

Report

London Oxford Airport (LOA) Energy and Sustainability Statement

Prepared for

London Oxford Airport

By YES Engineering Group Limited

February 2023



Revision History

Revision N°	Prepared By	Description	Date
A	Matthew Roberts	For Planning	11 December 2022

Document Acceptance

Action	Name	Signed	Date
Reviewed and Approved by	G Parker		22 January 2023
on behalf of	YES Engineering Group Limited		

© YES Engineering Group Limited 2023
 (unless YES Engineering has expressly agreed otherwise with the Client in writing)

This report has been prepared by Yes Engineering Group Limited on the specific instructions of our Client. It is solely for our Client's use for the purpose for which it is intended in accordance with the agreed scope of work. Any use or reliance by any person contrary to the above, to which Yes Engineering Group Limited has not given its prior written consent, is at that person's own risk.

Table of Contents

1	Introduction.....	2
1.1	General.....	2
1.2	Site Description	2
1.3	Purpose of Energy and Sustainability Statement.....	3
2	Renewable Energy.....	4
2.1	Introduction.....	4
2.2	Summary of Renewable Energy Feasibility Study	4
3	Design Strategies	5
4	Specific Policies Addressed	6
5	Conclusions	8
	Appendix A - Renewables	9
	Appendix B – BREEAM Pre-assessment Report.....	14

1 Introduction

1.1 General

YES Engineering has been engaged to prepare an Energy and Sustainability Statement as part of the planning application for a land redevelopment London Oxford Airport (LOA), OX5, 1GB. The development will utilise previously developed land to replace mid-century former MOD buildings with new energy efficient, fit for purpose accommodation suitable for high value employment uses.

The planning application is for an increase of the building footprint from 4836m² to 10334m², an uplift of 213% with 5 new developments on the site.

This Energy and Sustainability Statement covers the entire development and reviews the proposals for the wider development.

Detailed elements are not known for buildings so the following detailed energy assessments have not been completed.

- Part L2a Assessment Report
- LZC report

1.2 Site Description

The new development comprises of buildings A-E. Each building is split with into several units of either lab or office space. Figure 1 illustratively demonstrates how the development could be laid out. It is located on a site denoted by the Cherwell District Council as 'London Oxford Airport', which is situated in Langford Ln, Kidlington OX5 1RA, United Kingdom

In accordance with the Cherwell District Council's *The Cherwell Local Plan 2011-2031*, the new development is to be a 'high-value employment cluster employment development.



1.3 Purpose of Energy and Sustainability Statement

The local planning authority is Cherwell District Council (CDC). The Cherwell Local Plan 2011-2031 (July 2015) provides the strategic planning policy framework and sets out strategic site allocations for the District to 2031. The Plan requires an Energy Statement for proposals for major developments (over 10 dwellings, or 1000 m² of non-residential floor space).

This Statement has been prepared in order to address the requirement of the Cherwell Local Plan 2011-2031 and demonstrate how London Oxford Airport (LOA) will comply with Part L of the Building Regulations and local planning policies in relation to energy and carbon dioxide emissions.

Policy ESD1 and ESD5 are addressed through descriptions of the intended renewables proposed for this development.

A technical feasibility assessment of the potential on-site renewable and low carbon energy generation is included in Section 2. The suitability and type of the various technologies will be reviewed and confirmed as the detailed design progresses. A more detailed assessment of the aspects outlined above would be undertaken at the detailed design stage.

2 Renewable Energy

2.1 Introduction

This section provides a review of possible renewable and low carbon energy sources for the proposed development at London Oxford Airport in order to explore low carbon and renewable energy sources for the development.

A high level Renewable Energy Feasibility Study has been undertaken and is presented in **Appendix A**.

The need to reduce energy usage within new non-residential buildings is enforced through Part L of the Building Regulations (see 2.2). Detailed elements are not known for the buildings however so no part L calculations have been undertaken.

2.2 Summary of Renewable Energy Feasibility Study

A summary of the Renewable Energy Feasibility Study is presented below:

Element	Project Risk	Energy Reliability	To be implemented	Comment
Solar Panels	Low	Intermittent (due to sun exposure in England)	Yes	There is suitable space available onsite or in a neighbouring site that is available
Ground Source Heat Pumps	Low	Provides base cooling/heating demand	Yes	Soil and space surveys indicate it could be suitable.
Air Source heat pumps	Low	Reliable source of specialist load heating/cooling.	Some	Could be part of several options for cooling/heating to supplement the GSHPs. Especially for tenant specific applications
Solar Water Heating	Low	Intermittent	No. Roof space limited due to PV and hot water demand is low.	Due to intermittent nature and readily available heating from ground source heat pumps, there are better alternatives
Biomass Combined Heating & Power	Medium	Potential limitations in fuel supply chain. Site storage requirements	Provision made for possible future installation. Limited site heating	May affect air quality Fuel Supply can be scarce at times. Medium cost risk

			demand makes use of CHP of limited efficiency.	
District Heating Network	High	Reliable if infrastructure in place.	No	No existing infrastructure, not technically viable. High cost risk

Based upon the location of the site and the information currently available regarding the proposed development, it is possible to use a combination renewable and low carbon energy sources to meet the targets of the CDC Local Plan. This suite includes PV, and air/ground source heat pumps.

The suitability of the various technologies should continue to be reviewed as the detailed design progresses. This is to ensure compatibility with detailed building designs and the mechanical and electricity strategy.

3 Design Strategies

The design of the proposed buildings will incorporate both passive and active design strategies to minimise carbon footprint and impact on the environment. As a minimum the following passive strategies will be incorporated:

- High thermal performance values built into fabric, glazing, external doors, roof. Better than 0.16 W/m²K for roof and better than 0.26 for walls
- Minimising air leakage from the building. Improving on Building Regulations air permeability targets.
- Utilising daylight where possible through design arrangement of internal seating areas relative to glazing. Consideration given to shading to prevent solar gains.

Active design strategies to reduce carbon footprints will also be incorporated. As a minimum the following will be included within the designs:

- High efficiency lighting schemes targeting a maximum of 7 W/m² efficiency in office areas.
- Mechanical ventilation utilising high efficiency heat recovery systems and free cooling where possible.
- High efficiency motors and variable speed drives for pumping systems.
- High efficiency cooling and heating systems utilising Ground Source Heat Pumps (GSHP).
- Use of renewable energy sources on site.

4 Specific Policies Addressed

Policy Kidlington 1 of the adopted Local Plan includes the following as a design and place shaping principle:

The demonstration of climate change mitigation and adaptation measures including exemplary demonstration of compliance with the requirements of policies ESD 1 – 5.

ESD1 – Mitigating and Adapting to Climate Change

The objectives of ESD1 will be addressed as far as practicable within the development. Such measures will include:

- Design approach adopted to reduce carbon emissions and utilise resources efficiently.
- Incorporating renewable sources of energy where practical (see ESD4 and ESD5 below).

ESD2 – Energy Hierarchy and Allowable Solutions

Detailed design of the buildings has yet to be undertaken however the following key aspects will be developed during the detailed design phases in order to follow a ‘energy hierarchy’ approach:

- Use of sustainable design and construction measures to reduce the overall energy use of the building.
- Utilising localised energy generation (decentralised) where possible and ensuring high efficiency cooling and heating methods are developed.
- Incorporating renewable energy into the design
- Making use of allowable solutions.

ESD3 – Sustainable Construction

As a ‘New Build’ construction the development shall look to incorporate sustainable design technologies and minimise the carbon footprint of the buildings and overall site.

The development will target no less than ‘Very Good’ BREEAM certification and pre-assessments have already been completed showing compliance with this objective. Key reasons for the unattainability of an ‘Excellent’ BREEAM assessment include:

- 7% credits out of scope due to site constraints (e.g. poor transport infrastructure)
- 10% unpalatable due to excessive cost of implementation

As a minimum the design shall endeavour to:

Minimising energy demand within the buildings

- Minimise energy loss through the building fabric
- Maximise use of daylight internally
- Utilise free cooling systems.
- Utilise natural ventilation where applicable.
- Incorporate recycled and energy efficient materials in the construction
- Incorporate locally sourced materials and furniture where practical
- Reduce overall waste and recycle where possible

Appendix B contains a pre-assessment report on the BREEAM target.

ESD4 – Decentralised Energy Systems

A feasibility assessment for the use of Biofuel CHP plant on the site will be undertaken. However, it is anticipated that this will not prove economically viable for the following key reasons:

- Low heat load on the site and the use of ground source heat pumps not likely to be fully compatible with the use of CHP.
- Reliability of fuel sources.

There are currently no locally available district heating schemes that we are aware of. The site is also likely to have a relatively low heating demand and will incorporate ground source heat pumps (GSHP) for the heating demand. GSHP systems are inherently highly efficient for the production of both heating and cooling.

Local onsite energy production through the use of photovoltaic solar panels on a large percentage of the roof space are deemed viable and proposed to be incorporated within the scheme. These will contribute significantly to the aims of the decentralised energy systems policy ESD 4.

ESD5 – Renewable Energy

Section 2 and Appendix A have addressed the aspect of renewable energy systems to be incorporated into the scheme design.

Ground Source Heat Pumps and Photovoltaic Solar panels have both been included as part of the master planning exercise.

5 Conclusions

Based upon the site's location and the current development proposals, it is possible to assign several potential renewable and low carbon energy sources at the site to meet the energy targets. This includes photovoltaic panels (PV) and air/ground source heat pumps and potentially biomass generator.

Multiple passive and active design approaches will aim to incorporate high efficiency solutions throughout the buildings.

The suitability of these energy technologies should continue to be reviewed as the detailed design progresses, to ensure compatibility with detailed building designs and the mechanical and electrical strategy.

The target objectives of the CDC Local Plan policies are met or exceeded through the above strategies.

Appendix A - Renewables

Introduction

This Renewable Energy Feasibility Study examines a selection of well-established renewable and low carbon energy sources and reviews their suitability for the proposed development at London Oxford Airport.

The systems to be implemented at the site are covered first.

Solar Photovoltaic Panels (PV)



Figure B.1: Typical PV panels

Photovoltaic panels (PV) offset grid electricity and therefore provide a CO₂ saving of circa 0.5 kgCO₂/kWh.

PV arrays are connected to the building electrical system such that the power generated can be utilised at the time of generation, stored using on site battery banks, or exported to the grid. This flexibility increases the viability of PV generation given variable weather conditions.

PV performance is dependent on physical arrangement of collectors and is of maximum effectiveness on south or similar facing roof slopes. The proposed development is expected to gain efficient output from PV collectors across approximately half of the available roof spaces.

Whilst the intermittent nature of PV electricity production has not allowed the use of PVs to reduce the overall site peak load, it is anticipated that the overall energy usage from the grid will be substantially reduced. It is not currently proposed to utilise onsite battery storage as the peak solar production is likely to be utilised at time of generation.

PV has therefore been considered an effective renewable source of power for the site.

Ground Source Heat Pumps



Figure B.4: Ground source heating horizontal collector loops being installed

Ground source heat pumps draw heat energy from the ground, concentrate it and then release it into a property. This can also operate in reverse and produce cooling when needed.

Closed loop systems are proposed for the site utilising boreholes or horizontal collector loops. Boreholes are preferred and anticipated subject to cost analysis between the two options.

In order for systems to operate effectively, buildings must achieve a high standard of fabric energy efficiency and, where appropriate, an underfloor heating system (wet system) could be incorporated to optimise system performance.

The efficiency and cost-effectiveness of a ground source heat pump system is affected by underlying ground conditions and the thermal conductivity of the geology. Certain shall geological conditions (including sands, gravels and dry clays) have poor geothermal properties and therefore are not suitable.

The geological conditions on site have been reviewed and are considered suitable.

It is estimated that a total area of 5000m² of bore holes is required for the entire site. The bore holes would then be linked to a manifold chamber and from there, via larger dimension primary pipes, back to the plant room to connect to the heat pumps.

GSHP are considered suitable and the most energy efficient option for providing heating and cooling to the development.

The masterplan allows space for the installation of a network of boreholes in a closed loop as well as locations for pumping stations and associated infrastructure.

Solar Water Heating (or Solar Thermal)



Figure B.2: Typical solar water heating panel

Solar water heating could be used to offset a portion of the hot water demand in the commercial buildings at the site. For commercial offices, Solar water heating can reduce the fuel consumption associated with hot water by 60-70% and the associated CO₂ emissions.

Solar water heating systems rely on solar energy and, therefore, the most effective heat production occurs during the daytime and sunny periods. The efficiency of solar water heating is greatly reduced during the winter. Therefore, their output for the ‘whole year’ is relatively low.

At London Oxford Airport, given the capacity of heating available from the GSHP the additional infrastructure required for solar heating is not viable.

Air Source Heat Pumps



Figure B.3: External condensers of an air source heat pump system

Air source heat pumps absorb heat from the outside air, which can then be used to heat radiators, underfloor heating systems, or warm air convectors and hot water in a building. Heat pumps have some impact on the environment as they need electricity to run the fans and compressors for air extraction.

Air source heat pumps require the installation of external condensers, which are usually mounted on roofs or rear/side walls. They also feature moving parts (an electrically driven fan) and therefore make noise when they operate. If adopted, the external condensers will need to be positioned carefully to avoid visual/noise disturbance to site users and residents.

Keeping in mind these considerations, as part of a 'suite' of technologies to meet the CO reduction targets, air source heat pumps are an effective solution for London Oxford Airport to supplement the GSHPs if the tenants require any speciality cooling. These will provide resilience to specific tenant systems where a higher level of reliability and performance is required.

Biomass Combined Heat and Power



Figure B.5 Biomass Boiler

Large biomass plants can be used to supply heat (and power) to multiple buildings or in smaller kW-scale systems to provide warmth to a single room in a dwelling or to power central heating and hot water boilers.

Biomass can be used as a fuel source for heat, power and Combined Heat and Power (CHP) applications. Biomass is typically burned in biomass boilers. Other potential technologies include gasification and pyrolysis, but these are yet to be commercially proven.

Biomass plants can be scaled to meet the needs of the proposed development and to reflect the availability of biomass in the area.

The lifecycle costs of biomass systems are greater than tradition fossil fuel heating systems. However, incentive schemes such as the Renewable Heat Incentive (RHI) can reduce the costs and provide financial returns. This scheme has now been stopped and no alternative comparable scheme available to medium scale commercial developments is currently available.

As a solid fuel, biomass often requires transportation over significant distances. However, the carbon intensity of biomass is still significantly less than traditional fossil fuels (oil and gas), even including the emissions associated with intercontinental transportation.

The use of biomass technologies is subject to the availability of long-term contracts to ensure security of supply and sufficient generation for the site.

In addition, biomass is a bulky product that requires additional space for infrastructure (including storage and delivery space).

Given the relatively low heat demand and the large heating capacity of the GSHP, it is considered that a biomass system would not be viable for this site.

Biomass could be an option for a backup for power generator.

Wind Energy



Small scale building mounted wind turbines are deemed unlikely to make a significant impact on the energy use of the site.

Larger scale turbines are not considered suitable given the proximity to the airport and along with the variable nature of generation and requirements for storage to efficiently utilise generating capacity, have not been considered viable for this development.

Appendix B – BREEAM Pre-assessment Report

BREEAM Pre-Assessment Report

Site: London Oxford Airport Science Park

Client: London Oxford Airport

Revision: 02

Date: 23/01/2023



Revision History

Revision	Issue date	Description	Issued by	Checked by
01	09/12/2022	First Issue	EW	DE
02	23/01/2023	Score Update	EW	DE

This report has been produced by Energist UK Ltd for the private use of the client and solely in relation to the named project. It should not be reproduced in part or in whole nor distributed to third parties, without the express permission of Energist UK Ltd and the client.

Calculations contained within this report have been produced based on information supplied by the client and the design team. Any alterations to the technical specification on which this report is based, will invalidate its findings.

College Farm
Tetbury Road
Cirencester
GL7 6PY

Tel: 08458 386 387

info@energistuk.co.uk

www.energistuk.co.uk



Contents

1.	EXECUTIVE SUMMARY	4
2.	INTRODUCTION	5
3.	METHODOLOGIES	6
4.	DEVELOPMENT SUMMARY AND RATINGS	11
5.	CONCLUSIONS	17
6.	NEXT STEPS.....	17

1. EXECUTIVE SUMMARY

Energist UK has been appointed by London Oxford Airport to carry out a BREEAM 2018 New Construction Assessment for the proposed Science Park development at the site of London Oxford Airport, OX5 1GB. The development will be required to achieve a BREEAM rating of 'Very Good' in order to satisfy the planning requirements set out by the Local Planning Authority: Cherwell District Council.

This report details the Pre-Assessment Stage performance of the aforementioned development as measured against the BRE Environmental Assessment Method, BREEAM 2018 New Construction (SD5078 Issue 3.0). The site is to be registered with Building Research Establishment, BREEAM UK registration type: Commercial Uses Shell only.

The report demonstrates that the development has the potential to achieve BREEAM Very Good with an overall score of 59.2%. This score is subject to complying with all the detailed requirements during the formal assessment stage and providing documentation in line with BREEAM criteria.

Building name	LOA Science Park
BREEAM rating	Very Good
Total Score	59.20%
Min. standards level achieved	Excellent Level

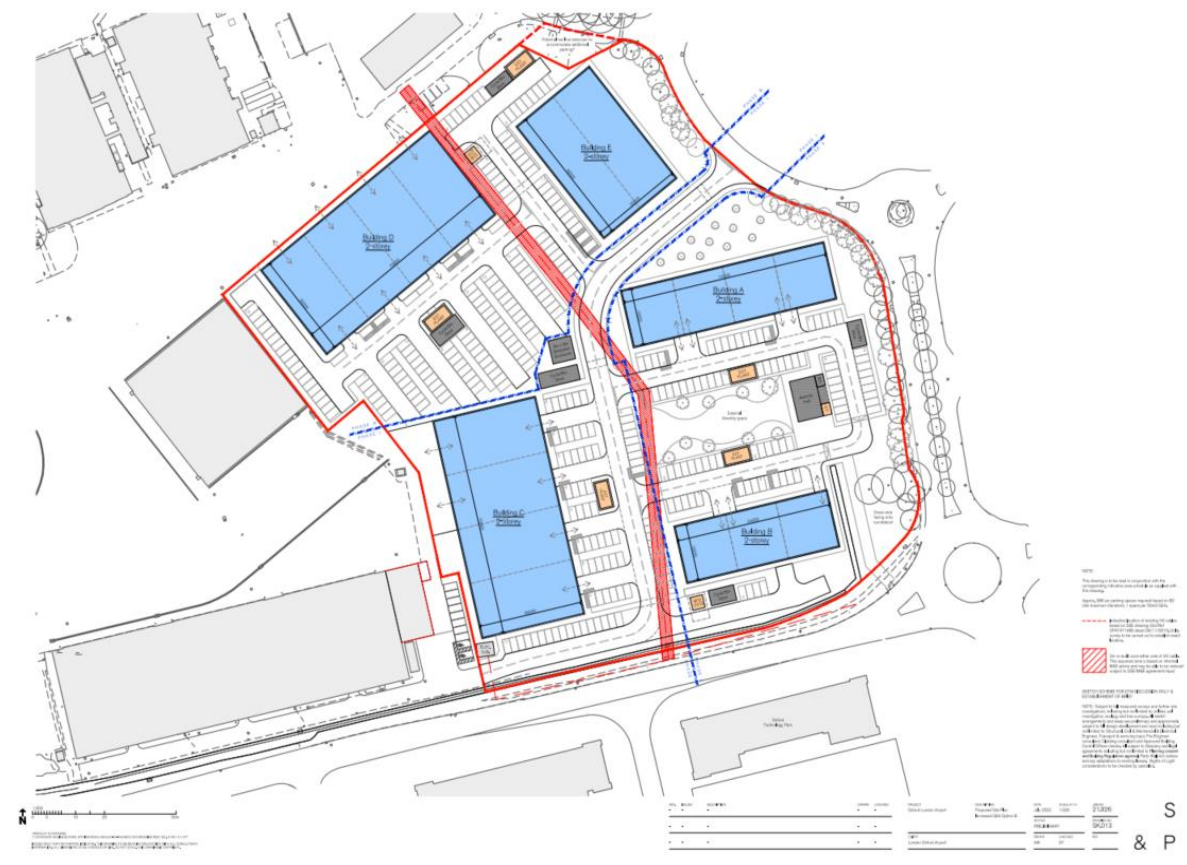
(Figure 1.1: Showing performance of development)

2. INTRODUCTION

Site description

The application site is situated at London Oxford Airport (LOA), Kidlington, OX5 1GB. The site lies in the Local Planning Authority area of Cherwell District Council, who require a rating of 'Very Good' to be met for the BREEAM New Construction 2018.

The proposed redevelopment is to demolish the existing buildings to provide 5no. new energy-efficient, fit-for-purpose accommodation with new vehicular access, parking, pedestrian and cycle access routes and landscaping.



(Figure 2.1: Application site areas in redline)

3.METHODOLOGIES

The Building Research Establishment Environmental Assessment Method ('BREEAM' hereafter) is an environmental assessment method for rating and certifying the performance of new construction projects. It is a national standard for use in the design and construction of all new developments with a view to encouraging continuous improvement in sustainable building techniques.

The BREEAM Scheme is designed to evolve with increasingly tightening Building Regulations, and the development of technology and innovations, with the most recent version of BREEAM released in March 2018, placing a greater emphasis on overall life cycle efficiencies and stakeholder participation, with updated standards in most sections.

The BREEAM Scheme covers nine categories of sustainable design (each of which contains a number of environmental issues), comprising:

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

A further 'Innovation' section is provided to award developments that exceed the levels set out in the standard criteria, where exemplary performance levels are achieved. Each issue is a source of environmental impact which can be assessed against a performance target and awarded one or more credits.

In addition to meeting minimum standards (which vary according to the BREEAM rating sought), achievement of the requirements in each design category scores a number of percentage points. The overall total percentage 'score' then determines the BREEAM Rating achieved by the assessed development.

Scoring system

Credits are available for each category meeting the specified levels of performance. The number of credits available in each category does not necessarily reflect the relative importance of the issues being assessed, and will

vary depending on the developments' Scheme type. Before the final score is calculated, each of the scores in the nine categories is multiplied by an 'Issue Weighting Factor' before the final score is calculated.

The BREEAM Rating is awarded on the basis of achieving both a set of mandatory minimum standards and a score level as set out above. The minimum standards vary depending on the rating required.

Minimum standards

Before the development can start to be awarded points under BREEAM 'Excellent' it must achieve minimum standards in the following categories highlighted below:

Minimum standards for each rating level					
	Pass	Good	Very Good	Excellent	Outstanding
MAN 03: Responsible construction practices	None	None	None	One credit (responsible construction management)	Two Credits (responsible construction management)
MAN 04: Commissioning and handover	None	None	One Credit (commissi oning-test schedule and responsibil ities)	One Credit (commissioning -test schedule and responsibilities)	One Credit (commissioning -test schedule and responsibilities)
MAN 04: Commissioning and handover	None	None	Criterion 11 (Building User Guide)	Criterion 11 (Building User Guide)	Criterion 11 (Building User Guide)
MAN 05: Aftercare	None	None	None	One credit (Commissionin g- implementation)	One credit (Commissionin g- implementation)
ENE 01: Reduction of energy use and	None	None	None	Four credits (Energy performance)	Six credits (Energy performance) and four credits (energy

carbon emissions					modelling and reporting)
ENE 02: Energy monitoring	None	None	One credit (First sub-metering credit)	One credit (First sub-metering credit)	One credit (First sub-metering credit)
WAT 01: Water consumption	None	One credit	One credit	One credit	Two credits
WAT 02: Water monitoring	None	Criterion 1 only	Criterion 1 only	Criterion 1 only	Criterion 1 only
MAT 03: Responsible sourcing of materials	Criterion 1 only	Criterion 1 only	Criterion 1 only	Criterion 1 only	Criterion 1 only
WST 01: Construction waste management	None	None	None	None	One credit
WST 03: Operation waste	None	None	None	One credit	One credit

(Figure 3.1: Table showing minimum standards required for each level of the BREEAM assessment)

BREEAM assessment - a two stage process

The BREEAM scheme allows for a building to be assessed at the design stage and post-construction stage before the formal BREEAM Certification (and Rating) is awarded; this will ensure that the completed development meets sustainability performance as designed. During the certification assessment, which will lead to a formal BREEAM rating and certificate, the assessment stages are as follows:

The initial Design Stage certification – at this stage an Interim Certificate is issued, based on a provisional rating. A Post-Construction check is required to verify the rating in the ‘as constructed’ state before a Final BREEAM Certificate can be issued.

The Design Stage assessment and Post-Construction check must be carried out by a licensed assessor, who registers the assessment with the BRE.

This report forms the Pre-Assessment which is the initial stage of the Design Stage Certification process. Energist UK has verified with BRE that the development will be assessed under the BREEAM 2018 New Construction Commercial once the planning application is approved.

Approach and Methodology

In order to gain an understanding of the achievable BREEAM rating for the application Site, Energist UK were appointed by London Oxford Airport to undertake a BREEAM Pre-Assessment for the development.

The purpose of this Pre-Assessment report is to identify the strengths and weaknesses of the proposals in relation to the BREEAM criteria, and to identify appropriate opportunities to achieve the aspired 'BREEAM' rating.

The Pre-Assessment is intended to identify how the development will score when the current designs are formally assessed under the BREEAM Scheme. This BREEAM Pre-Assessment was conducted under the New Construction 2018 scheme with manual version SD5078: 3.0 – 2018.

BREEAM rating	% score
Outstanding	≥ 85
Excellent	≥ 70
Very good	≥ 55
Good	≥ 45
Pass	≥ 30
Unclassified	< 30

(Figure 3.2: Table showing BREEAM rating and score)

RIBA Stages 1&2 (Pre-Planning Requirements)

BREEAM assessments cover all RIBA stages, including Preparation and Brief (Stage 1) and Concept Design (Stage 2). These pre-planning stages have a number of highly weighted credits requiring action prior to stage completion. It is important that these are credits are addressed so as to avoid unnecessary costly credits at later stages. The table below lists all of the credits either requiring action or completion at RIBA Stages 1 and 2. This table is for reference of all pre-planning credits only; not all credits will necessarily be targeted.

Issue	Name	RIBA Stage 1	RIBA Stage 2
Man01	Appointment of BREEAM AP		
Mat06	Complete a Material Efficiency Analysis		
Wst05	Complete a climate Change Adaption Strategy Appraisal		
Le01-Le05	Appointment of Suitably Qualified Ecologist		
Le02	Completed Ecology Report		
Wst06	Complete a Functional Adaptability Study		
Man01	Completed schedule of consultant responsibilities for each project stage		
Man01	Complete public consultation exercises		
Man01	Completed BREEAM Pre-assessment with targets		
Man02	Completed Elemental Life Cycle Cost Exercise		
Hea06	Completion of Security Needs Assessment		
Ene04	Completion of Passive Design Analysis		
Ene04	Completion of LZC Feasibility Study		
Tra01	Completed Transport Assessment and Travel Plan		
Tra02	Consultation with Local Authority on most appropriate improvement to local pedestrian and cyclist access		
Wst01	Complete a pre-demolition audit of any existing structures or hard landscaping		
Mat01	Completed Life Cycle Assessment		
Mat03	Ensure Sustainable Procurement Plan is in place		

(Figure 3.3: Table RIBA stage 1&2 Credits)

4. DEVELOPMENT SUMMARY AND RATINGS

During the Pre-Assessment, the viability of credits was assessed with the aim of achieving BREEAM rating of Very Good. The Pre-Assessment identified that BREEAM Very Good Rating is achievable for this project. The table below shows in "Targeted credits" how many credits are likely to be achieved with design in its current form. The column "Max credits" are the number of credits that are available for this particular development.

The Minimum Standards that are required for BREEAM rating of 'Very Good' have been assessed as being achievable.

Reference	Credit title	Max credits	Targeted credits	Comments
Management				
MAN 01	Project brief and design	4	4	Project delivery stakeholders will meet to define roles and responsibilities for each RIBA stage. Third party consultation will be undertaken to meet the minimum consultation requirements. BREEAM AP to be appointed at pre-planning stage and Stage 3.
MAN 02	Life cycle cost and service life planning	4	1	Capital cost will be reported in £/m ² at design stage and post construction stage.
MAN 03	Responsible construction practices	6	5	It is mandatory that all timber will be 'Legally harvested and traded timber' 2 credits are assumed for responsible construction management, this requires achievement of 35 CCS points and

				achievement of the 3 additional items within Table 1 of BREEAM guidance note GN33. BREEAM Site AP; The Principal Contractor required to monitor electricity and water usage during construction and record material and waste transport mileage.
MAN 04	Commissioning and handover	1	0	Credit not sought
Health and Wellbeing				
HEA 01	Visual comfort	3	2	External lighting levels, and controls will be designed and installed in accordance with industry best practice guidelines; Occupants of the buildings will have an appropriate level of view out through the external façade.
HEA 05	Acoustic performance	1	1	Acoustic testing will be undertaken to meet BREEAM requirements for indoor ambient noise levels
HEA 06	Security	1	1	Security Needs Assessment will be undertaken
HEA 07	Safe and healthy surroundings	2	1	Landscaped space is accessible by the building user.
Energy				
ENE 01	Reduction for energy use and carbon emissions	9	3	3 credits are targeted The assessment will be shell only therefore this section is based on heating and cooling demand of the building fabric only.
ENE 03	External lighting	1	1	Average luminous efficacy of the external lightings will not be less than 70 lumens per

				circuit watt. The circuit will include automatic controls.
ENE 04	Low carbon design	3	1	Passive Design Analysis and Low Zero Carbon Feasibility study will be carried out prior to the end of RIBA Stage 2.
Transport				
TRA 01	Transport assessment and travel plan	2	2	A Travel Plan has been developed based on a BREEAM compliant Transport Assessment.
TRA 02	Sustainable transport measures	10	4	Credits targeted for providing public transport information, cycle spaces, cycle facilities, EV Charing points and existing local amenities.
Water				
WAT 02	Water monitoring	1	1	A compliant water meter with a pulsed output will be installed to ensure compliance and gain one credit.
WAT 03	Water leak detection	1	1	Water leak detection system will be installed to the building.
Materials				
MAT 01	Environmental impacts from construction products- building life cycle assessment (LCA)	7	0	Credit is not targeted
MAT 02	Environmental impacts from construction products- Environmental Product Declarations (EPD)	1	0	Credit is not targeted.

MAT 03	Responsible sourcing of construction products	4	3	One credit on a Sustainable Procurement Plan will be used to guide specification towards sustainable construction products. All materials will be responsibly sourced, with a view to achieving 2 credits in this section.
MAT 05	Designing for durability and resilience	1	1	The design will incorporate suitable durability and protection measures and solutions to prevent damage to the vulnerable parts of the building from damage and exposed parts from material degradation.
MAT 06	Material efficiency	1	0	Credit is not targeted
Waste				
WST 01	Construction waste management	5	4	Pre-demolition audit; A Resource Management Plan will be developed and aim a construction waste resource efficiency benchmark of 7.5m ³ /6.5 tonnes per 100m ² . At least 70% by volume (or 80% by tonnage) of non-demolition waste and 80% by volume (or 90% by tonnage) of demolition waste will be diverted from landfill to be reused or recycled.
WST 02	Use of recycled and sustainably sourced aggregates	1	0	Credit is not targeted.

WST 03	Operational waste	1	1	Dedicated space to cater for the segregation and storage of operational recyclable waste volumes generated by the assessed building
WST 05	Adaptation to climate change	1	1	An Adaption to Climate Change Study will be completed prior to the end of RIBA Stage 2.
WST 06	Design for disassembly and adaptability	2	2	A Functional Adaptation Appraisal will be carried out at RIBA Stage 2.
Land use and ecology				
LE 01	Site selection	2	1	One credit is targeted for reusing previously occupied land. Contaminated Land credit is not sought.
LE 02	Identifying and understanding the risks and opportunities for the project	2	2	An Ecologist has been appointed to complete a Preliminary Ecology Appraisal for the site.
LE 03	Managing negative impacts on ecology	3	3	Plans will be put in place to minimise ecological value on site and these will be implemented by the Principal Contractor.
LE 04	Change and enhancement of ecological value	4	2	Solutions for enhancing ecological value on site will be identified and implemented leading to an increase in biodiversity value.
LE 05	Long term ecology management and maintenance	2	2	A Landscape and Ecology Management Plan will be developed covering the first five years after project completion. Opportunities for managing the ecological value during and post construction will be identified and implemented.

Pollution				
POL 03	Flood and surface water management	5	4	The development is situated in flood zone 4. It's assumed that SuDs will be used to achieve runoff rate and volume credit.
POL 04	Reduction of night time light pollution	1	1	External lighting will be designed and installed in line with the ILP Guidance notes and will include time controllers.
Innovation				
	Innovation	10	1	All of the Man03 Considerate Constructor checklist items will be achieved.

(Figure 4.1: Table showing the targeted credits of the development)

5. CONCLUSIONS

Energist UK has carried out a Pre-Assessment to determine the viable BREEAM rating that can be achieved by the proposed development at London Oxford Airport, Kodlington.

The Pre-Assessment has determined that the development has the potential to achieve an overall score of 59.50% which equates to a BREEAM rating of 'Very Good' as shown in the table below. Additional credits have been targeted for the development in order to provide a suitable buffer above the Very Good threshold. This satisfies the anticipated requirement set by Cherwell District Council.

BREEAM Section	Credits available	Credits achieved	% of credits achieved	Section weighting (Shell only)	Section score (%)
Management	15	10	66.67%	12.00%	8.00%
Health and wellbeing	7	5	71.43%	7.00%	5.00%
Energy	13	5	38.46%	9.50%	3.65%
Transport	12	6	50.00%	14.50%	7.25%
Water	2	2	100.00%	2.00%	2.00%
Materials	14	4	28.57%	22.00%	6.28%
Waste	10	8	80.00%	8.00%	6.40%
Land use and Ecology	13	10	76.92%	19.00%	14.61%
Pollution	6	5	83.33%	6.00%	5.00%
Innovation	10	1	10.00%	10.00%	1.00%
Final BREEAM Score					59.20%
BREEAM rating					Very Good

(Figure 5.1: Calculations for score)

6. NEXT STEPS

Design Stage Assessment

The first stage of the BREEAM assessment is carried out on the detailed design. It is possible to undertake the design stage assessment during the period up to the issue of tender documents. However, the evidence base is required to

demonstrate that each credit can be awarded; therefore, to gain the greatest number of credits it is advisable to undertake the design stage assessment once the required information is available. For example, details of all the sanitary fittings are required to be specified to calculate the score for the water consumption efficiency under BREEAM.

When the Assessor is satisfied with the performance under the BREEAM for the design stage assessment a report will be submitted to BRE to receive an 'Interim' BREEAM certification. This report will contain some documentary evidence together with an 'audit trail' for all specification, clauses, drawings, letters and reports.

Post Construction Stage Assessment

This can be carried out on the completed development. As part of this process, the Assessor will collate evidence (either documentary, photographic, or site survey evidence) to demonstrate that the development has been built in accordance with the details given at the Design Stage. This assessment is called a Post Completion Review Assessment (PCR).

If changes have been made to the design following the design stage assessment (during the construction phase), that affects the BREEAM score, the Assessor will re-calculate the Final score. This may be different to the Interim score. When the Assessor is satisfied with the performance under the BREEAM Scheme, they will submit a report to BRE to receive a Final BREEAM Certification for the development

Ongoing Consultation

Although this report provides recommendations, specific requirements of BREEAM can easily be misinterpreted or excluded at design stage, particularly in relation to the numerous standards with which the client must demonstrate compliance (such as CIBSE / ILE standards etc.) and the requirement to consult with various specialists (such as LZC / renewables' consultants, ecologists, acousticians etc.). It is therefore recommended that the relevant, competent third parties are engaged throughout all design stages in order to ensure the development proceeds in a manner that complies with the relevant requirements.

BREEAM - DESIGN STAGE SUMMARY

Site: LOA Science Park, OX5 1GB

Building Type	BREEAM New Construction 2018 Shell only Commercial Use
---------------	--

Date:	23/01/2023
-------	------------

BRE Reg No.	Pending
-------------	---------

Project URN:	CI.LO-0
--------------	---------

Certificate Details	
BREEAM Assessor	Ellie Wang (EN)
Architect Details	Spratley & Partners
M&E Details	
Client	Civils

Required BREEAM Rating	Very Good (55%)
Targeted Score	59.20%

Credit Title	Summary of mandatory requirements	To be Met?
Man04 Commissioning and Handover	Produce a Commissioning and Testing Schedule with defined responsibilities	N/A to Shell
Man04 Commissioning and Handover	Produce a technical and non-technical Building User Guide for the building	N/A to Shell
Ene02 Energy Monitoring	Provide energy monitoring for 90% of each fuel type	N/A to Shell
Wat01 Water Consumption	Achieve a 12.5% reduction in water consumption compared to the notional baseline	Yes
Wat 02 Water Monitoring	A water meter on the mains supply to building.	Yes
Mat 03 Responsible Sourcing of Materials	All timber to be legally harvested and traded. (Chain of Custody and FSC or PEFC).	Yes

Credit Title	CREDITS		Summary of Requirements (refer to the BREEAM Guidance Notes for the full credit requirements)	Comments/ Actions	Actioner	Action deadline	Stage for consideration
	Credits Available	Credits Targeted					
MANAGEMENT							
Man 01	Project Brief and Design	To optimise final building design through recognising and encouraging an integrated design process and robust stakeholder engagement.					
Project delivery planning	1	1	<p>Credit awarded where, prior to completion of the RIBA Stage 2, the TW, building occupier, design team and contractor contribute 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 phase of the project.</p> <p>The project team should demonstrate how the project delivery stakeholder contributions and outcomes of the consultation process have influenced or changed the Initial Project Brief, including if appropriate, the Project Execution Plan, Communication Strategy, and the Concept Design.</p>	<p>Meeting minutes showing parties present, roles and responsibilities agreed. Contractual tree, project roles table or design responsibility matrix if available.</p> <p>Must include date, location and attendee information (names, organisations and roles), along with a record of the meeting and agreed actions.</p> <p>Minutes to show discussion of project brief/strategy. To include:</p> <ul style="list-style-type: none"> a. End user requirements b. Aims of the design and design strategy c. Particular installation and construction requirements/limitations d. Occupiers' budget and technical expertise in maintaining any proposed systems e. Maintainability and adaptability of the proposals f. Requirements for the production of project and end user documentation g. Requirements for commissioning, training and aftercare support 	Planning team		RIBA Stage 2
Stakeholder Consultation (Interested Parties)	1	1	<p>Credit awarded where, prior to completion of the RIBA Stage 2, all relevant interested parties have been consulted by the design team on the minimum consultation content. The project team must demonstrate how the consultation exercise has influenced or changed the Initial Project Brief and Concept Design.</p> <p>Prior to completion of RIBA Stage 4, consultation feedback must be given to, and received by, all relevant parties.</p>	<p>Consultation plan setting out the process and scope of the consultation, including feedback process. Should contain:</p> <ul style="list-style-type: none"> 1. Functionality, build quality and impact (including aesthetics). 2. Provision of appropriate internal and external facilities (for future building occupants and visitors/users). 3. Management and operational implications. 4. Maintenance resources implications. 5. Impacts on the local community, e.g. local traffic/transport impact. 6. Opportunities for shared use of facilities and infrastructure with the community/appropriate stakeholders, if relevant/appropriate to building type. 7. Compliance with statutory (national/local) consultation requirements. 8. Energy use and sustainability measures 9. Inclusive and accessible design. 	Planning team		RIBA Stage 2

Credit Title	CREDITS		Summary of Requirements (refer to the BREEAM Guidance Notes for the full credit requirements)	Comments/ Actions	Actioner	Action deadline	Stage for consideration
	Credits Available	Credits Targeted					
BREEAM AP (Concept Design)	1	1	<p>The project team, including the TW, formally agree strategic performance targets early in the design process, see (with the support of the BREEAM AP where appointed).</p> <p>Credit awarded where the project involves a BREEAM AP at an appropriate time and level to work with the project team, including the TW, to consider the links between BREEAM issues and assist them in maximising the project's overall performance against BREEAM, from their appointment and throughout Concept Design. The BREEAM AP will monitor progress against the agreed performance targets throughout all stages after their appointment where decisions critically impact BREEAM performance. They will provide feedback to the project team as appropriate, to support them in taking corrective actions and achieving their agreed performance targets.</p>	A BREEAM Advisory Professional to be appointed at stage 2- BREEAM Advisory Professional will be the sustainability champion for this stage.			RIBA Stage 1
BREEAM AP (Developed Design)	1	1	<p>Credit awarded where the first BREEAM AP credit is achieved and the AP completed this role throughout the developed design phase.</p>	Further appointment needs to be appointed			RIBA Stage 2-4
Man 02	Life cycle cost and service life planning		To promote the business case for sustainable buildings and to deliver whole life value by encouraging the use of life cycle costing to improve design, specification, through-life maintenance and operation.				
Elemental Life Cycle Cost (LCC)	2	0	<p>Two credits awarded where an Elemental LCC analysis and design option appraisal is carried out in line with 'Standardized method of life cycle costing for construction procurement' PD 156865:2008, at RIBA Stage 2.</p> <p>The LCC analysis must provide an indication of future replacement costs over a period of analysis as required by the TW (e.g. 20, 30, 50 or 60 years) and includes service life, maintenance and operation cost estimates. Demonstrate how the elemental LCC plan has influenced building and systems design/specifications to minimise life cycle costs and maximise critical value.</p>	Credit not sought			RIBA Stage 2
Component Level LCC Option Appraisal	1	0	<p>Credit awarded where a component LCC plan is developed to include envelope, services, finishes and external spaces, where these will be installed by the developer, before the end of RIBA Stage 4.</p> <p>Demonstrate how the component level LCC plan has influenced building and systems design/specifications to minimise life cycle costs and maximise critical value.</p>	<p>LCC must be in line with PD 156865:2008</p> <p>Credit not targeted but could be a potential future win.</p>			RIBA Stage 4
Capital Cost Reporting	1	1	<p>Credit awarded where the project team reports the predicted capital cost for the building in £k/m2.</p> <p>At the design stage, this can be awarded based on confirmation of the predicted cost, and a TW commitment to provide the information on the final cost at the end of the project.</p>	<p>Provide budget/predicted costs for: Construction, including preparatory works, materials, equipment and labour Site management Construction financing Insurance and taxes during construction Inspection and testing</p> <p>This can be on headed letter or excel doc.</p>	Client		

Credit Title	CREDITS		Summary of Requirements (refer to the BREEAM Guidance Notes for the full credit requirements)	Comments/ Actions	Actioner	Action deadline	Stage for consideration
	Credits Available	Credits Targeted					
Man 03	Responsible Construction practices		To recognise and encourage construction sites which are managed in an environmentally and socially considerate, responsible and accountable manner.	Mandatory minimum requirement: One credit in responsible construction management for Excellent			
Pre-requisite	0	Y	MANDATORY FOR ALL RATINGS: All timber and timber based products used in the project are 'legally harvested and traded timber'.	Must be confirmed with Chain of Custody and FSC/ PEFC certificates	Main contractor		
Environmental management	1	0	Credit awarded where the TW operates an EMS covering main operations. The EMS must be either third party certified to ISO14001/EMAS standard, or structured in compliance with BS 8555 2003, having reached phase four of implementation stage. The TW must implement best practice pollution prevention policies on site, in line with PPG 6.	Civils don't have ISO 14001 certificate	Main contractor		
BREEAM AP (Site)	1	1	The TW and contractor have formally agreed performance targets. One credit awarded where the BREEAM AP works with the project team, including the TW, to consider the links between BREEAM issues and assist them in achieving and if possible going beyond the design intent, to maximise the project's performance against the agreed performance targets throughout the Construction, Handover and Close Out stages. Monitor construction progress against the performance targets agreed under criterion 5 above throughout all stages where decisions critically impact BREEAM performance. Provide feedback to the constructors and the project team as appropriate, to support them in taking corrective actions and achieving their agreed performance targets. The AP will monitor and, where relevant, coordinate the generation of appropriate evidence by the project team and the provision to the assessor.	This credit is targeted			
Responsible construction management	2	2	One credit awarded where the required responsible construction management items from Table 4.1 are achieved. One additional credit awarded where a further 6 responsible construction management items are achieved.	CCS to be used? If so score at least 35 points and ensure site will be left safe and tidy at handover.	Main contractor		
Monitoring of Construction Site Impacts (Utility Consumption)	1	1	Credit awarded where responsibility for monitoring all on-site energy use and potable water consumption from construction processes (and dedicated off-site monitoring) has been assigned to an individual. Potable water (m3) and energy (kWh or litres of fuel) used by all construction plant, equipment (fixed and mobile) and site accommodation is monitored and reported on. Provide the final CO2 emissions (total kgCO2/project value) and total net potable water consumption (m3) at the end of the project.	Confirm responsible individual, and confirm process in place to monitor energy and water use during construction. Copy of correspondence to individual, letter/policy to confirm what process will be followed on site to collect data.	Main contractor		
Monitoring of Construction Site Impacts (Transportation)	1	1	Credit awarded where responsibility has been assigned to an individual to monitor and record transport movement and impact data from delivery of the majority of construction materials to, and waste from, site. Transport, intermediate storage and distribution of materials from factory gate to building site to be included as minimum. Set targets for transportation movements and impacts resulting from delivery of the majority of construction materials to site and construction waste from site. Report separately for materials and waste, the total fuel consumption (litres) and total CO2 emissions (kgCO2 eq), plus distance travelled (km). Provide the final figures at the end of the project.	As above	Main contractor		

Credit Title	CREDITS		Summary of Requirements (refer to the BREEAM Guidance Notes for the full credit requirements)	Comments/ Actions	Actioner	Action deadline	Stage for consideration
	Credits Available	Credits Targeted					
Man 04	Commissioning and Handover		To encourage a properly planned handover and commissioning process that reflects the needs of the building occupants.	Mandatory minimum requirement: One credit in commissioning-testing schedule and responsibilities and Building User Guide criteria for Very Good and above.			
Commissioning - testing schedule and responsibilities	N/A	N/A	<p>Credit awarded where a schedule of commissioning and testing is in place and includes a suitable timescale for commissioning and re-commissioning of all complex and non-complex building services and control systems and for testing and inspecting building fabric. The schedule is in accordance with:</p> <ol style="list-style-type: none"> 1. Current Building Regulations 2. BSRIA guidelines(16) 3. CIBSE guidelines(17) 4. Other appropriate standards <p>Where present a BMS is also separately commissioned. An appropriate project team member is appointed to monitor and programme pre-commissioning, commissioning and testing. Where necessary include re-commissioning activities on behalf of the TW.</p>	N/A for Shell only	Main contractor		
Commissioning - design and preparation	N/A	N/A	<p>Credit awarded where an appropriate project team member is appointed - provided they are not involved in the general installation works for the building services systems- with responsibility for:</p> <ol style="list-style-type: none"> 1. Undertaking design reviews and giving advice on suitability for ease of commissioning. 2. Providing commissioning management input to construction programming and during installation stages. 3. Management of commissioning, performance testing and handover or post-handover stages. <p>For buildings with complex building services and systems, this role needs to be carried out by a specialist commissioning manager.</p>	N/A for Shell only	Main contractor		During design
Testing and inspecting building fabric	1	0	<p>Previous commissioning credits must be completed.</p> <p>Credit awarded where a post construction thermographic survey and airtightness testing and inspection is completed to assure the quality of the building fabric, including insulation continuity, avoidance of thermal bridging and air leakage paths.</p> <p>Defects identified through testing must be rectified prior to building handover and close out. All testing must be carried out by a Suitably Qualified Professional in line with relevant standards.</p>	Not targeted, 5 buildings Costly; Air leakage testing is likely to be throw up several issues for this warehouse building.	N/A		
Handover	N/A	N/A	<p>Credit awarded for developing <u>two building user guides</u> for the following users: A non-technical user guide for distribution to the building occupiers. A technical user guide for the premises facilities managers. A draft copy is developed and discussed with users first (where the building occupants are known) to ensure the guide is most appropriate and useful to potential users.</p> <p>Prepare two training schedules timed appropriately around handover and proposed occupation plans for the following users: A non-technical training schedule for the building occupiers. A technical training schedule for the premises facilities managers.</p>	N/A for Shell only	Main contractor		

Credit Title	Credits Available	Credits Targeted	Summary of Requirements (refer to the BREEAM Guidance Notes for the full credit requirements)	Comments/ Actions	Actioner	Action deadline	Stage for consideration
Man05	Aftercare		To ensure the building operates in accordance with the design intent and operational demands, through providing aftercare to the building owner and occupants during the first year of occupation.	Mandatory minimum requirement: One credit in commissioning implementation for Excellent and above.			
Aftercare support	N/A	N/A	<p>Credit awarded for providing aftercare support to the building occupiers including as a minimum: A meeting between the aftercare support team or individual, and the building occupier or management team (prior to initial occupation, or as soon as possible thereafter) to:</p> <ol style="list-style-type: none"> 1. Introduce the aftercare support available, including the content of the building user guide (where it exists) and training schedule. 2. Present key information on the building including the design intent and how to use the building to ensure it operates as efficiently and effectively as possible. <p>On-site facilities management training including:</p> <ol style="list-style-type: none"> 1. A walkabout of the building 2. Introduction to and familiarisation with the building systems, their controls and how to operate them in accordance with the design intent and operational demands. <p>Provide initial aftercare support for at least the first month of building occupation, e.g. weekly attendance on-site, to support building users and management (the level of frequency will depend on the complexity of the building and building operations). Provide longer term aftercare support for occupiers for at least the first 12 months from occupation, e.g. a helpline, nominated individual or other appropriate system to support building users and management.</p> <p>Establish operational infrastructure and resources to coordinate the collection and monitoring of energy and water consumption data for a minimum of 12 months, once the building is substantially occupied. This facilitates analysis of discrepancies between actual and predicted performance, with a view to adjusting systems and user behaviours accordingly.</p>	N/A for Shell only	N/A		
Commissioning - implementation	N/A	N/A	<p>Credit awarded for completing the following commissioning activities over a minimum 12-month period, once the building becomes substantially occupied: Complex systems: The specialist commissioning manager will:</p> <ol style="list-style-type: none"> 1. Identify changes made by the owner or operator that might have caused impaired or improved performance. 2. Test all building services under full load conditions, i.e. heating equipment in mid-winter, cooling and ventilation equipment in mid-summer and under part load conditions (spring and autumn). 3. Where applicable, carry out testing during periods of extreme (high or low) occupancy. 4. Interview building occupants (where they are affected by the complex services) to identify problems or concerns regarding the effectiveness of the systems. <p>1. Produce monthly reports comparing sub-metered energy performance to the predicted one 2. Identify inefficiencies and areas in need of improvement. 3. Re-commission systems (following any work needed to serve revised loads), and incorporate any revisions in operating procedures into the operations and maintenance (O&M) manuals.</p> <p>Simple systems (naturally ventilated): The external consultant, aftercare team or facilities manager will:</p> <ol style="list-style-type: none"> 1. Review thermal comfort, ventilation, and lighting, at three, six and nine month intervals after initial occupation, either by measurement or occupant feedback. 2. Identify deficiencies and areas in need of improvement 3. Re-commission systems and incorporate any relevant revisions in operating procedures into the O&M manuals. 	N/A for Shell only			
Post-occupancy evaluation (POE)	N/A	N/A	<p>Credit awarded where the client or building occupier commits to carry out a POE exercise one year after the building is substantially occupied. An independent party carries out the POE covering:</p> <ol style="list-style-type: none"> 1. A review of the design intent and construction process (review of design, procurement, construction and handover processes). 2. Feedback from a wide range of building users including facilities management on the design and environmental conditions of the building covering: 3. Internal environmental conditions (light, noise, temperature, air quality) 4. Control, operation and maintenance 5. Facilities and amenities 6. Access and layout 7. Energy and water consumption (see criterion 2 and Methodology 8. Other relevant issues, where appropriate (see Definitions on the facing page) <p>The independent party provides a report with lessons learned to the client and building occupiers. The client or building occupier commits funds to pay for the POE in advance.</p>	N/A for Shell only			

Credit Title	Credits Available	Credits Targeted	Summary of Requirements (refer to the BREEAM Guidance Notes for the full credit requirements)	Comments/ Actions	Actioner	Action deadline	Stage for consideration
HEALTH & WELLBEING							
Hea 01	Visual comfort	To encourage best practice in visual performance and comfort by ensuring daylighting, artificial lighting and occupant controls are considered.					
Control of glare from sunlight	N/A	N/A	Identify areas at risk of glare using a glare control assessment. The glare control assessment also justifies any areas deemed not at risk of glare. A glare control strategy designs out potential glare in all relevant building areas where risk has been identified. This should be achieved through building form and layout or building design measures. The glare control strategy does not increase energy consumption used for lighting.	N/A for Shell only	Arch		
Daylighting	1	0	One credit awarded where calculations have been carried out which demonstrate that at least 80% of floor area in occupied spaces achieve 2% daylight factor. 80% of working planes must have view of the sky.	Unlikely to be achievable from looking at the elevations			
View out	1	1	Credit awarded when 95% of floor space within relevant building areas (inc. workstations, close work areas or areas where a view out is deemed beneficial to occupants of the space) are within 8m of a wall which has a window or permanent opening that provides an adequate view out. The window/opening must be equal to, or greater than, 20% of the surrounding wall area. Where the room depth is greater than the 7m requirement, compliance is only possible where the % of window/opening is ≥ the values in table 1.0 of BS 8206.	Marked up plans to be provided.	Arch		
Internal & external light level, zoning & controls	1	1	All external lighting located within the construction zone is specified in accordance with BS 5489-1:2013 Code for the practice for the design of road lighting. Lighting of roads and public amenity areas and BS EN 12464-2:2014 Light and lighting - Lighting of work places - Part 2: Outdoor work places. External lighting should provide illuminance levels that enable users to perform outdoor visual tasks efficiently and accurately, especially during the night.	M&E to provide specification and lighting design drawings to meet criteria- external lighting only	M&E		
Hea 02	Indoor air quality	To encourage and support healthy internal environments with good indoor air quality.					
Pre-requisite	0	N	Indoor air quality (IAQ) plan- to award any credits a site specific IAQP must be produced by the end of Design.				
Ventilation	1	0	Credit awarded when the building has been designed to minimise the indoor concentration and recirculation of pollutants in the building as follows: 1. Provide fresh air into the building in accordance with the criteria of the relevant standard for ventilation 2. Ventilation pathways are designed to minimise the ingress and build-up of air pollutants inside the building (see Methodology on page 87 of manual) 3. Where present, HVAC systems must incorporate suitable filtration to minimise external air pollution, as defined in BS EN 13779:2007 Annex A3(46). 4. Areas of the building subject to large and unpredictable or variable occupancy patterns have carbon dioxide (CO ₂) or air quality sensors specified and: In mechanically ventilated buildings or spaces: sensors are linked to the mechanical ventilation system and provide demand-controlled ventilation to the space. In naturally ventilated buildings or spaces: sensors either have the ability to alert the building owner or 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 or roof vents 5. For naturally ventilated or mixed mode buildings, the design demonstrates that the ventilation strategy provides adequate cross flow of air to maintain the required thermal comfort conditions and ventilation rates in accordance with CIBSE AM10(47).	N/A for Shell only			

Credit Title	Credits Available	Credits Targeted	Summary of Requirements (refer to the BREEAM Guidance Notes for the full credit requirements)	Comments/ Actions	Actioner	Action deadline	Stage for consideration
Emissions from construction products	N/A	N/A	One credit awarded where three out of the five product types meet the emission limits, testing requirements and any additional requirements listed in Table 5.11. Two credits awarded where all of the product types listed meet the emission limits, testing requirements and any additional requirements listed in Table 5.11	N/A for Shell only			
Post-construction indoor air quality measurement	N/A	N/A	Credit awarded where the formaldehyde concentration in indoor air is measured post construction (but pre-occupancy) and does not exceed 100 µg/ m ³ averaged over 30 minutes. Where levels are found to exceed these limits, the project team confirms the measures that have, or will be, undertaken in accordance with the IAQ plan, to reduce the TVOC and formaldehyde levels to within the above limits.	N/A for Shell only			
Hea 04	Thermal comfort	To ensure the building is capable of providing an appropriate level of thermal comfort.					
Thermal modelling	N/A	N/A	One credit is awarded where full dynamic thermal modelling has been carried out using software in accordance with CIBSE AM11(78) Building Energy and Performance Modelling. The modelling demonstrates that: For air-conditioned buildings, summer and winter operative temperature ranges in occupied spaces are in accordance with the criteria set out in CIBSE Guide A Environmental design Table 1.5; or other appropriate industry standard. For naturally ventilated buildings: Winter operative temperature ranges in occupied spaces are in accordance with the criteria set out in CIBSE Guide A Environmental design, Table 1.5. Or other appropriate industry standard. The building is designed to limit the risk of overheating, in accordance with the adaptive comfort methodology outlined in either of the following standards as appropriate; CIBSE TM52: The limits of thermal comfort: avoiding overheating in European buildings(80) or CIBSE TM59: Design methodology for the assessment of overheating risk in homes.	N/A for Shell only			
Design for future thermal comfort	N/A	N/A	Once credit awarded where the thermal modelling demonstrates that the relevant requirements above are achieved for a projected climate change environment. Where the requirements 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 in order to subsequently meet the requirements.	N/A for Shell only			
Thermal zoning and controls	N/A	N/A	The thermal modelling analysis has met the requirements and this has informed the temperature control strategy for the building and its users. The strategy for proposed heating or cooling systems 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. - The degree of occupant control required for these zones. This is based on discussions with the end user and considers: User knowledge of building services, occupancy type, patterns and room, how the user is likely to operate or interact with the systems, e.g. are they likely to open windows, access thermostatic radiator valves (TRV) on radiators, change air-conditioning settings etc. The user expectations and degree of individual control. 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.	N/A for Shell only			
Hea 05	Acoustic performance	To ensure the building is capable of providing an appropriate acoustic environment to provide comfort for building users.					
Acoustic performance	1	1	A compliant test body must be appointed to carry out pre-completion acoustic testing to ensure that the relevant spaces (as built) achieve the required standards. Where spaces do not meet the standards, remedial works must be carried out prior to handover and occupation. 1 credit – The building meets the appropriate acoustic performance standards and testing requirements. These tables define criteria for the acoustic principles of: 1.b Indoor ambient noise level Shell only - A suitably qualified acoustician (SQA) must carry out a quantifiable assessment of the specification of the build form, construction and any external factors that are likely to affect the indoor ambient noise levels. From this assessment, the SQA must confirm that the developer's works will enable a future tenant utilising a typical fit-out and specification to meet the levels required to demonstrate compliance with the BREEAM criteria.	Appointment of SQA, Acoustic design advice report, confirmation of recommendations to meet BREEAM compliance.	Acoustician		

Credit Title	CREDITS		Summary of Requirements (refer to the BREEAM Guidance Notes for the full credit requirements)	Comments/ Actions	Actioner	Action deadline	Stage for consideration
	Credits Available	Credits Targeted					
Hea 06	Security		To encourage the planning and implementation of effective measures that provide an appropriate level of security to the building and site.				
Security of site and building	1	1	<p>Credit awarded where an evidence-based Security Needs Assessment (SNA) is conducted by a Suitably Qualified Security Specialist (SQSS) by the end of RIBA Stage 2.</p> <p>The SQSS develops a set of recommendations or solutions during or prior to RIBA Stage 2 which aim to ensure that the design of buildings, public and private car parks and public or amenity space are planned, designed and specified to address the issues identified in the SNA.</p> <p>The recommendations from the SQSS are implemented. Any deviations from the recommendations will need to be justified, documented and agreed in advance with a SQSS.</p>	Security Needs Assessment to be completed at RIBA Stage 2.	Arch		RIBA Stage 2
Hea 07	Safe and healthy surroundings		To encourage the provision of safe access around the site and outdoor space that enhances the wellbeing of building users.				
Safe access	1	0	<p>Credit awarded where external site areas form part of the assessed development the following apply:</p> <ol style="list-style-type: none"> 1. Dedicated and safe cycle paths are provided from the site entrance to any cycle storage, and connect to off-site cycle paths where applicable. 2. Dedicated and safe footpaths are provided on and around the site providing suitable links for the following: <ol style="list-style-type: none"> a. The site entrance to the building entrance, b. Car parks (where present) to the building entrance c. The building to outdoor space d. Connecting to off-site paths where applicable. 3. Pedestrian drop-off areas are designed off, or adjoining to, the access road and should provide direct access to other footpaths. <p>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.</p> <p>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.</p>	Site access is shared and this credit is therefore not achievable? Check with the team			
Outside space	1	1	One credit awarded where there is an outside space providing building users with an external amenity area.	There are soft landscaped areas amenity hub away from roads.			

Credit Title	CREDITS		Summary of Requirements (refer to the BREEAM Guidance Notes for the full credit requirements)	Comments/ Actions	Actioner	Action deadline	Stage for consideration
	Credits Available	Credits Targeted					
ENERGY							
Ene 01	Reduction energy use and CO₂ emissions		To minimise operational energy demand, primary energy consumption and CO₂ emissions.	Mandatory minimum requirement: Four Credits for Excellent			
Energy Performance	9	3	Up to 13 credits can be awarded where there is an improvement in the building operational related CO ₂ emissions. The number of credits is based on the Energy Performance Ratio for New Constructions (using the BREEAM calculator). Additional innovation credits are available.	Credit to be based on worst performing building. Current assumption is based on ASHP& PV			
Ene 02	Energy Monitoring		To minimise operational energy demand, primary energy consumption and CO₂ emissions.				
Sub-metering of end-use categories	N/A	N/A	Credit awarded where energy metering systems are installed so that at least 90% of the estimated annual energy consumption of each fuel is assigned to the end-use categories. Meter the energy consumption in buildings according to the total useful floor area: If the area is greater than 1,000m ² , by end-use category with an appropriate energy monitoring and management system. If the area is less than 1,000m ² , use either: an energy monitoring and management system or separate accessible energy sub-meters with pulsed or other open protocol communication outputs, for future connection to an energy monitoring and management system.	N/A for Shell only	M&E		
Sub-metering of high energy load and tenancy areas	N/A	N/A	Credit awarded where a significant majority of the energy supply to the building is monitored with: An accessible energy monitoring and management system for: a. tenanted areas or b. relevant function areas or departments in single occupancy buildings. OR Separate accessible energy sub-meters with pulsed or other open protocol communication outputs for future connection to an energy monitoring and management system for: a. tenanted areas or b. relevant function areas or departments in single occupancy buildings. Sub-meter per floor plate in large single occupancy or single-tenancy buildings with one homogeneous function, for example hotel bedrooms, offices.	N/A for Shell only	M&E		
Ene 03	External Lighting		To reduce energy consumption through the specification of energy efficient light fittings for external areas of the development.				
External lighting	1	1	Credit awarded where the average luminaire efficacy of the external light fittings within the construction zone is not less than 70 luminaire lumens per circuit Watt. All external light fittings are automatically controlled to prevent daytime operation and have presence detection in areas of intermittent use.	M&E to provide specification document and drawings to confirm lighting efficiencies and controls	M&E		

Credit Title	CREDITS		Summary of Requirements (refer to the BREEAM Guidance Notes for the full credit requirements)	Comments/ Actions	Actioner	Action deadline	Stage for consideration
	Credits Available	Credits Targeted					
Ene 04	Low carbon design		To encourage the adoption of design measures, which reduce building energy consumption and associated carbon emissions and minimise reliance on active building services systems.				
Passive Design	2	0	<p>Passive design analysis Credit awarded where the first Hea 04 credit has been achieved and the design team conduct an analysis of building design by the end of RIBA Stage 2, to identify opportunities for passive design solutions to reduce energy consuming services.</p> <p>Passive design measures are specified in line with the analysis to reduce the energy consumption of the building and the design team quantify the reduced total energy demand and carbon dioxide (CO₂) emissions resulting from the passive design measures.</p> <p>Free cooling Credit awarded for achieving the passive design analysis credit and including a free cooling analysis in the passive design analysis. This analysis identifies opportunities for the implementation of free cooling solutions. The building is naturally ventilated or uses any combination of the free cooling strategies listed in Free cooling analysis.</p>	Passive Design Analysis to be completed at RIBA stage 2.			RIBA Stage 2
Low or zero carbon technologies	1	1	<p>Credit awarded when an energy specialist conducts a feasibility study by the end of RIBA Stage 2, to establish the most appropriate recognised local (on-site or near-site) LZC energy sources for the development. This should be based on the expected building use and loads specified in the design brief or, if not specified, for likely scenarios.</p> <p>The design team demonstrates that the built form allows for the future installation of the most cost effective LZC options, in line with the feasibility study's recommendations. Specify local LZC technologies for the building or development in line with the feasibility study recommendations and quantify the reduced regulated carbon dioxide (CO₂) emissions resulting from the feasibility study.</p>	LZC study to be completed at RIBA stage 2.			RIBA Stage 2
Ene 08	Energy efficient equipment		To encourage installation of energy efficient equipment to ensure optimum performance and energy savings in operation.				
Energy efficient equipment	N/A	N/A	<p>Credits awarded for identifying the building's unregulated energy consuming loads. Estimate their contribution to the total annual unregulated energy consumption of the building, assuming a typical or standard specification. Identify the systems or processes that use a significant proportion of the total annual unregulated energy consumption of the building.</p> <p>Demonstrate a meaningful reduction in the total annual unregulated energy consumption of the building. Table 6.5 of the BREEAM manual lists some examples of significant contributors to unregulated energy consumption, and the associated criteria. If additional significant contributors, not listed in the table, will be specified, the design team should justify how a meaningful reduction will be achieved for these contributors.</p>	N/A for Shell and Core buildings.	M&E		

Credit Title	Credits Available	Credits Targeted	Summary of Requirements (refer to the BREEAM Guidance Notes for the full credit requirements)	Comments/ Actions	Actioner	Action deadline	Stage for consideration
TRANSPORT							
Tra 01	Transport assessment and travel plan		To reward awareness of existing local transport and identify improvements to make it more sustainable.				
Travel plan	2	2	<p>Two credits are awarded where a travel plan is developed based on a site-specific travel assessment or statement. The site-specific travel assessment or statement covers as a minimum:</p> <ul style="list-style-type: none"> a Existing travel patterns and opinions of existing building or site users towards cycling and walking, identifying constraints and opportunities, if relevant b Travel patterns and transport impact of future building users c Current local environment for walkers and cyclists (accounting for visitors with young children) d Reporting of the number and type of existing accessible amenities, see Table 7.1, within 500m of the site e Disabled access (accounting for varying levels of disability and visual impairment) f Calculation of the existing public transport Accessibility Index (AI) g Current facilities for cyclists <p>The travel plan includes proposals to increase or improve sustainable modes of transport and movement of people and goods during the building's operation and use. If the occupier is known, involve them in the development of the travel plan. Demonstrate that the travel plan will be implemented post construction and be supported by the building's management in operation.</p>	Travel Plan to be amended in line with Energist comments- Must include AI figure, and disabled access			Feasibility and design stages
Tra 02	Sustainable Transport Measures		To maximise the potential for local public, private and active transport through provision of sustainable transport measures appropriate to the site.				
Sustainable transport measures	10	4	Up to 10 credits awarded for identifying the sustainable transport measures in Table 7.4. Credits awarded according to the Accessible Index (AI) of the project, and the total number of points achieved for the options implemented in Table 7.3.	<p>1 credit targeted for cycle storage spaces (these must be covered and at least 1 space per 10 staff)</p> <p>1 credit targeted for electric charging points for 10% of the parking spaces.</p> <p>Credits targeted for cyclist facilities -changing rooms or showers to be provided.</p> <p>Public transport information</p> <p>Local amenities ?</p>	To check with the team		

Credit Title	CREDITS		Summary of Requirements (refer to the BREEAM Guidance Notes for the full credit requirements)	Comments/ Actions	Actioner	Action deadline	Stage for consideration
	Credits Available	Credits Targeted					
WATER							
Wat 01	Water Consumption		To reduce the consumption of potable water for sanitary use in new buildings through the use of water efficient components and water recycling systems.	Mandatory minimum requirement: One credit required for Good, Very Good and Excellent ratings			
Water Consumption	N/A	N/A	Up to 5 credits awarded where the BREEAM Wat 01 calculator is used to assess the efficiency of the domestic water-consuming components. This calculates water consumption (litres/person/day) for the assessed building against a baseline performance.	N/A for Shell only	M&E / Main Contractor		
Wat 02	Water monitoring		To reduce the consumption of potable water in new buildings through the effective management and monitoring of water consumption.	Mandatory minimum requirement: Criterion 1 for Very Good; Excellent & Outstanding.			
Water meter	-	Y	Mandatory: The specification of a water meter on the mains water supply to each building; this includes instances where water is supplied via a borehole or other private source.	M&E specification & drawings to show location of water meters and confirm it will be connected to BMS	M&E		
	1	1	Water-consuming plant or building areas, consuming 10% or more of the building's total water demand, are either fitted with sub meters or have water monitoring equipment integral to the plant or area. Each meter (main and sub) has 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.				
Wat 03	Water leak detection		To reduce the consumption of potable water in new buildings through minimising wastage due to water leaks.				
Leak detection system	1	1	One credit awarded where a BREEAM compliant leak detection system is specified within the building on the main water supply and between the utilities supply and the building. System must detect higher than normal flow rates at meter/sub-meter. Must automatically alert occupants, activate when flow higher than reasonable, be able to detect different flow rates, & be programmable by occupier.	M&E specification & drawings to show location of leak detection devices, and system setting.	M&E		
Flow control devices	N/A	N/A	Install flow control devices that regulate the water supply to each WC area or sanitary facility according to demand, in order to minimise undetected wastage and leaks from sanitary fittings and supply pipework.	N/A for Shell only	M&E		
Wat 04	Water efficient equipment		To reduce water consumption for uses not assessed under Wat 01 by encouraging specification of water efficient equipment.				
Water efficient equipment	N/A	N/A	Credit awarded when the project team identify the building's unregulated water demands that could be realistically mitigated or reduced (e.g. for irrigation, vehicle wash plant/equipment). The project team should then identify the system(s) or processes to reduce the unregulated water demand of the development and its operation, and demonstrate through either good practice design or specification a meaningful reduction in the total water demand of the building.	No irrigation systems/unregulated water use credit is filtered			

Credit Title	CREDITS		Summary of Requirements (refer to the BREEAM Guidance Notes for the full credit requirements)	Comments/ Actions	Actioner	Action deadline	Stage for consideration
	Credits Available	Credits Targeted					
MATERIALS							
Mat 01	Environmental impacts from construction products - Building (LCA)		To reduce the burden on the environment from construction products by recognising and encouraging measures to optimise construction product consumption efficiency and the selection of products with a low environmental impact (including embodied carbon), over the life cycle of the building.				
Superstructure	6	0	<p>(offices, industrial and retail buildings only) Credits awarded for demonstrating the environmental performance of the building as follows: Carry out a building LCA on of the superstructure design using either the BREEAM Simplified Building LCA tool or an IMPACT Compliant LCA tool according to the methodology. Submit the Mat 01/02 Results Submission Tool to BRE at the end of Concept Design, and before planning permission is applied for (that includes external material or product specifications).</p> <p>During Technical Design, demonstrate the environmental performance of the building as follows: As above plus submit the Mat 01/02 Results Submission Tool to BRE at the end of Technical Design.</p> <p>(all building types) During Concept Design and then a Technical Design, identify opportunities for reducing environmental impacts as follows: Carry out building LCA options appraisal of 2 to 4 significantly different superstructure design options. For each design option, fulfil the same functional requirements specified by the TW and all statutory requirements (to ensure functional equivalency).</p>	Not targeted for VG rating			During concept design and then technical design
Substructure and hard landscaping options appraisal during Concept Design (all building types)	1	0	<p>The above options appraisal at Concept Design is achieved.</p> <p>Credit awarded where for identifying opportunities at Concept Design stage for reducing environmental impacts as follows: 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). Using a building LCA tool that is recognised by BREEAM (as suitable for assessing substructure and hard landscaping during Concept Design) according to the methodology.</p>	Not targeted for VG rating			Concept design
Core building services options appraisal during Concept Design	1	0	<p>The above Superstructure options appraisal is achieved.</p> <p>Credit awarded for identifying opportunities during the Concept Design Stage for reducing environmental impacts as follows: Carry out building LCA options appraisal of at least 3 significantly different core building services design options. Use a building LCA tool that is recognised by BREEAM (as suitable for assessing core building services during Concept Design) according to the methodology (see Methodology on the next page).</p>	Not targeted for VG rating			Concept design

Credit Title	CREDITS		Summary of Requirements (refer to the BREEAM Guidance Notes for the full credit requirements)	Comments/ Actions	Actioner	Action deadline	Stage for consideration
	Credits Available	Credits Targeted					
Mat 02	Environmental impacts from construction products - (EPD)		To encourage availability of robust and comparable data on the impacts of construction products through the provision of EPD.				
Specification of products with a recognised environmental product declaration (EPD)	1	0	Credit awarded where construction products with EPDs achieve a total EPD points score of at least 20, according to the BREEAM methodology. Enter the details of each EPD into the Mat 01/02 Results Submission Tool, including the material category classification. The Mat 01/02 Results Submission Tool will verify the EPD points score and credit award.	This credit is likely to be onerous and restrict procurement routes if targeted.			
Mat 03	Responsible sourcing of construction products		To facilitate the selection of products that involve lower levels of negative environmental, economic and social impact across their supply chain including extraction, processing and manufacture.	Mandatory minimum requirement: Criterion 1 for Pass; Good; Very Good; Excellent & Outstanding.			
Enabling sustainable procurement	-	Y	MANDATORY FOR ALL RATINGS: Pre-requisite - All timber used on the project is 'Legally harvested and traded timber'	Provide policy which shows sustainable procurement plan. Will cover sourcing locally where possible, using EMS system etc.	Main contractor		SPP in place before Concept Design
	1	1	Credit awarded where the TW sources materials for the project in accordance with a documented sustainable procurement plan.				
Measuring responsible sourcing	3	2	Up to 3 credits can be awarded where the applicable building and hard landscaping materials, in applicable locations, are responsibly sourced in accordance with the BREEAM methodology. Applicable materials categories include: Timber/timber-based products; concrete/cementitious; metal; stone/aggregate; clay-based; gypsum; glass; plastic, polymer, resin, paint, chemicals and bituminous; animal fibre/skin, cellulose fibre; other. Responsible sourcing accreditations include PEFC, FSC, ISO 14001 and BES 6001. 1 credit where 10% of available points are achieved for Superstructure and (where substructure and hard landscaping are included 2 credits for 20% and 3 credits for 30%).	For design stage, policy or commitment letter to source all timber with suitable legal certificates (FSC, PEFC) and chain of custody evidence. Provide material specifications to confirm if they have ISO 14001 or BES 6001. Alternatively, if materials spec not decided can commit to sourcing mats with certification.	Main contractor		

Credit Title	CREDITS		Summary of Requirements (refer to the BREEAM Guidance Notes for the full credit requirements)	Comments/ Actions	Actioner	Action deadline	Stage for consideration
	Credits Available	Credits Targeted					
Mat 05	Designing for durability and resilience		To reduce the need to repair and replace materials resulting from damage to exposed elements of the building and landscape.				
Designing for durability and resilience	1	1	Credit awarded where the following is demonstrated: Part One: Protection is given to vulnerable parts of the building and landscaping against impact damage (both internal and external), including areas exposed to high pedestrian traffic, vehicular and trolley movements. Part Two: Protection is given to exposed parts of the building against material degradation due to environmental factors.	Where vehicle manoeuvring is within 1m of the building there must be barriers or bollards.			
Mat 06	Material Efficiency		To avoid unnecessary materials use arising from over specification without compromising structural stability, durability or the service life of the building.				
Material Efficiency	1	0	Credit awarded when opportunities and measures to optimise the use of materials in building design, procurement, construction, maintenance and end of life have been identified, investigated and implemented by the design/construction team as appropriate in consultation with the relevant parties at each of the following RIBA stages: 1. Preparation and Brief 2. Concept Design 3. Development Design 4. Technical Design 5. Construction	Credit not targeted			At Concept Design
WASTE							
Wst 01	Construction waste management		To promote resource efficiency via the effective management and reduction of construction waste. An additional exemplary credit is available - see Innovation section below for details.		Mandatory minimum requirement: One credit for Outstanding.		
Pre-demolition audit	1	1	One credit awarded for completing a compliant pre-demolition audit of any existing buildings, structures or hardstanding being considered for demolition. The audit must be carried out by a competent person and must be referenced within the project's Resource Management Plan.	To be included in demolition contractor tender.			
Construction resource efficiency	3	2	Minimising construction waste and RMP Up to three credits awarded where a Resource Management Plan (RMP) has been developed covering the non-hazardous waste related to onsite construction and dedicated offsite manufacture or fabrication (including demolition and excavation waste) generated by the building's design and construction. Where construction waste related to on-site construction and off-site manufacture/fabrication (excluding demolition and excavation waste) meets or is lower than the benchmarks as follows (per 100m ² GIFA): One credit = 13.3m ³ / 11.1 tonnes, Two credits = 7.5m³ / 6.5 tonnes , Three credits = 3.4m ³ / 3.2 tonnes.	Provide SWMP which includes targets and procedures in place to monitor waste and diversion from landfill. Confirm person responsible for collecting and recording data. Either commitment to do so, or copy of letter/email having done so.	Main contractor		
Diversion of resources from landfill	1	1	One credit awarded where 70% by volume/80% by tonnage of non-hazardous construction waste and 80% by volume/90% by tonnage of non-hazardous demolition waste generated by the development will be diverted from landfill and reused or recycled. Materials should be sorted into separate key waste groups, according to the waste streams generated by the scope of the works, either on or off-site.	As per above.	Main contractor		

Credit Title	CREDITS		Summary of Requirements (refer to the BREEAM Guidance Notes for the full credit requirements)	Comments/ Actions	Actioner	Action deadline	Stage for consideration
	Credits Available	Credits Targeted					
Wst 02	Use of recycled and sustainably sourced aggregates		To encourage the use of more sustainably sourced aggregates, encourage reuse where appropriate and avoid waste and pollution arising from disposal of demolition and other forms of waste.				
Project Sustainable Aggregate Points	1	0	Credit awarded where all aggregate uses and types on the project are identified. The quantity in tonnes and distance it was transported is determined. The information is entered into the BREEAM Wst02 calculator to achieve Project Sustainable Aggregate points. 3.5-6 points are required for 1 credit.	Credit not targeted. Recycled aggregates would need to be imported to site.			
Wst 03	Operational waste		To encourage the recycling of operational waste through the provision of dedicated storage facilities and space.		Mandatory minimum requirement: One credit for Excellent & Outstanding.		
Operational waste	1	1	<p>Credit awarded where there is dedicated space(s) to cater for the segregation and storage of operational recyclable waste volumes generated by the assessed building.</p> <p>The space must be a) clearly labelled, b) accessible to building occupants for the deposit of materials and collections; c) of a capacity appropriate to the building type, size, number of units and predicted volumes of waste.</p> <p>Where appropriate, the following facilities are provided as part of its waste management strategy a) Static waste compactor(s) or baler(s); b) Vessel(s) for composting suitable organic waste OR adequate space(s) for storing segregated food waste and compostable organic material prior to collection and delivery to an alternative composting facility; c) Where organic waste is to be stored/composted on site, a water outlet is provided adjacent to or within the facility for cleaning and hygiene purposes.</p>	<p>Drawing to show location and size of waste storage area. Must mark up the general waste area and the recycling storage areas.</p> <p>At least 2 m2 for recycling storage per unit. Within 20m of access. Shared space is fine.</p>	Arch		
Wst 05	Adaptation to Climate Change		To minimise the future need of carrying out works to adapt the building to take account of more extreme weather changes resulting from climate change and changing weather patterns.				
Resilience of structure, fabric, building services and renewables installation	1	1	Credit awarded when a climate change adaptation strategy appraisal is conducted for structural and fabric resilience and renewable installations by the end of RIBA Stage 2, in accordance with the following approach: Carry out a systematic risk assessment (specific to structural and fabric resilience) to identify and evaluate the impact of the expected increase in extreme weather conditions arising from climate change on the building over the projected life-cycle of the building, and where feasible mitigate against these impacts. The assessment should cover the following stages: 1. Hazard Identification, 2. Hazard assessment, 3. Risk estimation, 4. Risk Evaluation, 5. Risk Management	Study to be undertaken at RIBA Stage 2.			

Credit Title	Credits Available	Credits Targeted	Summary of Requirements (refer to the BREEAM Guidance Notes for the full credit requirements)	Comments/ Actions	Actioner	Action deadline	Stage for consideration
Wst 06	Design for disassembly and adaptability		To avoid unnecessary materials use, cost and disruption arising from the need for future adaptation works as a result of changing functional demands and to maximise the ability to reclaim and reuse materials at final demolition in line with the principles of a circular economy.				
Design for disassembly and functional adaptability - recommendations	1	1	Credit awarded for conducting a study to explore the ease of disassembly and the functional adaptation potential of different design scenarios by the end of Concept Design. Develop recommendations or solutions based on the study during or prior to Concept Design, that aim to enable and facilitate disassembly and functional adaptation.	By the end of Concept Design conduct a study to explore ease of disassembly and functional adaptability potential of different design options.	Arch		By end of Concept Design
Disassembly and functional adaptability – implementation	1	1	Achieve the above credit. 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.	Update of study at Technical Design. Recommendations to be implemented where practical. A building adaptability and disassembly guide is to be produced for the tenant.	Arch		
LAND USE & ECOLOGY							
LE 01	Site selection		To encourage the use of previously occupied or contaminated land and avoid land which has not been previously disturbed.				
Previously developed land	1	1	Credit awarded where at least 75% of the footprint of the proposed development falls within the boundary of previously developed land.	Existing and proposed plans to be provided with a calculation of the area of building footprint on previously developed land i.e. hard landscaped or buildings.	Arch		
Contaminated land	1	0	Credit awarded where the land used for the new development has, prior to development, been defined as significantly contaminated and adequate remedial steps have been taken to decontaminate the site prior to construction. There must be a commitment from the TW or contractor that all remediation will be in line with the remediation strategy and implementation plan.	Drainage report suggested there would be a ground survey report with possible contamination. TBC			Before any site works commence
LE 02	Identifying and understanding the risks and opportunities		To determine the ecological baseline and zone of influence of the site and identify risks and opportunities for achieving optimum outcomes.				
Prerequisite - Assessment route selection	-	Y	An assessment route for the project has been determined using BREEAM Guidance Note GN34 BREEAM Ecological Risk Evaluation Checklist. The TW or contractor confirms compliance is monitored against all relevant UK and EU or international legislation relating to the ecology of the site.				

Credit Title	Credits Available	Credits Targeted	Summary of Requirements (refer to the BREEAM Guidance Notes for the full credit requirements)	Comments/ Actions	Actioner	Action deadline	Stage for consideration
Survey and evaluation	2	2	<p>Route 1- 1 credit Completion of the BREEAM Ecological Risk Evaluation Checklist indicates Assessment route 1 can be used as the Assessment.</p> <p>Route 2- 2 credits 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 (route 2: 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:</p> <ol style="list-style-type: none"> 1. Current and potential ecological value and condition of the site, and related areas within the zone of influence. 2. Direct and indirect risks to current ecological value 3. Capacity and feasibility for enhancement of the ecological value of the site and, where relevant, areas within the zone of influence. <p>Data are collated and shared with project team to inform the site preparation, design or construction works.</p>	Ecologist report provided.	Ecologist		By end of Preparation and Brief
Determining the ecological outcomes for the site (Routes 1 and 2)			<p>Survey and evaluation criteria 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.</p> <p>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:</p> <ol style="list-style-type: none"> a avoidance b protection c reduction or limitation of negative impacts d on site compensation and, e enhancement, considering the capacity and feasibility within the site, or where viable, off-site. <p>Following this the optimal ecological outcome for the site is selected after liaising with representative stakeholders and the project team.</p>		Ecologist		During Concept Design
LE 03	Managing negative impacts on ecology		To avoid, or limit as far as possible, negative impacts on the ecology of the site and its zone of influence arising as a result of the project.	Mandatory minimum requirements: One credit for Very Good; Excellent; Outstanding.			
Prerequisite – Identification and understanding the risks and opportunities for the site	-	Y	LE 02 has been achieved. The TW or contractor has confirmed that compliance is monitored against all relevant UK, and EU or International legislation relating to the ecology of the site.				
Planning, liaison, implementation and data	1	1	<p>Credit awarded where 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.</p> <p>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 during site preparation and construction works.</p>	Roles and responsibilities. Consultation within the team.	Ecologist		
Managing negative impacts of the project	2	2	<p>Route 1 (one credit) Credit awarded where negative impacts from site preparation and construction works have been managed according to the hierarchy and no net impact has resulted.</p> <p>Route 2 (up to two credits) Credits awarded where negative impacts from site preparation and construction works have been managed according to the hierarchy and either:</p> <p>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)</p>	Ecologist to confirm using BREEAM checklist.	Ecologist		

Credit Title	Credits Available	Credits Targeted	Summary of Requirements (refer to the BREEAM Guidance Notes for the full credit requirements)	Comments/ Actions	Actioner	Action deadline	Stage for consideration
LE 04	Change and enhancement of ecological value of ecological value		To enhance the ecological value of the site and areas within its zone of influence in support of local, regional and national priorities.				
Prerequisite - Identifying and understanding the risks and opportunities for the project	-	Y	LE 03 has been achieved. Including the following, specific to the aims of this issue: <ul style="list-style-type: none"> 1. Roles and responsibilities have been clearly defined, allocated and implemented to support successful delivery of project outcomes 2. 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. 3. The TW or contractor confirms compliance is monitored against all relevant UK, EU or international legislation relating to the ecology of the site. 				
Enhancement of ecology	N/A	N/A	Route 1 ONLY Credit awarded where 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.				RIBA Stage 1/2
Liaison, implementation and data collation	1	1	Route 2 ONLY Credit awarded where 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: 1. On site, and where this is not feasible, 2. Off site within the zone of influence.	Ecology must be enhanced on site through ecologist recommendations. Native planting and bird boxes.			
Enhancement of ecology	3	1	Route 2 ONLY 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 - Route 2 (whichever is applicable to the project).	Ecology must be enhanced on site through ecologist recommendations. Native planting and bird boxes.			
LE05	Long term ecology management and maintenance		To secure ongoing monitoring, management and maintenance of the site and, its habitats ecological features to ensure intended outcomes are realised for the long term.				
Prerequisite - Roles and responsibilities, implementation, statutory obligations	-	Y	The TW 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: 1. Roles and responsibilities have been clearly defined, allocated and implemented to support successful delivery of project outcomes. 2. 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.				

Credit Title	Credits Available	Credits Targeted	Summary of Requirements (refer to the BREEAM Guidance Notes for the full credit requirements)	Comments/ Actions	Actioner	Action deadline	Stage for consideration
Planning, liaison, data, monitoring and review management and maintenance	1	1	<p>Credit awarded where the project team liaise and collaborate with representative stakeholders, taking into consideration data collated and shared, on solutions and measures implemented to:</p> <p>a. Monitor and review implementation and the effectiveness b. Develop and review management and maintenance solutions, actions or measures.</p> <p>In support of the above and to help ensure their continued relevance over the period of the project the following should be considered:</p> <p>a. Monitoring and reporting of on the ecological outcomes for site implemented at the design and construction stage b. Monitoring and reporting of outcomes and successes from the project c. Arrangements for the ongoing management of landscape and habitat connected to the project (on and, where relevant, off site) d. Maintaining the ecological value of the site and its relationship or connection to its zone of influence e. Maintaining the site in line with the any sustainability linked activities, e.g. ecosystems benefits (LE 02). f. Remedial or other management actions are carried out which relate to those identified in LE 02, LE 03 and LE 04.</p> <p>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.</p>	Ecologist to advise of the on-site measures applicable to the site.	Ecologist		
Landscape and ecology management plan (or similar) development	1	1	<p>Credit awarded where a Landscape and ecology management plan, or similar, is developed in accordance with BS 42020:2013(210) and the BREEAM requirements covering as a minimum the first five years after project completion.</p>	Ecologist to produce BREEAM compliant LHMP	Ecologist		
POLLUTION							
Pol 01	Impact of refrigerants	To reduce the level of greenhouse gas emissions arising from the leakage of refrigerants from building systems.					
No refrigerant use	N/A	N/A	<p>Credits awarded where there is no refrigerant use within the installed plant or systems.</p>	N/A for Shell only			
Impact of refrigerant	N/A	N/A	<p>Two credits Credits awarded where the direct effect life cycle CO₂ equivalent emissions (DEL_C) of ≤ 100 CO₂-eq/kW for systems which provide cooling and heating, the worst performing output based on the lower of kW cooling output and kW heating output is used to complete the calculation. To calculate the DEL_C, refer to the relevant definitions in the BREEAM Methodology and Additional information. OR All refrigerants used have a global warming potential (GWP) ≤ 10. OR One credit Systems using refrigerants have a DEL_C of ≤ 1000 kgCO₂-eq/kW cooling and heating capacity.</p>	N/A for Shell only	M&E		
Leak detection	N/A	N/A	<p>Credit awarded where all systems are hermetically sealed or only use environmentally benign refrigerants. OR Where the systems are not hermetically sealed systems have: A permanent automated refrigerant leak detection system, that is robust and tested, and capable of continuously monitoring for leaks. OR An inbuilt automated diagnostic procedure for detecting leakage is enabled. In the event of a leak, the system must be capable of automatically responding and managing the remaining refrigerant charge to limit loss of refrigerant.</p>	N/A for Shell only	M&E		
Pol 02	Local air quality	To contribute to a reduction in local air pollution through the use of low emission combustion appliances in the building.					
Local air quality	N/A	N/A	<p>Credits awarded where all heating and hot water is supplied by non-combustion systems. For example, only powered by electricity. OR alternatively; Emissions from all installed combustion plant that provide space heating and domestic hot water do not exceed the levels set in Table 12.4 and Table 12.5 of BREEAM.</p>	N/A for Shell only	M&E		

Credit Title	Credits Available	Credits Targeted	Summary of Requirements (refer to the BREEAM Guidance Notes for the full credit requirements)	Comments/ Actions	Actioner	Action deadline	Stage for consideration
Pol 03	Flood and surface water management		To avoid, reduce and delay the discharge of rainfall to public sewers and watercourses, therefore minimising the risk of localised flooding on and off site, watercourse pollution and other environmental damage.				
Pre-requisite	-	Y	An appropriate consultant is appointed to carry out and demonstrate the development's compliance with all criteria.				
Flood resilience	2	2	<p>One credit is awarded where the assessed development is located in a zone defined as having a medium or high annual probability of flooding and is not in a functional floodplain AND the ground level of the building, car parking and access is 600mm above the design flood level for the site's location. OR, where final building and site design reflects recommendations made by appropriate consultant, in accordance with BS 8533: 2011.</p> <p>Two credits are awarded where the assessed development is located in a zone defined as having a low annual probability of flooding and there is a low risk of flooding from all sources: fluvial, tidal, surface water, groundwater, sewers, reservoirs, canals and other artificial sources. All current and future sources of flooding must be taken into account.</p>	<p>Development in low flood risk area</p> <p>Provide Flood Risk Assessment.</p>	Drainage Engineer		
Pre-requisite			Surface water run-off design solutions must be bespoke, i.e. they must take account of the specific site requirements and natural or man-made environment of and surrounding the site. The priority levels detailed in the Methodology must be followed, with justification given by the appropriate consultant where water is allowed to leave the site.				
Surface water run off	2	2	<p>One credit- surface water run-off- rate Credit awarded where drainage measures are specified so that the peak rate of run-off from the site to the watercourses (natural or municipal) shows a 30% improvement for the developed site compared with the pre-developed site. This should comply at the 1-year and 100-year return period events. Relevant maintenance agreements for the ownership, long term operation and maintenance of all specified Sustainable Drainage Systems (SuDS) are in place. Calculations include an allowance for climate change.</p> <p>One credit- surface water run-off- volume Flooding of property will not occur in the event of local drainage system failure (caused either by extreme rainfall or a lack of maintenance); AND EITHER Drainage design measures are specified so that 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. This must be for the 100-year 6-hour event, including an allowance for climate change. Any additional predicted volume of run-off for this event is prevented from leaving the site by using infiltration or other SuDS techniques. OR (only where the above cannot be achieved): Justification of why this can't be achieved, i.e. where infiltration or other SuDS techniques are not technically viable options. Drainage measures are specified so that the post-development peak rate of run-off is reduced to the limiting discharge. The limiting discharge is defined as the highest flow rate from the following options: a The pre-development one-year peak flow rate b The mean annual flow rate (Qbar) c 2L/s/ha. For the one-year peak flow rate, the one-year return period event criterion applies. Relevant maintenance agreements for the ownership, long term operation and maintenance of all specified SuDS are in place.</p> <p>For either option, above calculations must include an allowance for climate change; this should be made in accordance with current best practice planning guidance.</p>	<p>All calculations must include an allowance for climate change, in accordance with current best practice guidelines.</p> <p>Provide Flood Risk Assessment.</p> <p>BREEAM checklist to be completed</p>	Drainage Engineer		
Minimising watercourse pollution	1	0	<p>Credit awarded where there is no discharge from the developed site for rainfall up to 5mm and effective on site treatment has been specified in areas that could be a source of watercourse pollution, including low and high risk (oil/petrol interceptors required) areas. A comprehensive up-to-date drainage plan should be handed over to building/site occupiers at the end of the project.</p>	Awarded at risk as first 5mm of rainfall cannot be retained on site.	Drainage Engineer		
Pol 04	Reduction of night time light pollution		To ensure that external lighting is concentrated in the appropriate areas and that upward lighting is minimised, thereby reducing unnecessary light pollution, energy consumption and nuisance to neighbouring properties.				
Reduction of night time light pollution	1	1	<p>Credit awarded where the external lighting design is in compliance with the Institution of Lighting Professionals (ILP) Guidance notes for the reduction of obtrusive light, 2011 and all external lighting (except security lighting) is automatically switched off between 2300-0700. If safety or security lighting is provided, these dim down to the lower levels in Table 2 of the ILP's guidance notes. Specific requirements apply to illuminated advertisements - please see the technical guidance for details.</p>	<p>M&E to review this credit and ensure the design complies. Provide letter of commitment and drawings confirming the location of the external light fittings.</p>	M&E		

Pol 05	Reduction of noise pollution		To reduce the likelihood of noise arising from fixed installations on the new development affecting nearby noise-sensitive buildings.			
Reduction of noise pollution	N/A	N/A	<p>Credit awarded where there are no noise-sensitive areas within the assessed building or within 800 m radius of the assessed site.</p> <p>OR</p> <p>Where there are noise-sensitive areas within the assessed building or noise-sensitive areas within 800 m radius of the assessed site, a noise impact assessment compliant with BS 4142:2014(227) is commissioned. Noise levels must be measured or determined for:</p> <p>a. Existing background noise levels: at the nearest or most exposed noise-sensitive development to the proposed assessed site including existing plant on a building, where the assessed development is an extension to the building</p> <p>b. Noise rating level from the assessed building.</p> <p>The noise impact assessment must be carried out by a suitably qualified acoustic consultant. The noise level from the assessed building, as measured in the locality of the nearest or most exposed noise-sensitive development, must be at least 5dB lower than the background noise throughout the day and night. If the noise sources from the assessed building are greater, measures have been installed to attenuate the noise at its source to a level where it will comply with the criterion.</p>	N/A to Shell only	Acoustician	

The innovation category provides opportunities for exemplary performance and innovation to be recognised that are not included within, or go beyond, the requirements of the credit criteria. This includes exemplary performance credits, for cases where the building meets the exemplary performance levels of a particular issue. It also includes innovative products and processes for which an innovation credit can be claimed, where they have been approved by BRE Global Ltd.

The cost-saving benefits of innovation are fostered and facilitated by helping encourage, drive and publicise accelerated uptake of innovative measures.

Credit Title		Credits Available	Credits Targeted	Summary of Requirements (refer to the BREEAM Guidance Notes for the full credit requirements)	Comments/ Actions	Actioner	Action deadline	Stage for consideration
Man 03	Responsible construction practices	1	1	Achieve all responsible construction management items in Table 4.1	Credit targeted			
Hea 01	Visual comfort	2	0	Credit awarded where higher levels of daylighting are achieved. Credit awarded where 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.	Credit not targeted			
Hea 02	Indoor air quality	1	0	Three of the product types listed meet the emission limits, testing requirements and any additional requirements listed in Table 5.12	Credit not targeted			
Ene 01	Reduction of energy use and carbon emissions	5	0	<p>Up to 2 credits: The building achieves an EPR NC \geq 0.9 and zero net regulated CO₂ 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. Exemplary credits based on the percentage of additional emissions from unregulated energy that are offset by LZC sources.</p> <p>Up to 3 credits: The building is deemed carbon negative where > 100% (see Table 6.2) of carbon emissions from unregulated (and regulated) energy use are offset by energy generated from on-site and near-site LZC sources.</p> <p>2 credits: Achieve maximum available credits in Ene 02 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 - on page 134. The TW 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 above. The energy model (criterion 3 above) is a Submitted to BRE and b retained by the building owner.</p>	Credit not targeted			

Wat 01	Water consumption	1	0	Credit awarded where a 65% improvement over the baseline in the Wat 01 calculator is achieved.	Credit not targeted			
Mat 01	Environmental impacts from construction products - Building life cycle assessment (LCA)	3	0	<p>One credit: Core building services options appraisal during Concept Design During Concept Design identify opportunities for reducing environmental impacts as follows: Carry out building LCA options appraisal of at least 3 significantly different core building services design options. Use a building LCA tool that is recognised by BREEAM (as suitable for assessing core building services during Concept Design) according to the methodology</p> <p>One credit: LCA and LCC alignment Achieve Elemental LCC plan and Component Level LCC options appraisal credits (Man 02 Life cycle cost and service life planning on page 41). Include design options appraised during Concept Design in Assessment scope - The elemental LCC plan. Include the design options appraised during Concept Design in the 'Component level LCC option appraisal' (in Man 02 Life cycle cost and service life planning on page 41). 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'.</p> <p>One credit: Third party verification A suitably qualified third party (see Definitions on page 215) carries out the building LCAs or produces a report verifying the building LCAs accurately represent the designs under consideration during Concept Design and Technical Design with reference to the requirements. For each LCA option, itemise the findings of the verification checks made by the suitably qualified third party in the report including, as a minimum, the quality requirements show in Table 9.4 on page 218. Include details of the suitably qualified third party's relevant skills and experience and a declaration of their third party independence from the project TW and design team in the report.</p>	Credit not targeted			
Mat 03	Responsible sourcing of construction products	1	0	Credit awarded where responsible sourcing points are achieved as follows: Superstructure >10%, internal finishes >20%, substructure and hard landscaping >30% and core building services >50%.	Credit not targeted.			
Wst 01	Construction waste management	1	0	<p>Non-hazardous construction waste generated by the building's design and construction is no greater than 1.6m³ or 1.9 tonnes per 100m² GIFA AND the percentage of non-hazardous construction and demolition waste (if relevant) diverted from landfill meets or exceeds 85% volume or 90% tonnes (non-demolition)/95% tonnes (demolition) and 95% for excavation.</p> <p>All key waste groups are identified for diversion from landfill in the pre-construction stage SWMP. Waste data obtained from licensed external waste contractors is reliable and verifiable, by using data from EA/SEPA/EA Wales/NIEA Waste Return Forms or from a PAS 402:2013 compliant company.</p>	Credit not targeted.			
Wst 02	Use of recycled and sustainably sourced aggregates	1	0	Achieve more than 6 project sustainable aggregate points.	Credit not targeted.			
Wst 05	Adaption to climate change	1	0	Credit awarded where design incorporates all measures to respond to climate change and achieves requirements under; Hea 04, Ene 01, Ene 04, Wat 01, Mat 05, and Pol 03.	Credits not targeted.			
Extra	Special innovative feature	10	0	Up to ten credits are awarded if a successful application is made to the BRE to have any particular building feature, technology, system or process that can be shown to improve the sustainability performance of a building's design, construction, operation, maintenance or demolition and which is recognised as 'innovative'.	Credits not targeted.			
Sub-Total		10	1	One Innovation credit = 1%. A maximum of 10% can be awarded in this section.				