features: Where evidence provided demonstrates that the first credit has been achieved, and for lifts the following energy-efficient features, the three that offer the greatest potential energy savings are specified: – The lifts operate in a stand-by condition during off-peak periods. – The lift car uses energy-efficient lighting and display lighting	N/A	N/A		MEP + Vertical Transportation Consultant

Issue	Credit Requirements	Credits		Comments / Actions	Responsible Team Member
		Available	Targeted (Potential)		
	– The lift uses a drive controller capable of variable-speed, variable-voltage, variable frequency (VVVF) control of the drive motor. Where regenerative drives are demonstrated to save energy, they are specified. For escalators and/or moving walks, each escalator and/or moving walk complies with EITHER of the following: – It is fitted with a load sensing device that synchronises motor output to passenger demand through a variable speed drive. OR, – It is fitted with a passenger sensing device for automated operation (auto walk), so the escalator operates in stand-by mode when there is no passenger demand.				
Ene 08 Energy Efficient Equipment	Two credits: – Identify the building's unregulated energy consuming loads and estimate their contribution to the total annual unregulated energy consumption of the building, assuming a typical/standard specification. – Identify the systems and/or processes that use a significant proportion of the total annual unregulated energy consumption of the development and its operation. – Demonstrate a meaningful reduction in the total annual unregulated energy consumption of the building.	N/A	N/A		Architect + MEP

	Function / Equipment	Criteria
A	Swimming pool	1. Specify automatic or semi-automatic pool covers, or 'liquid' pool covers with an automatic dosing system to ALL pools, including spa pools and hot tubs. 2. The covers envelop the entire pool surface when fully extended. 3. Control the air temperature in the pool hall so that it is 1 °C above the water temperature.
B	Laundry facilities with commercial-sized appliances	Demonstrate at least one of the following for commercial-sized appliances: 1. Specification of heat recovery from waste water. 2. Use of greywater for part of the washing process. This may be recycled from the final rinse and used for the next pre-wash. 3. The commercial or industrial sized machines are identified as eligible for the UK's Enhanced Capital Allowance Scheme for water.
C	Data centres	1. Design is in accordance with the 'Best practices for the EU Code of Conduct on Data Centres' principles with the data centre achieving at least the 'Expected minimum practice' level (as defined in the Code of Conduct). 2. Temperature set points are not less than 24°C, as measured at the inlet of the equipment in the rack.
D	IT-intensive operating areas	1. Uses a 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

Issue	Credit Requirements			Credits		Comments / Actions	Responsible Team Member
				Available	Targeted (Potential)		
			2. Specify a mechanism to achieve automatic power-down of equipment when not in use, including overnight.				
	E	Domestic scale appliances (individual and communal facilities)	Domestic scale appliances have the following ratings (or better) under the EU Energy Efficiency Labelling Scheme, where provided: 1. Fridges, fridge-freezers: A+ rating 2. Washing machines: A++ rating 3. Dishwashers: A+ rating 4. Washer-dryers and tumble dryers: A rating. OR 5. If any of the appliances will be purchased during occupation by the tenant/owner, information on the EU Energy Efficiency Labelling Scheme of efficient white goods must be provided to the residential areas of the building.				
	F	Healthcare	1. The procurement of large-scale equipment (where present, see compliance note CN4) and sets of electrical equipment (where numbering more than 50) has been informed and selected by life cycle costing analysis for at least two options in accordance with HTM07-02, Part B, Chapter 1.				
	G	Kitchen and Catering Facilities	The project has incorporated at least two-thirds of the energy efficiency measures outlined in the section summaries of each of the following sections of CIBSE Guide TM50 (except as specified): 1. Section 8 (Drainage and kitchen waste removal) 2. Section 9 (Energy controls - specifically controls relevant to appliances) 3. Section 11 (Appliance specification - not fabrication or utensil specifications) 4. Section 12 (Refrigeration) 5. Section 13 (Warewashing: dishwashers and glasswashers) 6. Section 14 (Cooking appliance selection) Section 15 (Water temperatures, taps, faucets and water saving controls).				

Issue	Credit Requirements	Credits		Comments / Actions	Responsible Team Member
		Available	Targeted (Potential)		
Transport					
Tra 01 Transport assessment and travel plan	Two credits: Where evidence provided demonstrates that a travel plan has been developed as part of the feasibility and design stages which considers all types of travel relevant to the building type and users. The travel plan must be structured to the needs of the particular site and take into consideration the findings of a site-specific transport survey. The travel plan must include a package of measures that have been used to steer the design of the development in order to meet the travel plan objectives and minimise car-based travel patterns. The travel plan must be demonstrated in action post construction.	2	2	BREEAM Compliant Travel Plan is required.	Transport Consultant + Architect
Tra 02 Sustainable transport measures	Ten credits Features included to achieve a Tra02 points score. Credits are achieved based on the site's Accessibility Index (AI) and the features provided.	10	9		Transport Consultant + Architect

Points	Points	Points	Credits
AI < 25	25 ≤ AI < 40 (urban centres)	AI of ≥ 40 (metropolitan centre locations)	
1	1		1
2		1	2
3	2		3
4		2	4
5	3		5
6	4	3	6
7	5		7
8	6	5	8
9	7	6	9
10	8	7	10

Sustainability Transport Measures:

Public transport measures	Points
Public transport measures	
– The existing AI calculated in Tra 01 achieves the following: – ≥ 4 for prison or MOD sites, rural location sensitive buildings, and other building group 3 – ≥ 8 for all other building type	1
– Demonstrate an increase over the existing Accessibility Index through negotiation with local bus, train or tram companies to increase the frequency of the local service provision for the development;	2

Issue	Credit Requirements		Credits		Comments / Actions	Responsible Team Member
			Available	Targeted (Potential)		
	– Demonstrate an increase over the existing Accessibility Index. This could be through provision of a diverted bus route, a new or enhanced bus stop, or other similar solutions.	3				
	– Provide a dedicated service, such as a bus route or service	3				
	– Provide a public transport information system in a publicly accessible area, to allow building users access to up-to-date information on the available public transport and transport infrastructure. This may include signposting to public transport, cycling, walking infrastructure or local amenities.	1				
	Private transport measures					
	– Provide electric recharging stations of a minimum of 3kW for at least 10% of the total car parking capacity for the development.	1				
	– Set up a car sharing group or facility to facilitate and encourage building users to car share. – Raise awareness of the sharing scheme with marketing and communication materials. – Provide priority spaces for car sharers for at least 5% of the total car parking capacity for the development. – Locate priority parking spaces nearest the development entrance used by the sharing scheme participants.	1				
	Active travel measures					
	– During preparation of the brief, the design team consults with the local authority (LA) on the state of the local cycling network and public accessible pedestrian routes, to focus on whichever the LA deems most relevant to the project and how to improve it. – Agree and implement one proposition chosen with the local authority. The proposition supported by the development is additional to existing local plans and has a significant impact on the local cycling network or on pedestrian routes open to the public	2				
	– Install compliant cycle storage spaces to meet the minimum levels set out the BREEAM criteria	1				

	– Option 7 has been achieved.
	– Provide at least two compliant cyclists' facilities for the building users, (including pupils where appropriate to the building type):
	  – Showers
	  – Changing facilities
	  – Lockers
	  – Drying spaces.
		1				

	Existing amenities: – At least three existing accessible amenities are present, see Table 7.6 on page 179, where relevant for a Building Group.	1				
	Enhanced amenities: – Ensure a minimum of one new accessible amenity is provided.	2				
	Ensure more than one new accessible amenity, in accordance with Table 7.6 within the BREEAM criteria for the relevant Building Group, is provided.	3				
	Alternative transport measures					
	Implement one site-specific improvement measure, not covered by the options already listed in this issue, in line with the recommendations of the travel plan. Submit these for review by BRE.	1 - 3				

<table>
<tr><th rowspan="2">Issue</th><th rowspan="2">Credit Requirements</th><th colspan="2">Credits</th><th rowspan="2">Comments / Actions</th><th rowspan="2">Responsible Team Member</th></tr>
<tr><th>Available</th><th>Targeted (Potential)</th></tr>
<tr><td colspan="6">Water</td></tr>
<tr><td>Wat 01 (M), (Me), (Mo)
Water Consumption
Mandatory:
– One credit for Good and above.
– Two credits for Outstanding.</td><td>Up to five credits:
Where evidence provided demonstrates that water consumption has been reduced to the following levels compared against the baseline building model:
<table>
<tr><th>% Improvement</th><th>No. of BREEAM Credits</th></tr>
<tr><td>12.5%</td><td>1</td></tr>
<tr><td>25%</td><td>2</td></tr>
<tr><td>40%</td><td>3</td></tr>
<tr><td>50%</td><td>4</td></tr>
<tr><td>55%</td><td>5</td></tr>
<tr><td>65%</td><td>Exemplary performance</td></tr>
</table></td><td>5</td><td>0</td><td></td><td>MEP + Architect + Interior Designer</td></tr>
<tr><td>Wat 02 (M), (Me), (Mo)
Water Monitoring
Mandatory:
Criterion 1 only for Good and above.</td><td>One credit:
Where evidence provided demonstrates that a water meter with a pulsed output will be installed on the mains supply to each building/unit.

Water-consuming plant or building areas, consuming 10% or more of the building's total water demand, need to be fitted with either sub meters or have water monitoring equipment integral to the plant or area. (Not applicable to Shell Only Assessments).

Each meter (main and sub) must have a pulsed output to enable connection to a Building Management System (BMS) for the monitoring of water consumption.

If the site on which the building is located has an existing BMS, managed by the same occupier/owner (as the new building), the pulsed water meter(s) for the new building must be connected to the existing BMS.

Additionally, for those pursuing a post occupancy stage certification:
The water monitoring strategy used enables the identification of all water consumption for sanitary uses as assessed under Wat 01 (litres/person/day), if a post occupancy stage certification is sought.</td><td>1</td><td>1</td><td></td><td>MEP</td></tr>
<tr><td rowspan="2">Wat 03
Water Leak Detection</td><td>First credit - Leak detection system:
Where evidence provided demonstrates that a leak detection system which is capable of detecting a major water leak on the mains water supply within the building and between the building and the utilities water meter is provided.</td><td>1</td><td>1</td><td></td><td>MEP</td></tr>
<tr><td>Second credit - Flow control devices:
Where evidence provided demonstrates that 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)</td><td>1</td><td>0</td><td></td><td>MEP</td></tr>
</table>

Issue	Credit Requirements	Credits		Comments / Actions	Responsible Team Member
		Available	Targeted (Potential)		
Wat 04 Water Efficient Equipment	First credit 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.	1	1		MEP + Architect + Irrigation Specialist
Materials					
Mat 01 Environmental impacts from construction products - Building life cycle assessment (LCA)	One - six credits: LCA superstructure Up to six credits are available for development of a building LCA on of the superstructure design using either the BREEAM Simplified Building LCA tool or an IMPACT Compliant LCA tool. Carry out building LCA options appraisal of 2 to 4 significantly different superstructure design options throughout the design development, using a building LCA tool that is recognised by BREEAM One credit LCA substructure Carry out building LCA options appraisal of a combined total of at least six significantly different substructure or hard landscaping design options (at least two shall be substructure and at least two shall be hard landscaping).	5	4	Life Cycle Assessment is required. This will require an additional appointment to be made. Please refer to Section 4, Appointment Confirmation.	Architect/ Structural Engineer/ Civil Engineer/ QS/ LCA Consultant
	Exemplary level criteria One credit – Core building services options appraisal during Concept Design Carry out building LCA options appraisal of at least 3 significantly different core building services design options, using a building LCA tool that is recognised by BREEAM One credit – LCA and LCC alignment Achieve Elemental LCC plan and Component Level LCC options appraisal credits Include design options appraised as part of the LCA within the Elemental and Component LCC models. Integrate the aligned LCA and LCC options appraisal activity within the wider design decision-making process. Record this in an options appraisal summary document including the relevant cost information from the 'elemental LCC plan' and 'Component level LCC option appraisal'.	2	0		Architect/ Structural Engineer/ Civil Engineer/ QS/ LCA Consultant
Mat 02 Environmental impacts from construction products - Environmental Product Declarations (EPD)	One credit: Where evidence provided demonstrates the design features construction products with EPD's that achieve a total EPD points score of at least 20, according to the BRE calculation methodology.	1	1		Architect/ Structural Engineer/ Civil Engineer/ QS/ LCA Consultant
Mat 03 (M), (M_e), (M_o) Responsible Sourcing Mandatory: Criterion 1 sustainable timber sourcing for all ratings	Pre-requisite All timber and timber based products used on the project are 'legally harvested and traded timber' First credit: Enabling sustainable procurement Where evidence provided demonstrates that a sustainability procurement plan is in place by concept design and will be used by the design team to guide specification towards construction products,	1	1		Architect/ Structural Engineer/ Civil Engineer/ QS/ LCA Consultant
	Up to three credits:	3	2		Architect/

<table>
<tr><th rowspan="2">Issue</th><th rowspan="2">Credit Requirements</th><th colspan="2">Credits</th><th rowspan="2">Comments / Actions</th><th rowspan="2">Responsible Team Member</th></tr>
<tr><th>Available</th><th>Targeted (Potential)</th></tr>
<tr><td></td><td>Where evidence provided demonstrates the available responsible sourcing of materials (RSM) can be awarded where the applicable building materials are responsibility sourced in accordance with the BREEAM methodology.
<table>
<tr><th>RSM credits</th><th>Mat 03 Scope Level</th><th>% of available points achieved</th></tr>
<tr><td>1</td><td>Superstructure</td><td>≥10%</td></tr>
<tr><td>2</td><td>As above, plus
Internal Finishes</td><td>≥20%</td></tr>
<tr><td>3</td><td>Substructure and hard landscaping</td><td>≥30%</td></tr>
<tr><td>1 exemplary performance credit</td><td>As above, plus core building services</td><td>≥50%</td></tr>
</table>
Exemplary credit:
Where evidence provided demonstrates that at least 50% of the available RSM points are achieved.</td><td></td><td></td><td></td><td>Structural Engineer/ Civil Engineer/ QS/ LCA Consultant</td></tr>
<tr><td>Mat 05
Designing for Durability and Resilience</td><td>One credit:
PART A:
– Protection measures are incorporated into the building's design and construction to reduce damage to the building's fabric or materials in case of accidental or malicious damage occurring. These measures must provide protection against:
  – Negative impacts of high user numbers in relevant areas of the building (e.g. corridors, lifts, stairs, doors etc.).
  – Damage from any vehicle or trolley movements within 1m of the internal building fabric in storage, delivery, corridor and kitchen areas.
  – External building fabric damage by a vehicle. Protection where parking or manoeuvring areas are within 1 metre of the building façade and where delivery areas or routes are within 2 metres of the façade, i.e. specifying bollards or protection rails.
  – Potential malicious damage to building materials and finishes in public and common areas where appropriate.

PART B:
– Key exposed building elements have been designed and specified to limit long and short-term degradation due to environmental factors. This can be demonstrated through one of the following:
  – The element or product achieving an appropriate quality or durability standard or design guide

OR
  – A detailed assessment of the element's resilience when exposed to the applicable material degradation and environmental factors.
  – Include convenient access to the roof and façade for cost-effective cleaning, replacement and repair in the building's design.
  – Design the roof and façade to prevent water damage, ingress and detrimental ponding.</td><td>1</td><td>1</td><td></td><td>Architect/ Landscape architect</td></tr>
<tr><td>Mat 06
Material Efficiency</td><td>One credit:
At the Preparation and Brief and Concept Design stages, set targets and report on opportunities and methods to optimise the use of materials. These must be done for each of the following stages
– Preparation and Brief
– Concept Design
– Developed Design
– Technical Design</td><td>1</td><td>1</td><td></td><td>Architect</td></tr>
</table>

<table>
<tr><th rowspan="2">Issue</th><th rowspan="2">Credit Requirements</th><th colspan="2">Credits</th><th rowspan="2">Comments / Actions</th><th rowspan="2">Responsible Team Member</th></tr>
<tr><th>Available</th><th>Targeted (Potential)</th></tr>
<tr><td></td><td>– Construction

Develop and record the implementation of material efficiency
– Developed Design
– Technical Design
– Construction</td><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="6">Waste</td></tr>
<tr><td>Wst 01 (M_o)
Construction waste management
Mandatory:
One credit for Outstanding</td><td>One credit - Pre-demolition audit
Complete a pre-demolition audit of any existing buildings, structures or hard surfaces being considered for demolition. This must be used to determine whether refurbishment or reuse is feasible and, in the case of demolition, to maximise the recovery of material for subsequent high grade or value applications. The audit must cover the content of Pre-demolition audit scope:
– Be carried out at Concept Design stage (RIBA Stage 2) by a competent person prior to strip-out or demolition works
– Guide the design, consider materials for reuse and set targets for waste management
– Engage all contractors in the process of maximising high-grade reuse and recycling opportunities
– Compare actual waste arisings and waste management routes used with those forecast and investigate significant deviations from planned targets.

Up to Three Credits - Construction resource efficiency:
Where a Resource Management Plan (RMP) has been developed covering the non-hazardous waste related to on-site construction and dedicated off-site manufacture or fabrication.

In addition, evidence provided demonstrates that non-hazardous construction waste (excluding demolition and excavation waste) generated by the building's design and construction meets or exceeds the following resource efficiency benchmarks:

<table>
<tr><th rowspan="2">BREEAM Credits</th><th colspan="2">Amount of waste generated per 100m² (gross internal floor area)</th></tr>
<tr><th>m³</th><th></th></tr>
<tr><td>One credit</td><td>≤ 13.3</td><td>≤ 11.1</td></tr>
<tr><td>Two credits</td><td>≤ 7.5</td><td>≤ 6.5</td></tr>
<tr><td>Three credits</td><td>≤ 3.4</td><td>≤ 3.2</td></tr>
<tr><td>Exemplary level</td><td>≤ 1.6</td><td>≤ 1.9</td></tr>
</table></td><td>4</td><td>3</td><td>BREEAM compliant pre-demolition audit is required prior to demolition.</td><td>Contractor</td></tr>
<tr><td></td><td>Fifth credit - Diversion of resources from landfill:
Where evidence provided demonstrates that the following percentages of non-hazardous construction and demolition waste (where applicable) generated by the project have been diverted from landfill:</td><td>1</td><td>1</td><td></td><td>Contractor</td></tr>
</table>

<table>
<tr><th>Issue</th><th>Credit Requirements</th><th colspan="2">Credits</th><th>Comments / Actions</th><th>Responsible Team Member</th></tr>
<tr><th></th><th></th><th>Available</th><th>Targeted (Potential)</th><th></th><th></th></tr>
<tr><td></td><td>
<table>
<tr><th>BREEAM credits</th><th>Type of Waste</th><th>Volume</th><th>Tonnage</th></tr>
<tr><td>One credit</td><td>Non- demolition</td><td>70%</td><td>80%</td></tr>
<tr><td></td><td>Demolition</td><td>80%</td><td>90%</td></tr>
<tr><td></td><td>Excavation</td><td>N/A</td><td>N/A</td></tr>
<tr><td>Exemplary level</td><td>Non- demolition</td><td>85%</td><td>90%</td></tr>
<tr><td></td><td>Demolition</td><td>85%</td><td>95%</td></tr>
<tr><td></td><td>Excavation</td><td>95%</td><td>95%</td></tr>
</table>
</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Wst 02
Use of recycled and sustainably sourced aggregates</td><td>Prerequisite
If demolition occurs on site, to encourage the reuse of site-won material on site, complete a pre-demolition audit of any existing buildings, structures or hard surfaces in accordance with Wst01 requirements.

One credit: Project Sustainable Aggregate Points
Where evidence provided identifies amounts of aggregate used for the project, the types of aggregate, its source (location) and the transport type. This information is used to calculate the Sustainable Aggregate points score. Credits are scored as follows:
<table>
<tr><th>Project Sustainable Aggregate Credits</th><th>Project Sustainable Aggregate points</th></tr>
<tr><td>1</td><td>3.5–6.0</td></tr>
<tr><td>1 exemplary performance credit</td><td>> 6.0</td></tr>
</table>
The calculation is based on the following aggregate uses:
– Engineered fill
– Concrete coarse aggregate
– Concrete fine aggregate
– Asphalt aggregate
– Granular bedding for pipes
– Granular bedding for hard landscape products
– Hydraulically bound materials</td><td>1</td><td>0</td><td></td><td>Civil/ Structural Engineer</td></tr>
<tr><td></td><td>Exemplary level criteria:
To achieve exemplary performance criteria, the project sustainable aggregate points score must meet or exceeds the exemplary level performance benchmark in the table above.</td><td>1</td><td>0</td><td></td><td>Civil/ Structural Engineer</td></tr>
</table>

Issue	Credit Requirements	Credits		Comments / Actions	Responsible Team Member
		Available	Targeted (Potential)		
Wst 03 (M_e) (M_o) Operational waste Mandatory: – One credit for Excellent and above	One credit: Where evidence provided demonstrates that there is dedicated space(s) to cater for the segregation and storage of operational recyclable waste volumes generated by the assessed building/unit, its occupant(s) and activities. The dedicated space(s) must be: – Clearly labelled, to assist with segregation, storage and collection of the recyclable waste streams – Accessible to building occupants / facilities operators for the deposit of materials and collections by waste management contractors – Of a capacity appropriate to the building type, size, number of units (if relevant) and predicted volumes of waste that will arise from daily/weekly operational activities and occupancy rates. – The specified/installed operational waste facilities are compliant with the relevant NHS guidelines for that part of the UK. Where the consistent generation in volume of the appropriate operational waste streams is likely to exist, e.g. large amounts of packaging or compostable waste generated by the building's use and operation, the following facilities must be provided as part of its waste management strategy: – 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.	1	1		Architect/MEP
Wst 04 Speculative floor and ceiling finishes	One credit For tenanted areas (where the future occupant is not known), prior to full fit-out works, carpets, other floor finishes and ceiling finishes have been 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.	N/A	N/A		Client + Architect + Interior Designer
Wst 05 Adaptation to climate change	One Credit - Structural and fabric resilience: Where evidence provided demonstrates that a climate change adaptation strategy appraisal for structural and fabric resilience has been conducted by the end of Concept Design (RIBA Stage 2) covering hazard identification and assessment, risk estimation, evaluation and management. Appraisal to identify and evaluate impact on the building over its life cycle from expected extreme weather conditions arising from climate change and, where feasible, mitigate against these impacts ID hazards taking into account the following: structural stability, robustness, weather proofing and detailing, material durability, health and safety of occupants, impact on building contents and business continuity	1	1		Architect + Structural Engineer
	Exemplary Credit: A holistic approach to the design and construction of the current building's life cycle, to mitigate against the impacts of climate change, is represented by the achievement of these criteria. In addition to achieving the first credit above, the following must also be achieved: Hea 04 – Thermal Comfort: – Project team demonstrate how the building has been adapted, or designed to be easily adapted in future using passive design solutions Ene 01 – Reduction in energy use and carbon emissions – At least 6 credits in this issue have been achieved Ene 04 – Low Carbon Design	1	0		Architect + Structural Engineer + Façade Consultant + FRA Consultant

Issue	Credit Requirements	Credits		Comments / Actions	Responsible Team Member
		Available	Targeted (Potential)		
	– Passive design analysis credit has been achieved Wat 01 – Water Consumption – Minimum of three credits in this issue have been achieved Mat 05 – Designing for durability and resilience – Building elements incorporate appropriate design and specification measures to limit material degradation due to environmental factors Pol 03 Surface Water Run Off – Flood risk- A minimum of one credit has been achieved. – Surface Water Run Off-Two credits have been achieved.				
Wst 06 Design for disassembly and adaptability	One credit - Design for disassembly and functional adaptability - recommendations Where evidence provided demonstrates that the design team conducts a study to explore the ease of disassembly and the functional adaptation potential of different design scenarios. Recommendations are required to be developed at the concept design stage.	1	1		Architect / Client
	One credit - Disassembly and functional adaptability – implementation Provide an update, during Technical Design, on: – How the recommendations or solutions proposed by Concept Design have been implemented where practical and cost effective. Omissions have been justified in writing to the assessor. – Changes to the recommendations and solutions during the development of the Technical Design. – Produce a building adaptability and disassembly guide to communicate the characteristics allowing functional adaptability and disassembly to prospective tenants. –	1	1		Architect / Client
Land use and ecology					
LE 01 Site Selection	First credit - Previously occupied land: Where evidence is provided to demonstrate that at least 75% of the proposed development's footprint is on an area of land which has previously been developed for use by industrial, commercial or domestic purposes in the last 50 years.	1	1		Architect
	Second credit - Contaminated land: Where evidence provided demonstrates that the site is significantly contaminated as confirmed by a contaminated land specialist's site investigation, risk assessment and appraisal. The client or principal contractor must confirm that remediation of the site will be carried out in accordance with the remediation strategy and its implementation plan.	1	0		Contamination Specialist
LE 02 Identifying and understanding the risks and opportunities for the project	Prerequisite - Assessment route selection An assessment route for the project has been determined using BREEAM Guidance Note GN34 BREEAM Ecological Risk Evaluation Checklist. The client or contractor confirms compliance will be, and is, monitored against all relevant UK and EU or international legislation relating to the ecology of the site. Depending on the route for compliance taken determines the number of credits available: -	2	2	Additional appointment is required by Ecologist to include to ensure full BREEAM scope is covered.	Ecologist

	Project team member route (Route 1)	Ecologist route (Route 2
Survey and evaluation	1 credit	1 credit
Determining the ecological outcomes for the site		1 credit

Issue	Credit Requirements	Credits		Comments / Actions	Responsible Team Member
		Available	Targeted (Potential)		

	Exemplary criteria | 1 credit | 1 credit
	
	Survey and evaluation
	Route 1
	Completion of the BREEAM Ecological Risk Evaluation Checklist indicates Assessment route 1 can be used as the assessment OR
	
	Route 2
	– An appropriate individual is appointed at a project stage that ensures early involvement in site configuration and, where necessary, can influence strategic planning decisions.
	– Prior to the completion of the preparation and brief, an appropriate level of survey and evaluation:
	– For sites where, complex ecological systems are likely to be present has been carried out to determine the ecological baseline of the site, taking account of the zone of influence to establish:
	  – Current and potential ecological value and condition of the site, and related areas within the zone of influence.
	  – Direct and indirect risks to current ecological value
	  – Capacity and feasibility for enhancement of the ecological value of the site and, where relevant, areas within the zone of influence.
	– Data is collated and shared with project team to inform the site preparation, design or construction works.
	
	Determining the ecological outcomes for the site (Routes 1 and 2)
	– Survey and evaluation criteria (criteria 3–6 above) relevant to the chosen route have been achieved.
	– During Concept Design, the project team liaise and collaborate with representative stakeholders to identify and consider ecological outcome for the sites (appropriate to the scale and type of development) for the project.
	– When determining the ecological outcome for the site, this must involve the identification, appraisal and selection of specific solutions and measures sufficiently early to influence key project planning decisions. This must be done in accordance with the following hierarchy of action:
	  – avoidance
	  – protection
	  – reduction or limitation of negative impacts
	  – on site compensation and,
	  – enhancement, considering the capacity and feasibility within the site, or where viable, off-site.
	– Following this the optimal ecological outcome for the site is selected after liaising with representative stakeholders and the project team.				

	Exemplary Level criteria Determine the ecological outcomes for the site (sustainability-related activities) When determining the optimal ecological outcome for the site consider, in addition to those outlined above, the wider site sustainability-related activities and the potential for ecosystem service related benefits.	1	0		Ecologist

<table>
<tr><th rowspan="2">Issue</th><th rowspan="2">Credit Requirements</th><th colspan="2">Credits</th><th rowspan="2">Comments / Actions</th><th rowspan="2">Responsible Team Member</th></tr>
<tr><th>Available</th><th>Targeted (Potential)</th></tr>
<tr><td>LE 03
Managing negative impacts on ecology</td><td>Prerequisite – Identification and understanding the risks and opportunities for the site
The client or contractor has confirmed that compliance is monitored against all relevant UK, and EU or International legislation relating to the ecology of the site

<table>
<tr><th></th><th>Project team member route (Route 1)</th><th>Ecologist Route (Route 2)</th></tr>
<tr><td>Planning, liaison and implementation</td><td>1 credit</td><td>1 credit</td></tr>
<tr><td>Managing negative impacts of the project (limitation or compensation)</td><td>1 credit</td><td>1 or 2 credits</td></tr>
</table>

One credit – Planning, liaison, implementation and data
– Roles and responsibilities have been clearly defined, allocated and implemented to support successful delivery of project outcomes at an early enough stage to influence the concept design or design brief.
– Site preparation and construction works have been planned for and are implemented at an early project stage to optimise benefits and outputs.
– The project team liaising and collaborating with representative stakeholders, taking into consideration data collated and shared, have implemented solutions, and measures have been selected

Up to two credits – Managing negative impacts of the project
Route 1 (one credit)
Negative impacts from site preparation and construction works have been managed according to the hierarchy and no net impact has resulted.

Route 2 (up to two credits)
Negative impacts from site preparation and construction works have been managed according to the hierarchy:

For sites where, complex ecological systems are likely to be present) and either:
– No overall loss of ecological value has occurred (2 credits)

OR

– The loss of ecological value has been limited as far as possible (1 credit)</td><td>3</td><td>3</td><td></td><td>Ecologist + Contractor</td></tr>
<tr><td>LE 04
Change and enhancement of ecological value</td><td>Prerequisite - Identifying and understanding the risks and opportunities for the project
– LE 03 has been achieved. Including the following, specific to the aims of this issue:
  – Roles and responsibilities have been clearly defined, allocated and implemented to support successful delivery of project outcomes
  – Site preparation and construction works have been planned for and implemented at a stage that is sufficiently early in the project to optimise benefits and outputs.
– The client or contractor confirms compliance is monitored against all relevant UK, EU or international legislation relating to the ecology of the site.

<table>
<tr><th></th><th>Project team member route (Route 1)</th><th>Ecologist route (Route 2)</th></tr>
<tr><td>Liaison, implementation and data</td><td>N/A</td><td>1 credit</td></tr>
<tr><td>Enhancement of ecology</td><td>1 credit</td><td>up to 3 credits</td></tr>
</table></td><td>4</td><td>4</td><td></td><td>Ecologist + Contractor + Landscape Architect</td></tr>
</table>

<table>
<tr><th rowspan="2">Issue</th><th rowspan="2">Credit Requirements</th><th colspan="2">Credits</th><th rowspan="2">Comments / Actions</th><th rowspan="2">Responsible Team Member</th></tr>
<tr><th>Available</th><th>Targeted (Potential)</th></tr>
<tr><td></td><td>Route 1
One credit - Enhancement of ecology
– The project team liaising and collaborating with representative stakeholders, taking into consideration data collated and shared, have implemented solutions and measures based on recommendations from recognised ‘local’ ecological expertise, specialist input and guidance to inform the adoption of locally relevant ecological solutions and measures which enhance the site.
– Data collated is provided to the local environmental records centres nearest to, or relevant for, the site.

Route 2
One credit - Liaison, implementation and data collation
– The project team liaising and collaborating with representative stakeholders, taking into consideration data collated and shared, have implemented the solutions and measures selected in a way that enhances ecological value in the following order:
  – On site, and where this is not feasible,
  – Off site within the zone of influence.

Up to three credits - Enhancement of ecology
– Credits are awarded on a scale of 1 to 3, based on the calculation of the change in ecological value occurring as a result of the project. This must be calculated in accordance with the process set out in either GN 35 - BREEAM, CEEQUAL, HQM Ecology Assessment Issues – Route 1 or GN 36 - BREEAM, CEEQUAL, HQM Ecology Assessment Issues</td><td></td><td></td><td></td><td></td></tr>
<tr><td>LE 05
Long term ecology management and maintenance</td><td>Prerequisite - Roles and responsibilities, implementation, statutory obligations
– The client or contractor has confirmed that compliance is being monitored against all relevant UK, EU and international standards relating to the ecology of the site.
– Where pursued, LE 04 has been achieved, including the following specific aims of this issue:
  – Roles and responsibilities have been clearly defined, allocated and implemented to support successful delivery of project outcomes.
  – Site preparation and construction works have been planned for and implemented at a stage that is sufficiently early in the project to optimise benefits and outputs.

One credit - Planning, liaison, data, monitoring and review management and maintenance
<table>
<tr><th></th><th>Project team member route (Route 1)</th><th>Ecologist route (Route 2)</th></tr>
<tr><td>Liaison, monitoring implementation and evolving management and maintenance solutions</td><td rowspan="2">1 credit</td><td>1 credit</td></tr>
<tr><td>Landscape and habitat management plan</td><td>1 credit</td></tr>
</table>
One credit - Planning, liaison, data, monitoring and review management and maintenance
– The project team liaise and collaborate with representative stakeholders, taking into consideration data collated and shared, on solutions and measures implemented to:</td><td>2</td><td>2</td><td></td><td>Ecologist + Contractor</td></tr>
</table>

Issue	Credit Requirements	Credits		Comments / Actions	Responsible Team Member
		Available	Targeted (Potential)		
	– monitor and review implementation and the effectiveness – develop and review management and maintenance solutions, actions or measures. – In support of the above, and to help ensure their continued relevance over the period of the project the following should be considered: – Monitoring and reporting on the ecological outcomes for site implemented at the design and construction stage – Monitoring and reporting of outcomes and successes from the project – Arrangements for the ongoing management of landscape and habitat connected to the project (on and, where relevant, off site) – Maintaining the ecological value of the site and its relationship or connection to its zone of influence – Maintaining the site in line with the any sustainability linked activities, e.g. ecosystems benefits (LE 02). – Remedial or other management actions are carried out which relate to those identified in LE 02, LE 03 and LE 04. – As part of the tenant or building owner information supplied, include a section on Ecology and Biodiversity to inform the owner or occupant of local ecological features, value and biodiversity on or near the site. One credit - Landscape and ecology management plan (or similar) development – Landscape and ecology management plan, or similar, is developed in accordance with BS 42020:2013(210) covering as a minimum the first five years after project completion and includes: – Actions and responsibilities, prior to handover, to give to relevant individuals – The ecological value and condition of the site over the development life. – Identification of opportunities for ongoing alignment with activities external to the development project and which supports the aims of BREEAM's Strategic Ecology Framework – Identification and guidance s to trigger appropriate remedial actions to address previously unforeseen impacts – Clearly defined and allocated roles and responsibilities. – The landscape and management plan or similar is updated as appropriate to support maintenance of the ecological value of the site.				
Pollution					
Pol 01 Impact of Refrigerants	Pre-Requisite: All systems (with electronic compressors) must comply with the requirements of BS EN 378:2008, and where refrigeration systems containing ammonia are installed, they must comply with the Institute of Refrigeration Ammonia Refrigeration Systems Code of Practice. Three credits: Where evidence provided demonstrates that the building does not require the use of refrigerant within its building services or plant. Two credits: Where evidence provided demonstrates that the systems specified using refrigerants have Direct Effect Life Cycle CO_2 equivalent emissions (DELC CO_{2e}) of ≤100 $kgCO_{2e}$/kW cooling/heating capacity. OR Where air-conditioning or refrigeration systems are installed the refrigerants used have a Global Warming Potential (GWP) ≤10. One credit:	3	1		MEP

Issue	Credit Requirements	Credits		Comments / Actions	Responsible Team Member
		Available	Targeted (Potential)		
	Where evidence provided demonstrates that the systems using refrigerants have Direct Effect Life Cycle CO_2 equivalent emissions of (DELC CO_{2e}) of ≤1000 $kgCO_{2e}$/kW cooling/heating capacity.				
	One credit: Where evidence provided demonstrates that the systems using refrigerants have a permanent automated refrigerant leak detection system installed, capable of automatically isolating and containing the remaining refrigerant(s) charge in response to a leak detection incident.	1	0		MEP
Pol 02 Local air quality	Up to two credits: All heating and hot water is supplied by non-combustion systems. For example, only powered by electricity OR alternatively; Emissions from all installed combustion plant that provides space heating and domestic hot water do not exceed the levels set in Table 12.4 and Table 12.5 in the BRE guidance document. The measurements must be provided by manufacturers, following the labelling requirements of the European directive 2009/125/EC. No credits can be awarded for Pol 02 if any of the combustion appliances are not covered in Table 12.4 below and Table 12.5. Emissions from all installed combustion plant that provide space heating and domestic hot water are required to not exceed the levels set in Table 1.21 and Table 1.22 within the BREEAM criteria.	2	1		MEP
Pol 03 Surface Water Run Off	Prerequisite An appropriate consultant is appointed to carry out and demonstrate the development's compliance with all criteria. Part 1: Flood resilience (Up to Two credits) Two credits - Low flood risk: Where evidence provided demonstrates that the site is of low risk of flooding and a site-specific flood risk assessment has been completed in line with PPS25, taking account of current and future sources of flooding.	2	2	BREEAM compliant Flood Risk Assessment (FRA) is needed.	Drainage Consultant
	One credit - Medium/high flood risk: Where evidence provided demonstrates that the assessed development is located in a zone defined as having a medium or high annual probability of flooding AND the ground level of the building, car parking and access is at least 600mm above the design flood level of the flood zone for the site's location OR the final design of the building and the wider site reflects the recommendations made by an appropriate consultant in accordance with the hierarchy approach outlined in section 5 of BS 8533:2017	0	0		Drainage Consultant
	Part 2: Surface Water Run-Off Pre-Requisite: An appropriate consultant has been appointed. First credit: Where evidence provided demonstrates that the consultant has confirmed that the drainage measures specified ensure that the peak rate of run-off from the site to the watercourses (natural or municipal) is no greater for the developed site than it was for the pre-development site. This should comply at the 1-year and 100-year return period events, considering climate change. Additionally, relevant maintenance agreements for the ownership, long term operation and maintenance of all specified SuDS are in place. Second credit:	2	2		Drainage Consultant

Issue	Credit Requirements	Credits		Comments / Actions	Responsible Team Member
		Available	Targeted (Potential)		
	Where evidence provided demonstrates that the consultant has confirmed that there is no risk of flooding in the event of a local drainage system failure, AND EITHER – The post development run-off volume, over the development lifetime, is no greater than it would have been prior to the assessed site's development, including an allowance for climate change. – Any additional predicted volume of run-off for the 100-year 6-hour event must be prevented from leaving the site by using infiltration or other SUDs techniques OR (only where criterion no. 9 or 10 for this credit cannot be achieved) – Justification from the Appropriate Consultant indicating why the above criteria cannot be achieved i.e. where infiltration or other SUDS techniques are not technically viable options. – The post development peak rate of run-off is reduced to a limiting discharge.				
	Part 3: Minimising Watercourse pollution One credit: Where evidence provided demonstrates that the following water course pollution prevention measures are covered: – Appropriate Consultant confirms that there will be no discharge from the developed site for rainfall up to 5mm. – Specification of Sustainable Drainage Systems (SUDs) or source control systems such as permeable surfaces or infiltration trenches – Specification of oil/petrol separators (or equivalent system) in surface water drainage systems, where there is a high risk of contamination or spillage of substances – All water pollution prevention systems have been designed and detailed in accordance with the recommendations of Pollution Prevention Guideline 3 – A comprehensive and up-to-date drainage plan of the site will be made available for the building/site occupiers.	1	0	Credit to be confirmed by design team as to whether minimising watercourse pollution measures can be intergrated into final design.	Drainage Consultant
Pol 04 Reduction in night time light pollution	One credit: Where evidence provided demonstrates that the lighting system has been designed in accordance with the following requirements: – The external lighting strategy has been designed in compliance with Table 2 (and its accompanying notes) of the ILE Guidance notes for the reduction of obtrusive light, 2011. – All external lighting (except for safety and security lighting) can be automatically switched off between 2300hrs and 0700hrs. This can be achieved by providing a timer for all external lighting set to the appropriate hours. – If safety or security lighting is provided and will be used between 2300hrs and 0700hrs, this part of the lighting system complies with the lower levels of lighting recommended during these hours in Table 2 of the ILE's Guidance notes, for example by using an automatic switch to reduce the lighting levels at 2300 or earlier. – Illuminated advertisements, where specified, must be designed in compliance with ILE Technical Report 5 – The Brightness of Illuminated Advertisements.	1	1		MEP
Pol 05 Reduction of Noise Pollution	One credit: Where evidence provided demonstrates that there is either no noise-sensitive areas or buildings within 800m radius of the assessed development OR Where there are or will be noise-sensitive areas or buildings within 800m radius of the assessed development a noise impact assessment in compliance with BS 7445:1991 has been carried out and the following noise levels measured/determined:	1	1	Noise impact assessment is required.	Acoustician

Issue	Credit Requirements	Credits		Comments / Actions	Responsible Team Member
		Available	Targeted (Potential)		
	– Existing background noise levels at the nearest or most exposed noise-sensitive development to the proposed development or at a location where background condition can be argued to be similar. – 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).				
Innovation					
Exemplary credits summary	Exemplary credits Up to a maximum of ten credits are available in aggregate from a combination of the following: Exemplary level of performance in existing BREEAM issues Where the building demonstrates exemplary performance by meeting defined exemplary level performance criteria in one or more of following BREEAM assessment issues: – Man 03 Responsible construction practices – Hea 01 Visual comfort – Hea 02 Indoor air quality – Ene 01 Reduction of energy use and carbon emissions – Wat 01 Water consumption – Mat 01 Environmental impacts from construction products - Building life cycle assessment (LCA) – Mat 03 Responsible sourcing of construction products – Wst 01 Construction waste management – Wst 02 Use of recycled and sustainably sourced aggregates – Wst 05 Adaptation to climate change One innovation credit can be awarded for each individual BREEAM issue exemplary performance level complied with. Approved Innovations 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.	10	1	– Man 03 Responsible construction practices (1 credit)	Contractor + MEP + Energy Assessor

9. Appendix C: Credit Weightings BREEAM 2018.

The weightings for the associated credits depending on the assessment route are shown in Table D1 below.

Section	Section Weighting			No. of credits available	Value of Each Credit
	Fully-fitted	Shell only	Shell and core	Fully Fitted	
Management	11.0%	12.0%	11.0%	18	0.61%
Health and Wellbeing	14.0%	7.0%	8.0%	11	0.73%
Energy	16.0%	9.5%	14.0%	19	0.74%
Transport	10.0%	14.5%	11.5%	12	0.96%
Water	7.0%	2.0%	7.0%	9	0.78%
Materials	15.0%	22.0%	17.5%	14	1.25%
Waste	6.0%	8.0%	7.0%	10	0.70%
Land Use and Ecology	13.0%	19.0%	15.0%	13	1.15%
Pollution	8.0%	6.0%	9.0%	12	0.75%
Innovation	10.0%	10.0%	10.0%	10	1.00%

Table D1: BREEAM Credit Weightings

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