

EDEN PROJECT NORTH, MORECAMBE

ENERGY & SUSTAINABILITY STATEMENT

3ADAPT

People focused. Data informed.

August 2021

REVISION	DESCRIPTION	ISSUED BY	DATE	CHECKED
01	DRAFT Issue	JR	19/08/21	PH
02	Combined with energy and review comments	JR	25/08/21	PH
03	Final issue	JR	31/08/21	PH

This report has been prepared for the sole benefit, use and information of Eden Project International Ltd. The liability of 3ADAPT Limited in respect of the information contained in the report will not extend to any third party.

Author	**James Rowan**
Date	**31/08/21**
Approved	**Phil Hampshire**
Date	**31/08/21**

EXECUTIVE SUMMARY

This energy & sustainability statement has been developed to support the planning application for Eden Project North in Morecambe. This statement describes the sustainability aspirations and strategies for the design, construction and operation of the scheme, including the legislative requirements for the site and stakeholders involved.

Eden Project North will be a leading example of regenerative sustainability. This means that the project aims to not only keep its environmental impact to an absolute minimum, but deliver environmental benefits and drive sustainable change beyond the boundaries of the project itself. To support this approach a regenerative sustainability framework has been developed for the project based upon a capitals-based model for sustainability addressing areas of natural capital (e.g. biodiversity, energy, water, waste, materials, etc.) as well as wider issues encompassed within the Human, Social, Manufactured and Financial capitals.

Under each of these capitals a series of themes covering detailed aspects have been presented with accompanying perfromance targets aligned with best practice and proposed strategies for how this will be delivered. The table below provides an executive summary of each themes with greater detail provided in the full statement.

Eden Project North is also targeting a BREEAM 'Excellent' rating in alignment with policy requirements. A pre-assessment has been completed for the project identifying a route to achieving this rating along with how all mandatory requirements have been achieved.

THEME	STRATEGY
 **ENERGY & CARBON**	The **energy & carbon** strategy will follow a hierarchical approach to first minimise energy demand before the deployment of low and zero-carbon (LZC) technologies. Heat pump technology is proposed to meet all the buildings heating and cooling requirements, and a combination of on and off-site solutions will deliver a 100% renewable energy supply.
 **WATER**	The **water** strategy will follow a hierarchical approach to minimise consumption as much as possible, before utilising alternative sources to municipal potable supplies. A combined rainwater harvesting and SUDS system is proposed to meet the majority of the site's non-potable water demands.
 **MATERIALS**	The **materials** strategy aims to minimise the impact of construction materials as well as waste outputs from operation. Embodied carbon of construction materials has been minimised using a lifecycle analysis, and operational waste impacts will be minimised by designing out waste at source and providing comprehensive recycling facilities.

THEME	STRATEGY
 **BIODIVERSITY/ ECOLOGY**	The **biodiversity/ecology** strategy aims to deliver improvements on an otherwise low ecological value site. The landscape proposals will include species mixes which are similar to coastal priority habitats, with the intention of increasing the habitat value of the site.
 **COMMUNITY**	The **community** strategy will seek to make Eden Project North an asset for the local community. Through creating high quality public realm and a comprehensive outreach programme, which has already begun, it is hoped to work with the local community to support local initiatives aligned with Eden's ethos and values.
 **ACCESSIBILITY**	The **accessibility** strategy will ensure that Eden project North is open and accessible to everyone. Wayfinding throughout the venue and the experiential design will accommodate the needs and access requirements of as many user groups as possible to deliver this successfully.
 **HEALTH & WELLBEING**	The **health and wellbeing** strategy aims to deliver positive outcomes to both visitors and the local community through improving peoples' connection to nature. This is a guiding principle of the visitor experience, and outreach with the local community is planned through social prescribing activities.
 **EDUCATION & RESEARCH**	The **education and research** strategy aims to educate and inspire, maximising the opportunity presented by both its audience reach and location within an area of exceptional natural value. This will be achieved through both curation of the exhibits, as well as partnership with local institution in both curriculum delivery and research undertaking.
 **BUILT ENVIRONMENT & INFRASTRUCTURE**	The **built environment & infrastructure** strategy aims to deliver a high performing asset which can stand the test of time. This will be achieved through delivery of an integrated building management system, as well as systems and infrastructure which are resilient to the projected effects of climate change.

THEME	STRATEGY
 **TRANSPORT**	The **transport** strategy aims to encourage visitors to utilise sustainable modes of transport wherever possible. Integrated ticketing systems are proposed to support this such as discounts for rail travel, as well as booked car parking options to maximise use of the existing and underutilised J34 Park & Ride facility and reduce parking and congestion around the venue itself. Measures are also proposed to support active travel in the vicinity of the project site, and make this an attractive option for staff commuting.
 **LONG-TERM VALUE**	The **long-term value** strategy considers the economic benefits Eden Project North can bring to Morecambe and the region. The projects aims to regenerate the visitor economy in the local area as well as supporting development of local, sustainable supply chains which can benefit the venue and other local organisations.
 **EMPLOYMENT**	The **employment** strategy aims to maximise the local benefit from the direct and indirect employment created by the project. It is proposed to prioritise jobs for local residents, as well as developing apprenticeship schemes for younger residents in collaboration with local education institutions.

1 TABLE OF CONTENTS

EXECUTIVE SUMMARY **4**

1 TABLE OF CONTENTS **7**

2 INTRODUCTION **8**

3 THE DEVELOPMENT **9**

4 REGULATORY AND POLICY CONTEXT **10**

5 APPROACH TO SUSTAINABLE DESIGN **13**

6 NATURAL CAPITAL **16**

7 SOCIAL CAPITAL **32**

8 HUMAN CAPITAL **35**

9 MANUFACTURED CAPITAL **39**

10 FINANCIAL CAPITAL **45**

11 BREEAM **48**

2 INTRODUCTION

This energy & sustainability statement has been developed to support the planning application for the proposed Eden Project North development located on the bay-front in Morecambe, on the site of the former Bubbles Leisure Complex and Super-dome attraction and within the local authority of Lancaster City Council (LCC). This statement describes the sustainability aspirations and strategies for the design, construction and operation of Eden Project North (EPN), including the legislative requirements for the site and stakeholders involved. It is structured under a number of themes, using a capitals-based model of sustainability, and summarises how the sustainability aspirations will be delivered by a series of strategies to address key environmental, social and economic issues and LCC planning policy and guidance.

The energy & sustainability statement is an LCC planning validation requirement and addresses the key planning policies and guidance in various sections of the Lancaster District Local Plan. The content of the report has been informed by Planning Advisory Note 9 - Energy efficiency in new development, specifically the Energy Efficiency Checklist. Each section of the checklist has bene included within the relevant sections of this report, and for completeness a table with section references ahs bene provided within the appendix.

This document draws on aspects of the Planning Statement, Design and Access Statement (DAS) and Environmental Impact Assessment (EIA), as well as other technical reports and should be read in conjunction with these documents. The document is structured as follows:

- ***The Development*** – description of current site, proposed development, vision and sustainability strategy and framework themes, objectives, KPI's and targets and stakeholder mapping.
- ***Regulatory and Policy Context*** – summary of review of key regulation and local policy and guidance relevant to EPN.
- ***Approach to Sustainable Design*** – summary of the regenerative sustainability approach which is used for the basis of this energy & sustainability statement.
- ***Each Theme of The Energy & Sustainability statement*** – summary of the drivers and overarching strategy to deliver against each theme of the approach.

3 THE DEVELOPMENT

3.1 Existing Site

The project site is located on the bay-front within Morecambe, situated where the former Bubbles Leisure Complex and Super Dome attraction used to operate. The site is an area of underutilised and poor quality open space with areas of hardstanding, lawn areas and a concrete amphitheatre structure. It neighbours the Midland hotel, the Morecambe War memorial, the RNLI Lifeboat station and a parade of retail/commercial units south of Marine Road Central. For further details regarding the site context please refer to the Planning Statement.

3.2 The Development

Eden Project North is a unique and ambitious project that seeks to re-imagine the seaside resort for the 21st century. The project has far-reaching environmental, social and economic ambitions, but above all it will be a day out that inspires a sense of wonder and connection with the natural world.

Eden Project North shares much with the hugely successful Eden Project in Cornwall. It will be a ticketed visitor attraction that is sustainable and transformative. At its heart are large indoor environments, housed within iconic pavilions. It builds on Eden Project's particular mix of entertainment and education, leaving visitors with lasting memories as well as driving positive behavioural change. As in Cornwall, Eden Project North combines exhibits, performance, learning, play, immersive experiences, world class horticulture, art, food, beverage and retail spaces, all integrated as essential parts of the overall experience. Eden Project North will be a particular response to place and time as well as the global climate emergency context.

The project itself is defined by four large shells and connecting structures, providing a total of 17,186m^2 GIA. The building is situated within a larger site of approximately 4.6 hectares where a unique landscape is proposed providing places for the local community to explore as well as adding to the ticketed visitor experience.



Figure 1: Aerial view of the proposed development

4 REGULATORY AND POLICY CONTEXT

Eden Project North will contribute to delivering key LCC policy objectives, helping to secure a sustainable future and the regeneration of Morecambe. Further to a review, the following outlines the main regulatory and LCC planning policy and guidance requirements regarding sustainable development that are applicable to the proposed development that must be adhered to in order to comply with policy. A summary of the key policies which should be addressed is also provided under each theme of this energy & sustainability statement.

4.1 National Policy

4.1.1 National planning policy framework

The National Planning Policy Framework (NPPF, 2021) sets out planning policies for England and is a key part of the Government's reform of the planning system, which seeks to make planning more accessible.

It is supplemented by national Planning Practice Guidance (PPG) and together these provide a framework of economic, environmental and social planning policies, setting out what sustainable development means in practice and how the planning system can contribute to its achievement.

4.1.2 The Building Regulations Approved Document Part L, Current Requirements: Part L 2013 Incorporating 2016 Amendments

Part L of the Building Regulations is the mechanism by which government is driving reductions in the regulated CO_2 emissions from new buildings. Nationally, new buildings are currently required to comply with the 2013 edition of Part L2A (for new buildings other than dwellings) of the Building Regulations, updated in 2016.

In order to comply with Criterion 1 of these regulations energy modelling is required to be performed, demonstrating that the predicted carbon dioxide emissions (BER, Building CO_2 Emission Rate) of the development proposals are below the established Target Emissions Rate (TER) as defined by the established methodology.

Other requirements include Criterion 2 to 5 as follows: -

- Criterion 2: the performance of the individual fabric elements and the fixed building services of the building should achieve reasonable overall standards of energy efficiency,
- Criterion 3: demonstrate that the building has appropriate passive control measures to limit the effect of heat gains on indoor temperatures in summer, irrespective of whether the building has mechanical cooling.
- Criterion 4: the performance of the building, as built, should be consistent with the BER rate.
- Criterion 5: the necessary provisions for enabling energy-efficient operation of the building should be put in place.

An update to the Part L is in progress following a consultation which closed in February 2020, however there is currently no announced timeline for publication. When an announcement is made, the impacts of any changes will be considered within the Eden Project North design relative to the transition timeline for the new regulations.

4.1.3 Climate change act 2008 (2050 target amendment)

This legalisation requires the government to reduce the UK's net emissions of greenhouse gases by 100% relative to 1990 levels by 2050. This was the first net zero commitment by a major economy, and represented a significant amendment to the previous policy of 80% within the same timeframe.

This legislation is now a key driver behind policy proposals across all areas of government, and it will require equally significant efforts from the private sector. Eden as an organisation is committed to supporting this net zero agenda, and Eden Project North has been designed to make a positive contribution to achieving this ambitious goal.

4.2 Regional policy

Morecambe sits within a two-tier local authority systems, therefore whilst planning policy is not defined at this level it is important that the project still addresses the wider policy drivers and ambitions of the region. This applies specifically to areas of responsibility such as regional transport, and waste disposal.

There are also a large number of industrial bodies such as the Northern Powerhouse and the Lancashire Enterprise Partnership Council in the region. Whilst these organisations do not define policy, strategy documents and initiatives published by these groups particularly around the areas of clean growth and economic recovery have been considered to maximise the regional value the project can deliver.

4.3 Local Policy

4.3.1 Local Plan

The Lancaster City Local Plan, was formally adopted in July 2020 and is the main planning document for the Lancaster City Council planning area which guides the borough's future development in the period up to 2031. This document sets-out the vison and objectives for the district, allocates sites for housing and other forms of development and indicates development management policies.

The Local Plan is structured into two parts:

1. **Strategic policies and Land Allocations**
   This document defines the spatial vision and plan for the future of the district and how it will be delivered.

2. **Development Management DPD**
   This document defines the policies that will be used by planning officers and the planning committee to determine planning application such as this one.

Specific sustainability related policies and how the project responds to them have been drawn out under each theme.

4.3.2 Lancaster climate emergency

On the 30th January 2019, Lancaster City Council declared a climate emergency and committed to a range of actions to address the challenge of climate change within the district. Although the current plan was under review at that time, it was too far advanced in the preparation process to incorporate any changes. Therefore, once adopted in 2020 an immediate review was initiated focussed on mitigation and adaption measures necessary to address the climate emergency. This review is still in progress and whilst the exact revised policy

wording is not yet known or adopted, we understand that the Eden Project North proposals align with the direction of travel of LCC's emerging Local Plan Review.

4.4 BREEAM

Within the Local plan, policy DM30 states that *'non-residential building development should enable achievement of the BREEAM 'Excellent' standard.'* This policy requirement has implications across several themes of the Eden regenerative sustainability framework and has been addressed accordingly within the design. Detailed measures proposed in response to this requirement are included throughout each section of this report, with a summary of the BREEAM Strategy and current pre-assessment provided at the end of this statement.

5 APPROACH TO SUSTAINABLE DESIGN

5.1 Regenerative sustainability

Eden Project North will be a leading example of regenerative sustainability. This means that the project aims to not only keep its environmental impact to an absolute minimum, but grow natural, social, human, manufactured and financial capital and drive sustainable change beyond the boundaries of the project itself.

To support this approach a regenerative sustainability framework has been developed for the project. The intention of the framework is to guide the project through design, construction and operation to help meet its sustainability ambitions. The regenerative sustainability framework is based upon a capitals-based model of sustainability addressing areas of natural capital (e.g. biodiversity, energy, water, waste, materials, etc.) as well as wider issues encompassed within the Human, Social, Manufactured and Financial capitals. This approach drives the project to not only focus on areas of environmental performance but also consider themes of community, health and wellbeing, education and research, transport, economic growth among others.

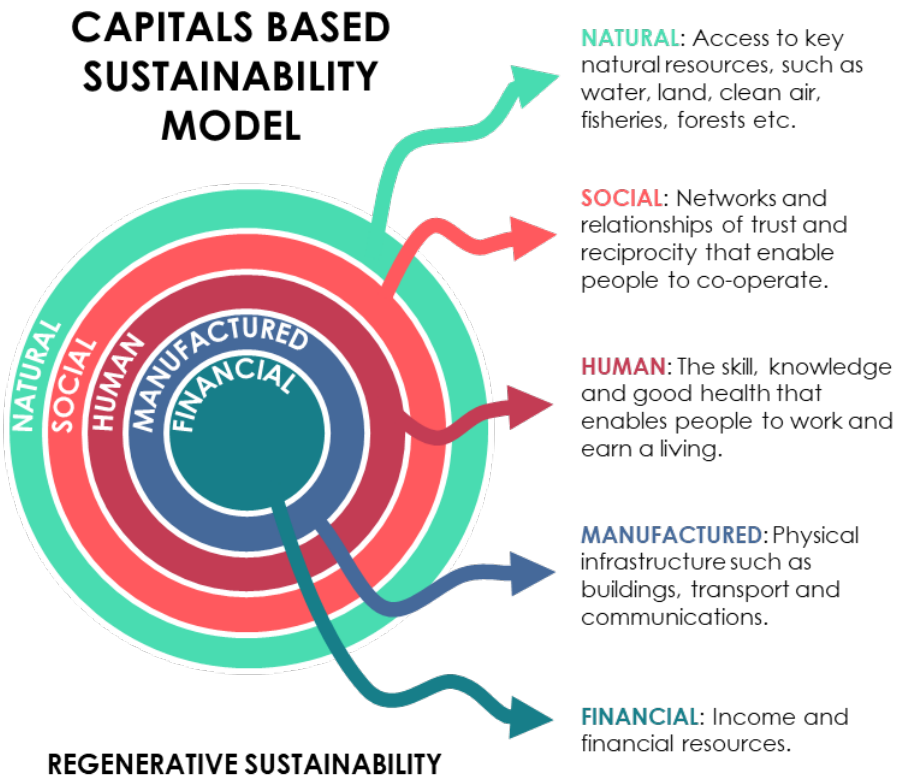


Figure 2: Overview of the capitals-based sustainability mode

The regenerative sustainability framework is evidence-led responding to key drivers, such as policy and best practice, from the international through to the local level. The framework then translates the key drivers and the project vision into a set of objectives, which then inform strategy opportunities to be explored and developed by the project team with the aim of delivering great outcomes for Eden Project North, Morecambe and the wider region. A suite of key results and targets are also defined to continuously monitor and evaluate performance from project inception through to operation. An overview of the framework structure is presented below.

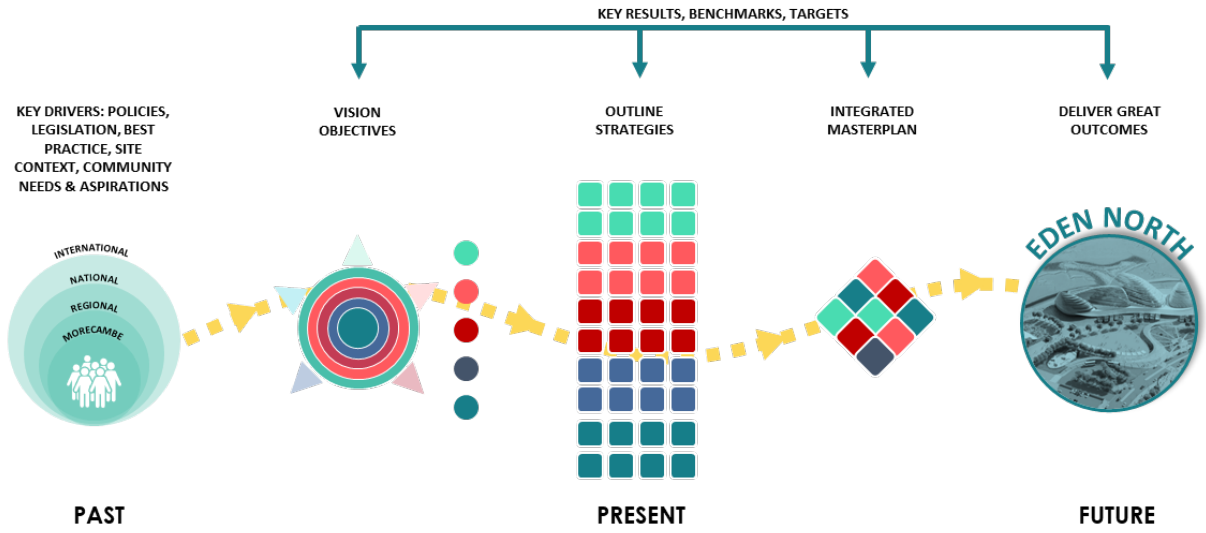


Figure 3: Overview of the regenerative sustainability framework

5.2 Vision and objectives

In order to define and capture the regenerative sustainability ambitions for Eden Project North a vision and set of objectives aligned to the capitals was developed with the project team. These are defined below and have helped shape the focus for the project design and are monitored via the regenerative sustainability framework.

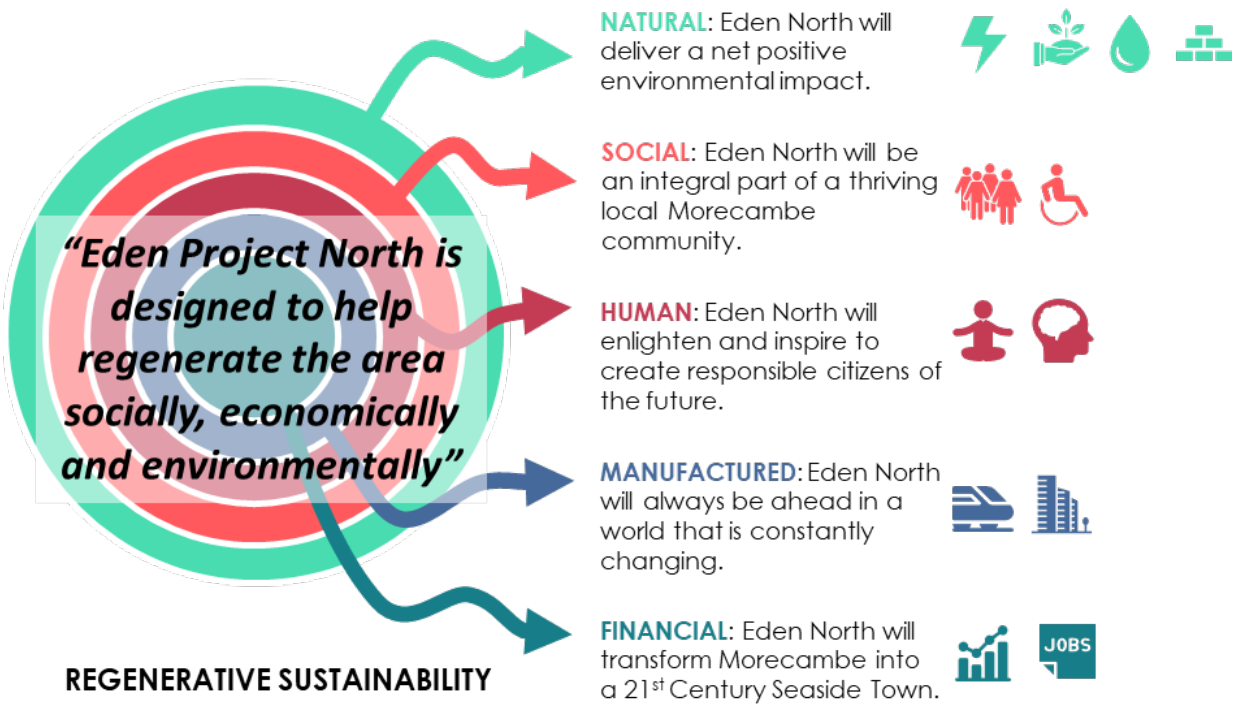


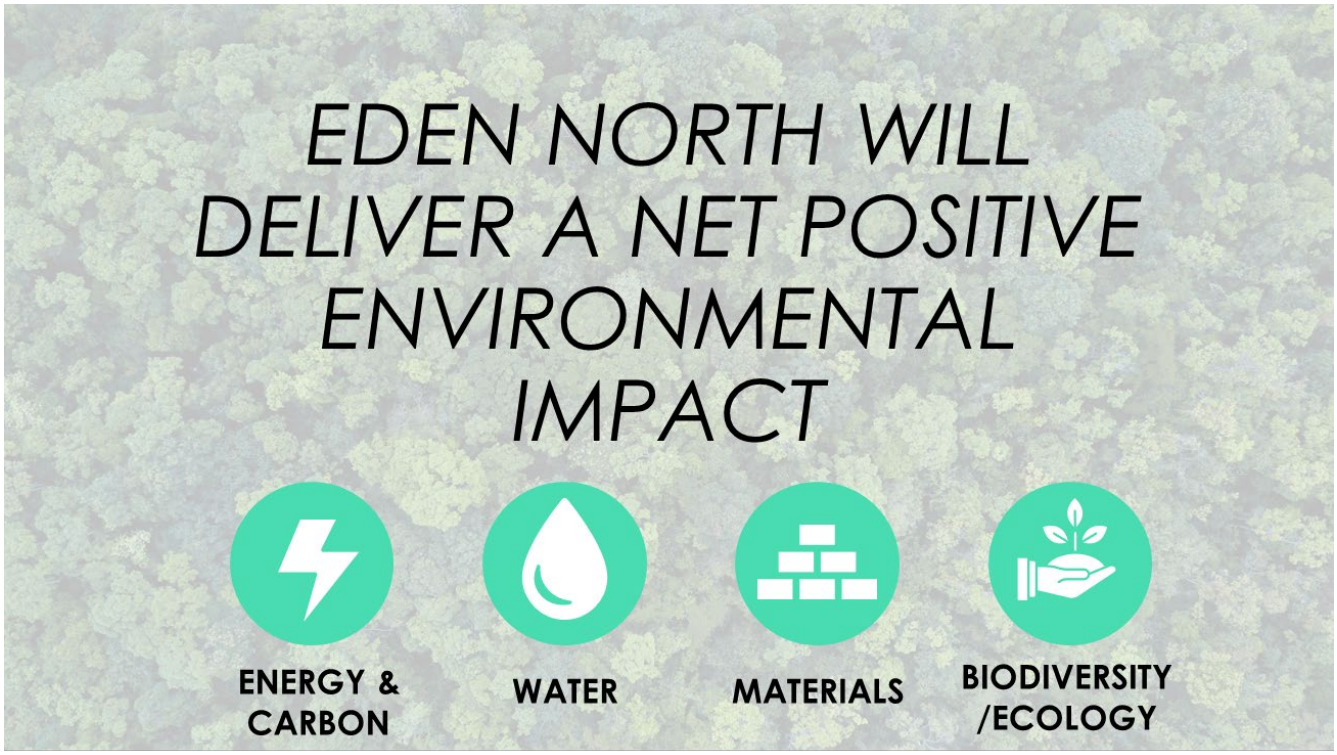
Figure 4: Project vision and objectives

5.3 Sustainability Strategy and Framework Themes, Objectives, KPIs and Targets

Under each of the capitals a series of themes have been defined to support translation of the project vision and objectives into tangible design strategies and measurable results. These are summarised in the table below. This energy & sustainability statement has been structured to provide an overview of the proposed approach to each theme from the framework. Within each section is an overview of the relevant planning policy, the key results and targets from the regenerative sustainability framework, as well as the design proposals and project interventions intended to support delivery.

CAPITAL	THEME
NATURAL	ENERGY & CARBON
	WATER
	BIODIVERSITY/ECOLOGY
	MATERIALS
SOCIAL	COMMUNITY
	ACCESSIBILITY
HUMAN	EDUCATION & RESEARCH
	HEALTH & WELLBEING
MANUFACTURED	BUILT ENVIRONMENT & INFRASTRUCTURE
	TRANSPORT
FINANCIAL	LONG-TERM VALUE
	EMPLOYMENT

6 NATURAL CAPITAL



This section describes the proposed natural capital strategy as part of the Eden Project North development, broken down under the four themes of Energy, Water, Materials and Biodiversity/Ecology. Natural capital is focussed on aspects of environmental sustainability defining how the project can not only minimise resource consumption but support regenerative outcomes through ecological enhancement and supply chain development.

6.1 Energy & Carbon

6.1.1 Key requirements

The energy and carbon strategy will seek to meet the energy related policies which are summarised in the table below. It is understood that energy efficiency and subsequently carbon emissions reduction are key focus points of the local plan update in response to the climate emergency declaration. Eden Project North aspires to be a leading sustainable development and therefore it aims to exceed current requirements and is expected to meet future more stringent updates as well.

Table 1: Policy requirements

DRIVER	POLICY
NPPF	Meeting the challenge of climate change, flooding and coastal change
Building regulations Part L	Minimising carbon emissions from building energy use and operation – building emissions rate to be below target emissions rate.
Climate Change Act	Net zero greenhouse gas emissions by 2050
LCC Local Plan	DM29 Key design principles
	DM30 Sustainable design
	DM31 Air quality management and pollution
	DM35 Water supply and waste water (BREEAM)
	DM53 Renewable and low carbon energy generation
BREEAM	Energy credits – reduction of carbon emissions, lighting, low carbon design.

The energy and carbon strategy is also targeting 'Best Practice' levels of performance across the regenerative sustainability framework. A summary of the Energy key results and KPIs is presented in the table below.

Table 2: Regenerative Sustainability Framework key results and KPIs

THEME	FRAMEWORK KEY RESULT	UNITS	BEST PRACTICE TARGET VALUE
ENERGY & CARBON	Building carbon emissions (embodied carbon and operational energy)	kgCO2/m^2/year	0
	Total building energy demand (Energy Use Intensity)	kWh/m^2/year	140

6.1.1.1 Net Zero Carbon

In order to actively address the climate emergency and support the UK's net zero ambitions, Eden Project North is aiming to be a Net Zero Carbon building as per the UKGBC definition[1]. This requires that the building satisfies the following requirements:

- *Reduce construction impacts (refer to Materials theme)*
  - Minimise embodied carbon emissions from construction materials as much as possible.
  - Complete a whole life carbon assessment to understand the resultant carbon emissions and ensure these are offset through a high-quality carbon offsetting scheme at practical completion.
- *Reduce operational energy use*
  - Prioritise energy efficiency measures to minimise energy demand as much as possible.
- *Increase renewable energy supply*
  - All energy requirements of the building are to be met from renewable energy supplies.
  - On-site systems should be prioritised, with off-site supplies used to meet the remaining supply requirement as long as they demonstrate additionality.

[1] https://www.ukgbc.org/ukgbc-work/net-zero-carbon-buildings-a-framework-definition/

- *Offset any remaining carbon*
    - Any remaining carbon should be offset using a recognised offsetting framework

This ambition has been a key driver for the design development, and the strategies employed to achieve this are discussed in the next section (details relating to embodied carbon are covered in the materials theme).

Although this is a widely-accepted industry definition, it is also acknowledged that this Net Zero definition is far from complete and does not include a large proportion of operational scope 3 carbon emissions such as those from the venue's supply chain. Addressing all emissions will be critical to addressing the global climate emergency, an approach endorsed within the new Science Based Targets Net Zero guidance. As an organisation Eden are looking to address the full carbon footprint across all their operations, and so it is intended that the venue will continue to tackle its carbon emissions during operation and work to towards a truly net zero carbon post-opening.

6.1.2 Strategy

This section provides an overview of the proposed energy strategy for Eden Project North. Full details of the approach can be found in the separate energy strategy document which is included within the planning submission.

6.1.2.1 Applying the Energy Hierarchy

A 'Lean, Clean, Green' hierarchical approach to energy is proposed for Eden Project North. This approach aims to minimise energy demand and consumption from the outset through the use of low energy, passive measures and efficient systems before the deployment of low and zero-carbon technologies.

The rationale is that it is more cost effective to reduce energy demands by prioritising passive design measures and low energy efficient systems, before considering deployment of low and zero carbon (LZC) technologies. This approach also ensures that contributions from LZC systems are maximised.

The energy hierarchy is summarised as follows;

- Lean: Reduce demand through passive design measures,
- Clean: Supply energy efficiently and use market leading energy efficient equipment,
- Green: Incorporate on-site renewable energy systems.

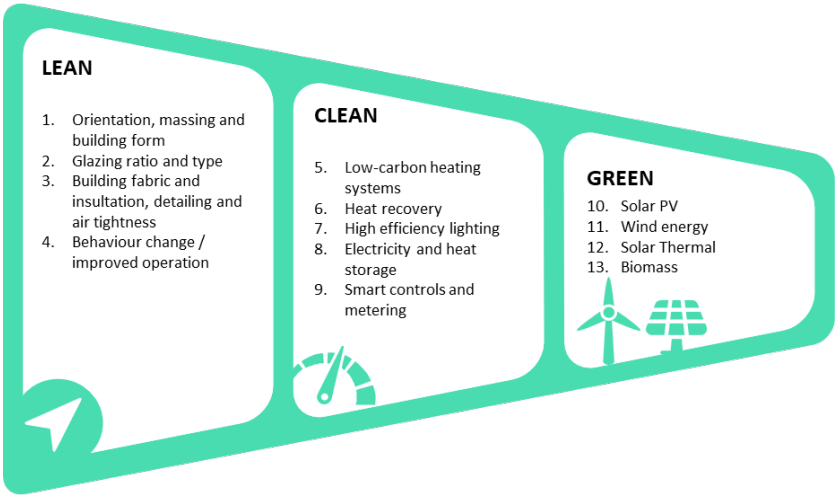


Figure 5: The energy hierarchy

6.1.2.2 Lean

Lean energy strategies and measures utilise passive design approaches to reduce the onsite energy demand from the outset, and consequently the associated CO_2 emissions. Lean design measures which have been included within the energy strategy are outlined below:

- **Semi-outdoor spaces:** Instead of working to specific temperature conditions, a UTCI (universal thermal climate index) assessment has been used to define comfortable conditions for occupants and limit the times when heating and cooling may be required to peak winter and summer conditions.
- **Ventilation and Heat Recovery:** Environmental conditioning within the shells will be kept to an absolute minimum with natural ventilation strategies used as much as possible. This ventilation will be provided through openings at low level and exhausts at high level to deliver effective airflow movement. The shells will be naturally ventilated to maintain comfort during summer., but experience shows that natural ventilation will also be used to purge excess heat during winter due to solar gain. This will be captured usefully as far as practicable through a heat recovery system. Internal climatically controlled spaces will have mechanical ventilation supply and extract air. This will be provided by a heat recovery air handling unit with a heat recovery system of over 80% efficiency.
- **Building fabric, insulation and air tightness:** With the shells operating as semi-outdoor spaces, other internal areas of the building will utilise high levels of insulation and airtightness to keep energy requirements to a minimum. Proposed levels of thermal perfromance are presented in the table below, demonstrating significant improvement upon legislative standards. Whilst the ETFE shell is targeting a higher u-value than the internal spaces there are several mitigations to offset these values. Rather than heating the entire shell, the focus will be to create local microclimates to provide a level of comfort to the visitors which makes the thermal performance of the shells less impactful.

Element U-value (W/m^2K)	Building Regulations Limiting Values	Building Regulations Notional Values	PassivHaus	Proposed
Roof	0.25	0.18	≤0.15	0.1-0.15
Walls	0.35	0.26	≤0.15	0.12-0.15
Floor	0.25	0.22	≤0.15	0.1-0.15
Windows	2.2	1.6	<0.8	1.2
Doors	3.5	-		1.2
Shells	-	-		≤1.4*
Air permeability (m3/h/m2) @ 50Pa	10	3	0.6	Shells ≤ 2.22* Other ≤ 1.5

* As per Eden Cornwall

- **Thermal bridging**: This will be minimised by ensuring the building's thermal lines are continuous with minimal breaks in a bid to minimise energy loss. Detailing around windows & doors will be detailed robustly to mitigate any risk of thermal bridging. Air & Moisture transfer prevention shall be achieved by ensuring joints & interfaces are seam taped etc. This will in turn help keep & maintain continuous insulation lines and prevent thermal bridging overall.
- **Solar gain control:** It is planned to utilise super lightweight ETFE pillows for the biome structures. The opacity of these pillows is planned to be varied to reduce the solar gains in areas at risk of

overheating. For some highly exposed areas dynamic local shading devices are proposed to provide shelter in peak summer conditions, which can be removed in winter when solar gain will be beneficial for comfort.

- **Behaviour change / improved operation:** Findings from continuous monitoring and post occupancy evaluation studies will be used to refine operation of the venue to further reduce energy demands and promote energy efficient behaviour.

6.1.2.3 Clean

Clean energy strategies and measures utilise highly efficient systems and controls to reduce energy demand from active building services systems. Strategies proposed within the Eden project north design include:

- **Heat Pump:** An all-electric heat pump solution is proposed to provide all the heating and cooling needs of the venue. It is currently proposed to utilise air source heat pumps, however the feasibility of a ground source system will be further investigated in the next design stages as this would deliver a superior system efficiency. Its currently proposed for the air source heat pumps to be integrated within bespoke structures in the energy field providing additional amenity as cycle storage and an educational tool for visitors. Significant thermal stores will be provided to allow the heat pumps to operate based on demand side management, taking advantage of when the grid is green to charge the thermal stores and maximise the carbon reduction potential.
- **Energy balance:** With a combination of heating and cooling demands required, it is proposed to utilise an ambient loop linked with the heat pump to recycle unwanted heat gains within the development such as extracting heat from the IT/server room and distributing this to occupied areas. The use of thermal stores will further support efficient operation of this system. This ambient loop also has the potential to be extended to the adjacent Midland hotel to increase overall system viability.
- **High efficiency lighting:** Highly energy efficient lighting will be proposed for all internal, external and specialist (e.g. Experiential/exhibition areas) systems.
- **Smart controls and metering:** Intelligent control systems will provide the ability to understand consumption, balance demand and supply profiles, and deliver energy efficiently.

The use of all electric systems within the development is a key pillar of the net zero carbon strategy. Removing the use of all combustion-based fossil fuels means the full building energy supply can be matched with equivalent renewable energy generation, in addition to the local air quality benefits from removing combustion-based systems.

6.1.2.4 Green

Following the reduction of energy demands through 'lean' and 'clean' measures, the final stage of the energy hierarchy is to consider renewable energy technologies.

Due to the site's prominent urban location and the proposed architectural form the opportunities for large on-site renewable energy systems are relatively limited. Solar photovoltaics and solar thermal have been identified as the most suitable technology for the project.

Solar PV is proposed to be integrated into the ETFE modules of the biome roof structure. In total 3,707m2 of building integrated PV is planned to be provided within south facing aspects of the shells. This is projected to produce between 80 - 165MWh/year. The potential to integrate further solar PV into the energy pods as well as external canopies will be explored in the next design stage, along with an assessment of battery storage feasibility.

Small scale solar thermal systems are also proposed to be incorporated onto the dunescape roof to supply domestic hot water locally to spaces such as toilets and catering areas.

On-site renewable energy systems are estimated to provide 3-7% of the site's energy needs. In order to achieve a Net Zero Carbon building, Eden Project North must have a 100% renewable energy supply. With the on-site constraints discussed above, there is a large proportion of this supply which needs to come from off-site solutions. At this stage of design, the details of this have not yet been defined and will be confirmed during the next design stages. In alignment with the requirements of the UKGBC definition[2] however only supplies which can provide exclusive ownership/attribution, are 100% renewable and deliver additionality will be utilised. The day one solution for this is likely to be a high-quality green tariff from a market supplier, however over time it would be hoped to transition towards a more ambitious solution such as a Power Purchase Agreement with a new unsubsidised renewable generation project in the local area.

6.1.3 Analysis

Due to the level of design at this stage, detailed energy modelling (e.g. dynamic simulation) has not been possible therefore a high-level assessment of predicted operational energy demand and resultant carbon emissions has been completed. Comprehensive data from the Eden Cornwall site was used as a baseline with improvements from the energy proposals calculated against this.

The graph below provides an overview of this analysis, across the different energy end uses within the development.

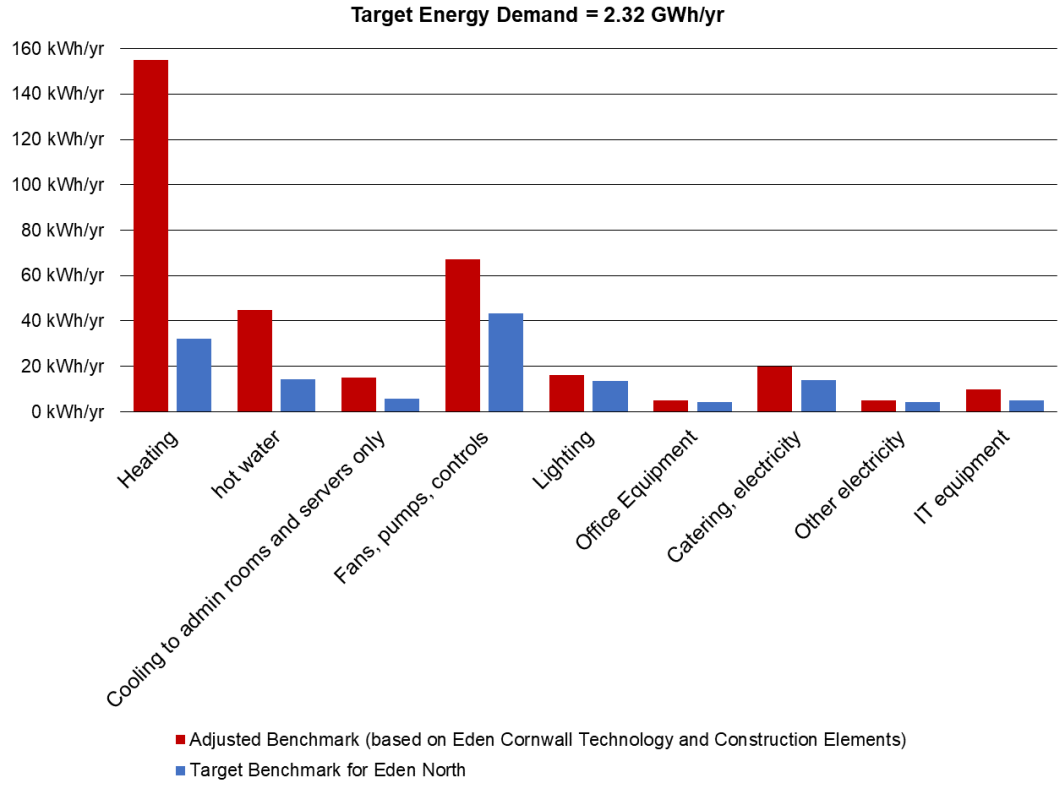


Figure 6: Energy performance compared with Eden Cornwall

[2] https://www.ukgbc.org/ukgbc-work/renewable-energy-procurement-carbon-offsetting-guidance-for-net-zero-carbon-buildings/

The design measures these demonstrated savings come from is further detailed in the image below.

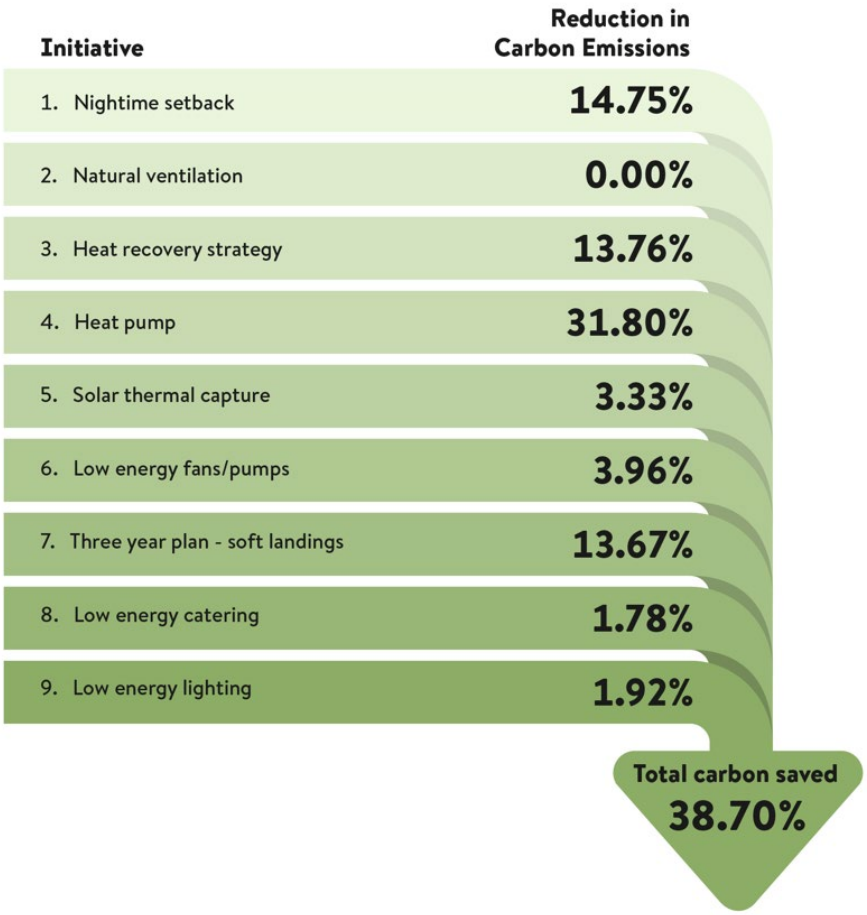


*Figure 7: Total projected **carbon savings** against Eden Cornwall*

Whilst there is no specific carbon or energy target requirement within LCC policy, it is indirectly covered within the requirement for a BREEAM 'Excellent' rating. To achieve 'Excellent' there is a minimum standard of energy perfromance (ENE01) which requires a carbon reduction of approximately 20% compared with the Building Regulations Target Emissions Rate (TER). As detailed energy modelling has not yet been completed performance compared with the TER is not possible at this stage, but based on previous project experience the deisgn team is confident this 20% requirement can be achieved and likely exceeded with the proposed deisgn.



6.2 Water

6.2.1 Key requirements

The water strategy will seek to meet the related planning policy requirements which are summarised in the table below.

Table 3: Policy requirements

DRIVER	POLICY
NPPF	Meeting the challenge of climate change, flooding and coastal change
LCC Local Plan	DM29 Key design principles
	DM30 Sustainable design
	DM33 Development and flood risk
	DM34 Surface water run-off and sustainable drainage
	DM35 Water supply and waste water
	DM36 Protecting water resources and infrastructure
BREEAM	Water credits – consumption, leak detection, efficient equipment
	Pollution credits – flood and surface water management

The water strategy is also targeting 'Best Practice' levels of performance across the regenerative sustainability framework. A summary of the Water key results and KPIs is presented in the table below.

Table 4: Regenerative Sustainability Framework key results and KPIs

THEME	FRAMEWORK KEY RESULT	UNITS	BEST PRACTICE TARGET VALUE
WATER	Annual municipal potable water consumption	litres/visitor	10
	Proportion of annual non-potable demand met from alternative sources	%	50%

6.2.2 Strategy

6.2.2.1 Applying the water hierarchy

The proposed Eden Project North water strategy will follow a hierarchical approach, which supports the conservation of water supplies and resources. This approach looks to minimise water demand as a priority, before considering alternative sources for lower grade use. The water resource strategy will also incorporate resilience and robustness, to ensure longevity and minimise risk. This will tie in with a site-wide sustainable drainage strategy which incorporates the use of Sustainable Urban Drainage Systems (SUDS).

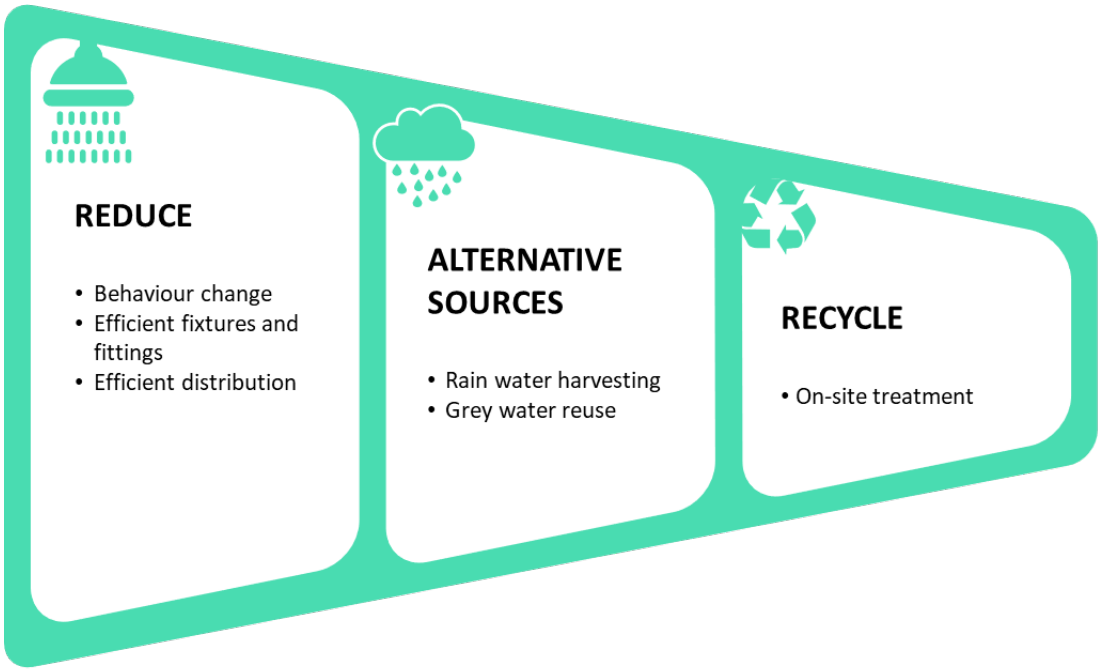


Figure 8: Water hierarchy

An overview of the measures proposed within Eden Project North design are discussed below. The approach outlined below has been developed in alignment with the BREEAM water credit requirements, particularly regarding fixture and fitting specifications, to achieve as many credits as possible.

6.2.2.2 REDUCE

Specification of high-performance water efficient fixtures, fittings, appliances and equipment, will help reduce site water consumption and demands on wastewater services. These represent passive measures and require no behavioural changes by the end users. Several composting toilets are also proposed to be situated within the scheme eliminating water demand for toilet flushing entirely.

System efficiency can also be optimised by improvements in the design and distribution of the water system, reducing leakages and losses across site. Intelligent design that reduces the number of dead legs and minimises overall distribution lengths shall be sought, whilst additional features such as flow restrictors will be considered. The water distribution systems will be metered and monitored by the BMS to detect abnormal water usage or leakage. Zones will be shut off via solenoid valve when they are not in use to limit water loss through pipe failure during unoccupied hours.

There is a large amount of planting and landscaping proposed within the design which without careful consideration could lead to high levels of irrigation demand. Within the external landscape it is proposed to use native species as much as possible, meaning they will be highly resilient to the local climate and require very limited irrigation beyond rainfall. Precise details of the planting proposals within the shells are not yet confirmed but are likely to be more extensive than the external areas. Within these spaces low-irrigation planting will be prioritised where possible, along with a highly efficient irrigation strategy. Systems such as drip-feed will be proposed wherever possible, and irrigation scheduling will be optimised through careful monitoring of the soil and internal environmental conditions.

6.2.2.3 ALTERNATIVE SOURCES

Due to the demand for irrigation on-site, it is intended to maximise the use of rainwater harvesting as a non-potable water source. Rainwater is considered a relatively clean water source, needing only minimal treatment before use in non-potable water systems. The use of on-site rainwater harvesting can help reduce the project's demands on the mains water supply as well as minimising stress on site and municipal drainage systems.

Rainwater will be collected from roof areas and landscape areas of the development to be stored within attenuation systems across the site. Due to the large attenuation requirements for stormwater flows off the site, it is intended to combine these systems to provide the largest volume possible for use within the site. With combined systems it is important to ensure the stormwater system can always function as required during storm events, therefore weather forecasting will be integrated into the system controls such that the storage volume available can be accurately managed at all times such as discharging to free up storage volumes if a high rainfall event is forecast.

With this combined approach, it is hoped that a high proportion of the non-potable water demand can be met from rainwater. During the next design stages detailed water balance calculations assessing both the demand, and supply availability throughout the year will be explored to understand exactly what proportion can be achieved.

6.2.2.4 RECYCLE

Water strategies to 'Recycle' water involve collecting grey and black water to be recycled and treated for secondary usage. A greywater system is considered the most appropriate for the Eden North Project, as black water systems require large areas for processing and treatment which are unavailable on the project site.

It is proposed to utilise a greywater recycling system to recycle water from wash basins and other similar uses to supply non-potable demands such as toilet flushing within the development. Grey water is unlikely to be suitable for irrigation within the internal landscaped areas without comprehensive treatment, so the harvested rainwater will likely be prioritised for this demand with grey water for all other non-potable demands where viable.

6.2.3 Surface water drainage

Surface water drainage from the site is proposed to be managed via infiltration using existing soakaways, in order to reduce pressure placed on the existsing drainage infrastructure. This is the preferred design approach however further infiltration testing is required. Where this solution is not viable discharge to the sea via a culvert which runs across the site will be utilised.

Run-off from roof areas will be captured by a blue roof system integrated into the dunescape roof, providing a combined blue/green roof. The green roof aspect will include topsoil/planting medium to allow for local plants to cover the roof areas, providing ecological benefits. Below the green roof will be a blue roof system which will capture the rainwater and act as storage for the rainwater to be reused as a non-potable water source as described above.

In alignment with local policy surface water captured in the public realm area of the site will be conveyed where possible to the proposed SuDS features, reducing the need for a conventional drainage systems such as channel drains and gullies. Sustainable Urban Drainage Systems (SuDS) are proposed to reduce the impact of surface water from storm events on the existing environment mimicking the natural run-off characteristics of the site and removing pollutants from the urban run-off at source. Pond storage, swales and gravel attenuation areas will be integrated within the landscape design as indicated in the plan below to provide the attenuation levels required before discharging via the soakaways.



Figure 9: Proposed SuDS features

Should on-site testing demonstrate that the soakaways are not a viable solution, additional attenuation will likely be required on-site to manage the discharge rate into the culvert. This would likely be provided via large attenuation tanks buried within the site.

All systems will be sized based on a 1 in 100 year rainfall event, plus a 40% allowance. This will provide the site with a significant degree of resilience to extreme events and further rainfall intensity increases as a result of climate change.



6.3 Materials

6.3.1 Key requirements

The materials strategy will seek to meet the relevant policy requirements which are summarised in the table below.

Table 5: Policy requirements

DRIVER	POLICY
NPPF	Meeting the challenge of climate change, flooding and coastal change
	Facilitating the use of sustainable minerals
LCC Local Plan	DM29 Key design principles
	DM30 Sustainable design
	DM32 Contaminated land
BREEAM	Materials credits – impacts from construction materials, responsible sourcing, materials efficiency
	Waste credits – construction waste, operational waste

The materials strategy is also targeting 'Best Practice' levels of performance across the regenerative sustainability framework. A summary of the Materials key results and KPIs is presented in the table below.

Table 6: Regenerative Sustainability Framework key results and KPIs

THEME	FRAMEWORK KEY RESULT	UNITS	BEST PRACTICE TARGET VALUE
MATERIALS	Building embodied carbon footprint	kgCO2/m2	600
	Materials sourced locally (within average of 100 miles)	%	50
	Operational waste diverted from landfill	%	85%
	Building carbon emissions (embodied carbon and operational energy)*	kgCO2/m^2/year	0

*As defined under the Energy & Carbon theme, the project is aiming to achieve a Net Zero Carbon building as per the UKGBC definition. This requires not only the operational energy requirements to be zero carbon, but also the embodied carbon associated with the construction materials of the project.

6.3.2 Strategy

6.3.2.1 Construction materials

Due to major improvements in the energy efficiency standards of new buildings and the decarbonisation of the UK electricity grid, embodied carbon associated with buildings now typically accounts for the majority of the lifetime carbon emissions. In order to address this and support achieving a Net Zero Carbon building, Eden

Project North has focussed on minimising the embodied carbon of the building design through consideration of material production, sourcing, lifecycle and disposal.

To assess the embodied carbon emissions of the design a lifecycle assessment (LCA) has been completed using One Click LCA software. Due to the current level of design this has focussed on the superstructure options for the project, but will be developed in the next design stages to include all aspects of the building. In order to minimise emissions the design has prioritised lightweight structures, to minimise the mass of materials needed, and timber due to its very low embodied carbon due to the carbon it sequesters during its growth. This has led the design to move away from a traditional solution of steel, concrete and glass towards an ETFE and timber hybrid solution.

In alignment with the BREEAM LCA requirements (credit Mat 01), four superstructure options have been analysed with the results presented below. Using the principles discussed above, a 60% reduction in embodied carbon is delivered compared with a more traditional construction approach. It is currently hoped to utilise the timber hybrid solution identified, however this is subject to further refinement and detailed design within the next stages.

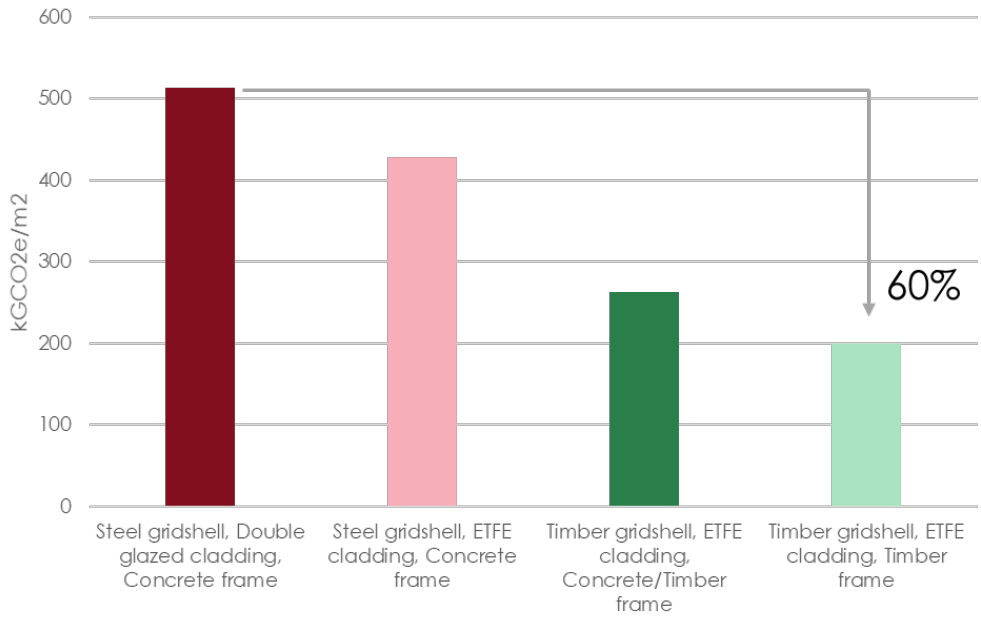


Figure 10: LCA superstructure embodied carbon results

At this stage of design, the emissions associated with sourcing and transport of materials is currently based on default assumptions in the analysis, however it is hoped that the project can utilise local suppliers of materials as much as possible. While the impact of material transport is relatively limited within the overall embodied carbon footprint, local sourcing provides much wider economic benefits which is discussed within the Financial Capital section of this statement.

6.3.2.2 Construction waste

As well as the construction materials, the construction process itself for Eden Project North will employ further measures to minimise its impact more focussed around waste. Waste generated on-site will be minimised as much as possible through the use of modular design and off-site prefabricated components where possible. Any generated waste from construction will be segregated as much as possible to enable diversion from landfill, with perfromance targets to meet or exceed with the relevant BREEAM credits. The cut and fill balance for the site is also being explored within the site to minimise the need site preparation materials. At present

there is a large need for fill in order to achieve the require site levels for flood mitigation, however the possibility for further processing of site clearance materials is being explored to reduce this imbalance. Further detail will be developed in the next stages when a full Construction Waste Management Plan is to be developed.

6.3.2.3 Operational waste

Minimising the impacts of operational waste from Eden Project North is another key focus of the project. Due to the nature of the building, users of the venue will likely be very transient therefore measures to reduce waste generation and maximise recycling need to be carefully considered. A summary of the strategies proposed is presented below:

- Waste sources from venue operations should be minimised as much as possible. This will be a particular focus within the catering offer and can be achieved through initiatives such as cup deposit schemes and avoiding packaging unless completely necessary.
- Waste will be segregated at source into at least three streams (residual, mixed recyclables and organic) throughout the site across front and back of house areas. Appropriate space allowances (aligned with BREEAM credit requirements) for waste management and storage have been incorporated within the building layouts.
- Operational organic waste is proposed to be treated on-site through composting for use within the landscape. This will primarily come from venue operations, although could be supplemented by on-site landscape waste.
- Signage and information regarding the waste management issues and processed at Eden Project North will be communicated to visitors throughout the venue. It is planned to introduce elements of gamification to also encourage visitors to segregate their waste.

A full Operational Waste Management Strategy providing greater detail on the above strategies is to be developed in the next design stages.



6.4 Biodiversity/Ecology

6.4.1 Key requirements

The biodiversity/ecology strategy will seek to meet the relevant policy requirements which are summarised in the table below.

Table 7: Policy requirements

DRIVER	POLICY
NPPF	Conserving and enhancing the natural environment
	Achieving well design places
LCC Local Plan	SO3 Protect and enhance the natural, historic and built environment of the district.
	SP8 Protecting the natural environment
	DM29 Key design principles
	DM30 Sustainable design
	DM43 Green infrastructure
	DM44 The protection and enhancement of biodiversity
	DM45 Protection of trees, hedgerows and woodland
BREEAM	Land Use and Ecology credits – ecological impacts, change and management

The biodiversity/ecology strategy is also targeting 'Best Practice' levels of performance across the regenerative sustainability framework. A summary of the key results and KPIs is presented in the table below.

Table 8: Regenerative Sustainability Framework key results and KPIs

THEME	FRAMEWORK KEY RESULT	UNITS	BEST PRACTICE TARGET VALUE
BIODIVERSITY/ ECOLOGY	Change in ecological value of site	% (biodiversity net gain)	25%
	Proportion of planting native to the local area	%	60

6.4.2 Strategy

The biodiversity/ecology strategy has been developed based on the Ecological Impact Assessment undertaken by TEP to identify natural assets and opportunities to enhance the ecological value of the site and inform the landscape strategy.

The appraisal identified that the majority of the site, primarily comprising of amenity grassland, is of low ecological value. Habitats and species identified on the site do not pose a constraint to the proposed development. There are however areas of potential habitat for waterbird species on the periphery of the site, namely around the sea defences and on the mud flats.

All ecological features within the site are classified as 'widespread, unthreatened and resilient to project impacts'. The landscape strategy has therefore been developed in order to transform this area and promote a rich landscape to enhance the visitor experience and support habitat creation.

The landscape design for Eden Project North includes a variety of spaces to support the operation of Eden project North including functional areas such as the Rhythm Garden to be used for outdoor events, garden spaces within the paid-visitor experience such as the tide garden, and public realm spaces for use by the general public and to support pedestrian movements around the venue.

The planting strategy for the site seeks to incorporate the use of native species found in coastal habitats in order to maximise the biodiversity and potential habitat value of the site. This approach to planting will offer an alternative to traditional ornamental and amenity seaside planting, and will provide an educational opportunity..

The planting strategy for these landscaped areas will include native species mixes found in coastal habitats, with the intention of maximising the biodiversity and potential habitat value of the site as well as demonstrating to visitors the dynamic nature of coastal ecosystems. By using plants suited to local coastal conditions, planting will be suitably robust, able to withstand the levels of salt and weather exposure (including drier periods), representing a sustainable approach to the long-term management of the landscape. The dunescape roof which connects all of the shell structures will also be living roof providing further ecological value to the site and a seamless landscaped connection across the site.

Based on the landscape proposals a biodiversity assessment has been completed, using the Biodiversity Metric 3.0 calculator, to quantify change in the biodiversity of the site from its current state and the propsoed development. Using this assessment, a net gain of 41% has been calculated, demonstrating the biodiversity value of the propsoed landscape strategy. The UK Environment Bill shortly to be adopted, mandates all new development to deliver 10% biodiversity net gain demonstrating the ambition of the Eden Project North proposals.

7 SOCIAL CAPITAL



7.1 Community

7.1.1 Key requirements

The community strategy for Eden Project North will seek to meet the relevant policy requirements which are summarised in the table below.

Table 9: Policy requirements

DRIVER	POLICY
NPPF	Promoting healthy and safe communities
LCC Local Plan	DM26 Public realm and civic space
	DM27 Open space, sports and recreational facilities
	DM29 Key design principles
	DM56 Protection of local services and community facilities
BREEAM	Management credits – stakeholder consultation

The community strategy is also targeting 'Best Practice' levels of performance across the regenerative sustainability framework. A summary of the key results and KPIs is presented in the table below.

Table 10: Regenerative Sustainability Framework key results and KPIs

THEME	FRAMEWORK KEY RESULT	UNITS	BEST PRACTICE TARGET VALUE
COMMUNITY	Proportion of Morecambe population interacting with Eden North every year	%	50%
	Proportion of site dedicated to communal public gardens	%	25%

7.1.2 Strategy

Eden Project North is planned to not only create a world-class visitor attraction for the Lancaster region, but also a new focal point for the local Morecambe community. The project aims to integrate within the local community engaging and collaborating with local residents to widen its reach beyond the boundaries of the venue.

This ambition has been exemplified within the community consultation activities which have been run over the past year. The Eden community conversations have delivered an open platform of engagement with local residents in both physical and digital platforms. It is planned that this collaborative approach will continue through to the operation phases of the venue, exploring the potential for events and projects which can be run with the local community to support initiatives aligned with Eden's ethos and values.

The venue itself has been designed to provide large areas of publicly accessible space to support these community objectives. Whilst there is a paywall for the internal spaces, the majority of the external landscaped areas covering approximately 50% of the site will be open to the public at all times. These landscaped areas will provide additional high-value public space in the centre of Morecambe for local residents to visit and enjoy. Areas such as the Energy Field also provide education and interaction opportunities showcasing how the energy systems in the venue itself work and how they are helping to address the global climate emergency. Whilst reducing the net area of open space on the site, these spaces are considered to provide a significant improvement on the amenity of the current site and create a much more desirable location for community use and recreation.

The public realm areas have also been designed to integrate and improve popular existing local assets such as the seafront promenade and the east-west cycling routes across the site. The seafront promenade will have additional sheltered seating areas introduced as well as planting which integrates with the building's dunescape roof proving high-quality and attractive places for pedestrians to gather.



7.2 Accessibility

7.2.1 Key requirements

The accessibility strategy for Eden Project North will seek to meet the relevant policy requirements which are summarised in the table below.

Table 11: Policy requirements

DRIVER	POLICY
NPPF	Promoting sustainable transport
	Promoting healthy and safe communities
LCC Local Plan	DM29 Key design principles
	DM56 Protection of local services and community facilities

The strategy is also targeting 'Best Practice' levels of performance across the regenerative sustainability framework. A summary of the key results and KPIs is presented in the table below.

Table 12: Regenerative Sustainability Framework key results and KPIs

THEME	FRAMEWORK KEY RESULT	UNITS	BEST PRACTICE TARGET VALUE
ACCESSIBILITY	Proportion of development designed to provide access for those with physical disabilities (i.e. to ADA and DDA standards).	%	100%

7.2.2 Strategy

Ensuring that all aspects of the venue are accessible to as many members of society as possible has been a key design requirement for the venue. For visitors with physical disabilities this has mainly informed the layout and wayfinding across the site. Initial wayfinding across the site has been developed to provide level access to all aspects of the venue, internally and externally. This is often provided through ramp access routes, but where required lift provision has also been provided around the cores.

Eden as an organisation has developed a breadth of experience in managing accessibility within internal and external environments within the Cornwall site, and many of these lessons learnt will be incorporated into the design and operation of Eden Project North.

As well as movement across the site, accessibility and inclusivity will also be considered within the experiential design of the venue. The detail of these spaces is to be develop further in the next stages, but it will consider opportunities to accommodate the needs and access requirements of as many user groups as possible to deliver an inclusive and accessible experience.

8 HUMAN CAPITAL



8.1 Health & wellbeing

8.1.1 Key requirements

The health and wellbeing strategy for Eden Project North will seek to meet the relevant policy requirements which are summarised in the table below.

Table 13: Policy requirements

DRIVER	POLICY
NPPF	Promoting healthy and safe communities
LCC Local Plan	DM29 Key design principles
	DM57 Health and well-being
BREEAM	Health and wellbeing credits – indoor air quality, safe and healthy surroundings

The community strategy is also targeting 'Best Practice' levels of performance across the regenerative sustainability framework. A summary of the key results and KPIs is presented in the table below.

Table 14: Regenerative Sustainability Framework key results and KPIs

THEME	FRAMEWORK KEY RESULT	UNITS	BEST PRACTICE TARGET VALUE
HEALTH & WELLBEING	Percentage of visitors feeling more connected to nature	% survey response	100%
	Number of local participants involved in Eden on Prescription	#	250

8.1.2 Strategy

The health and wellbeing strategy for the venue incorporates features of user comfort, active design, access to nature as well and promoting public art and design features intended for delight and celebration.

Access to nature and the concept of biophilia is understood to be a key contributing factor to human wellbeing and happiness. Eden Project North aims to utilise this to deliver an exceptional experience immersing visitors within the natural rhythms and landscapes of the local environment. Bringing people closer to nature and raising awareness about the fragility and challenges ecosystems face within the planetary emergency are key aspirations for the project, and an outcome which will be monitored through visitor surveys and engagement. It is hoped this can be achieved both within the visitor experience but also through the public realm proposals and community outreach activities.

It is proposed to maximise the benefits of the project through expanding the Eden on Prescription scheme which successfully operates at Eden Cornwall. Through social prescribing with local healthcare services, the scheme links primary care patients with non-clinical support in the community to deliver improvements to their health and wellbeing. This includes activities such as lunch clubs, walking groups and gardening to help tackle mental health issues, isolation and other chronic health issues. Whilst Lancaster district is a relatively affluent area there are understood to be significant pockets of deprivation, especially within Morecambe, where health related issues have a greater prevalence. Through the Eden on Prescription initiative, it is hoped to expand the intended benefits of the project beyond paying visitors and support these local residents and deliver improved health and wellbeing outcomes.

Health and wellbeing considerations of users within the building, staff especially, have also been incorporated into the design. This includes providing high levels of indoor air quality, delivering adequate levels of thermal comfort and providing a safe and secure environment. Targeted performance in these areas is aligned with the relevant BREEAM requirements to also support achievement of an ‘Excellent’ rating.

Aspects of active travel are also encouraged within the scheme to promote healthy lifestyles, and these are discussed in more detail under the Transport theme.



8.2 Education & research

8.2.1 Key requirements

The education & research strategy for Eden Project North will seek to meet the relevant policy requirements which are summarised in the table below.

Table 15: Policy requirements

DRIVER	POLICY
LCC Local Plan	DM28 Employment and skills plans

The education & research strategy is also targeting 'Best Practice' levels of performance across the regenerative sustainability framework. A summary of the key results and KPIs is presented in the table below.

Table 16: Regenerative Sustainability Framework key results and KPIs

THEME	FRAMEWORK KEY RESULT	UNITS	BEST PRACTICE TARGET VALUE
EDUCATION & RESEARCH	Number of students participating in Eden North education programs each year	#/year	75,000
	Number of active research projects involving academic institutions	#/year	2

8.2.2 Strategy

Eden Project North will provide a combination of entertainment and education, leaving visitors with lasting memories as well as driving positive behavioural change. The project is situated in an area of exceptional natural value and is opening amidst a planetary emergency of climate change and biodiversity decline. The project aims to combine all these aspects within the visitor experience to educate and inspire.

The experiential design of Eden Project North will focus on natural rhythms - dictated by the Sun and Moon – and how they underpin the health and wellbeing of humankind and the natural environment on which we rely. These themes will be brought to life in a series of zones, each of which allows an enjoyable and educational experience. Engagement across visitors of all ages will be supported with interactive elements and incidental play features to ensure it is a learning experience for all.

Several higher education institutions and research centres have been engaged with during the deisgn development to the building itself. Eden Project North aspires to be a pioneering sustainable development, and therefore opportunities to use pioneering technologies and materials within the scheme are being explored. The details of this are to be developed in the next design stages but it is hoped to utilise several cutting edge materials technologies across the site to provide live testing and research, as well as contributing to the visitor's educational experience.

Engagement with formal education systems at all levels is also planned for the scheme, building on the successful programmes delivered at Eden Project Cornwall. The project will look to host school groups from the local region providing them with supported access to the exhibits as well as bespoke educational activities and curricula. Eden Project International, Lancaster and Morecambe College have already signed a 25-year education agreement, with support from Lancaster University, local schools and FE colleges, to transform the education system across Morecambe Bay. The Morecambe Bay Curriculum (MBC) is a place-based curriculum and will support learning across primary, special, secondary, FE and HE levels and establish a single line of sight into employment opportunities. Eden Project North has already had positive impacts on the education system, now offering level 3 diplomas, equivalent to 3 A-levels at Lancaster and Morecambe College. Whist not limited to the venue itself, this is an example of the educational benefits planned for Eden Project North to deliver beyond the boundaries of the visitor experience.

It is also planned for Eden Project North in conjunction with Lancaster University to develop an internationally significant research platform and create a “Living Laboratory”. This will provide a showcase space for the research activity taking place across the region adding to the educational offer of the visitor experience.

9 MANUFACTURED CAPITAL



9.1 Built environment & infrastructure

9.1.1 Key requirements

The built environment and infrastructure strategy for Eden Project North will seek to meet the relevant policy requirements which are summarised in the table below.

Table 17: Policy requirements

DRIVER	POLICY
NPPF	Meeting the challenge of climate change, flooding and coastal change
LCC Local Plan	SO4 Provision of necessary infrastructure required to support both new and existing development and the creation of sustainable communities
	DM29 Key design principles
	DM33 Development and flood risk
	DM58 Infrastructure delivery and funding
	DM59 Telecommunications and broadband improvements
BREEAM	Health and wellbeing credits – thermal comfort
	Pollution credits – flood and surface water management

The strategy is also targeting 'Best Practice' levels of performance across the regenerative sustainability framework. A summary of the key results and KPIs is presented in the table below.

Table 18: Regenerative Sustainability Framework key results and KPIs

THEME	FRAMEWORK KEY RESULT	UNITS	BEST PRACTICE TARGET VALUE
BUILT ENV & INFRASTRUCTURE	Buildings, Infrastructure, and off-site activities to be resilient to or can adapt to future climate scenarios	Climate Scenario	2080

9.1.2 Strategy

On opening day, Eden Project North aspires to be a leading example of sustainable construction. It is critical however that measures are put in place to maintain this level of performance across the project lifetime. Performance may be threatened by operational challenges or could be more significantly affected by external factors such as climate change. To ensure that the performance of the building can be delivered from day one and sustained throughout the building lifetime a series of measures have been proposed within the design.

9.1.2.1 Building management

Close management of building performance requires a complete understanding of all the building operations from day one. In order to achieve this a comprehensive building management system (BMS) is proposed for the building to cover all key resource systems as far as possible. Within the energy systems high frequency reporting regarding internal temperatures and comfort criteria will be used to maximise the amount of time the shells can operate passively. Smaller internal spaces will be operated based on both temperature as well as air quality indicators such as CO2 to maximise energy efficiency as well as occupant comfort and wellbeing.

Similar systems will also be used within water and waste systems to optimise waste collection and use of alternative water sources, for example using weather forecasts to predict require stormwater storage capacity to minimise unnecessary discharge.

All data and metering will support a continuous programme of monitoring and evaluation, to identify poor performance/faults which need addressing as well as areas of opportunity for further efficiency savings. It is also planned to incorporate data flows from these systems into visual dashboards within the venue itself to provide live feedback and education opportunities about how the building operates. This could also be incorporated within a web platform to provide live measurement of the project impact in CO2 emissions, for example.

9.1.2.2 Climate Change adaptation

Over the lifetime of the project (50+ years), the local climate and context the project operates within is likely to change significantly creating new challenges and opportunities the building needs to respond to. This applies to not only the building design, but also all on and off-site infrastructure critical to its operation.

Within the building design climate change impacts have been considered primarily in the areas of energy and flooding. The most likely climate change impacts for the site will be an increase in average and peak summer temperature events, greater rainfall intensity, and sea level rise.

As detailed in the Energy & Carbon theme, the shells are intended to operate passively without the need for active energy systems during large periods of the year. Whilst increased average temperatures may benefit this strategy in the cooler months, peak summer conditions will likely require greater cooling input and therefore ventilation openings, systems and plant will be sized accordingly to accommodate this.

Both coastal and surface water flood risk to the site will worsen with projected climate change estimates, and therefore future allowances for a 50-year design life have been included in the modelling to ensure adequate mitigation measures are included within the design. Detailed information regarding the proposals to achieve this are included within the Flood Risk Assessment and Surface Water Drainage Strategy.

Climate change risk associated with any potential off-site infrastructure such as local food production or energy generation will also be considered to ensure that all systems and operations are as resilient as possible.



9.2 Transport

9.2.1 Key requirements

The transport strategy for Eden Project North will seek to meet the relevant policy requirements which are summarised in the table below.

Table 19: Policy requirements

DRIVER	POLICY
NPPF	Promoting sustainable transport
LCC Local Plan	SO5 Delivery of a safe and sustainable transport network that improves both connection within and out of the district, reducing the need to travel and encouraging more sustainable forms of transport
	DM29 Key design principles
	DM31 Air quality management and pollution
	DM60 Enhancing accessibility and transport linkages
	DM61 Walking and cycling
	DM62 Vehicle parking provision
	DM63 Transport efficiency and travel plans
	DM64 Lancaster district highways and transport masterplan
BREEAM	Transport credits – transport assessment and sustainable transport measures

The transport strategy is also targeting 'Best Practice' levels of performance across the regenerative sustainability framework. A summary of the key results and KPIs is presented in the table below.

Table 20: Regenerative Sustainability Framework key results and KPIs

THEME	FRAMEWORK KEY RESULT	UNITS	BEST PRACTICE TARGET VALUE
TRANSPORT	Percentage of visitors using sustainable travel options (public transport, human powered)	%	25%
	Proportion of fleet that is low-emitting and/or electric	%	100%

9.2.2 Strategy

Eden Project North is forecasted to expect on average 750,000 annual visitors with a maximum of 4,000 visitors per day. Due to the nature of the development and these high levels of transient visitors, developing a sustainable transport strategy is essential. Full details of the transport proposals can be found in the Transport Assessment and Interim Travel Plan, however a summary of the key proposals has been provided below.

9.2.2.1 Multi-Modal travel options

The Eden Project North site is well served with existing transport options due to its central location within Morecambe. Even with such a high volume of visitors forecast, it has been determined that with the

availability of existing infrastructure no major upgrades or investment is required to serve the site. The transport strategy has therefore focussed on maximising the use of these existing infrastructure assets whilst encouraging people to arrive by non-car modes.

Whilst non-car travel is to be encouraged, there is also a practical reality that in the opening year many visitors will still seek to travel by car. Based on trip modelling it is forecast that around 60-70% of visitors will arrive by car in the opening year. While Morecambe is not particularly congested, with such a large proportion of visitors arriving by car the aim is to intercept many car trips as they leave the motorway at the M6 Junction 34, where there is an underused and recently built Park and Ride facility. Other vehicles would use readily available and underutilised existing parking in the town centre, with these two amenities being linked through ticketing systems to allow a dynamic and flexible response according to demands.

While use of the Park and Ride does not mitigate the impact of car journeys, it aims to remove traffic from the centre of Morecambe and subsequently mitigate local pollution and air quality impacts. It is hoped that the shuttle bus running from the P&R to the venue would be an electric vehicle further reducing carbon emissions and air quality impacts whilst also providing an educational opportunity for visitors, however the viability of this from a charging infrastructure perspective needs to be explored in further detail during the next stages and with potential operators.

Rail access to the site is good with Morecambe railway station located just 300 metres from the project site, with regular services to Lancaster, Leeds and Heysham. Whilst there is capacity for these services to meet the demands of Eden Project North, it is acknowledged that greater frequency and connectivity of services will be required to achieve a greater modal split for rail travel. Eden will continue to work with local providers and operators to explore opportunities for this during operation. There are a number of regular bus routes serving the site which are considered to be most suitable for employees and visitors starting their trips from Morecambe and Lancaster.

9.2.2.2 Ticketing and incentives

A time controlled and advance booking system will allocate visitors a specific time slot to enter the site. This will allow EPIL to control, manage and influence the visitor demand throughout the day and year, avoiding very large peak days and hours. Whilst it is acknowledged a large number of trips will likely be made by car, it is proposed to use the booking system to also manage these trips and try to encourage a modal shift.

Based on information provided when booking tickets, visitors will be shown various travel routes to site, along with potential incentives for more sustainable methods such as discounts or catering vouchers. For visitors who still choose to travel by private vehicle, based on information such as party size appropriate parking options will be provided and may be integrated within the ticket. For example, electric vehicles and Blue Badge holders may be directed towards parking in the town centre whilst other may have a space reserved at the Park & Ride facility.

It is hoped this forward planning and integration with the ticketing system will allow greater control over visitor transport options and help support a gradual shift towards greater use of public transport options.

9.2.2.3 Electric vehicles

In alignment with national policy, there is an expected dramatic increase in the use of electric vehicles in the next 10-20 years. It is important to ensure that adequate charging infrastructure is available for these vehicles to enable their use for journeys to and from the venue. Due to the fact no new parking spaces are proposed as part of the development, additional EV spaces are not included within this application although there are already 24 charging points at the Park & Ride facility. Eden therefore propose to work with Lancaster City

Council to deliver additional and upgraded charging infrastructure across these parking areas to enable greater use of electric vehicles for both visitors to the venue and local residents.

It is hoped that the Park & Ride shuttle bus can be an electric vehicle (subject to further feasibility) and whilst a large fleet will not be required for venue operations any vehicles which are required will be 100% electric which will also be encouraged with key suppliers to the site.

9.2.2.4 Active travel

Due to its location on the seafront promenade the site is well connected with popular walking and cycling routes mainly running east-west along the seafront. An assessment of average cycling trips indicates that almost all of Morecambe is able to access the site within a 20-minute cycle, making it a viable option for local employee commuting particularly.

Facilities to encourage staff to travel to site via walking or cycling such as showers and lockers are proposed within the development, and this may be further encouraged through staff information and initiatives such as the Cycle to Work scheme. Active travel and public transport will be strongly encouraged for staff, with no specific car-parking allocation and an ambition to recruit a local workforce.

The project team has worked with local stakeholders such as LCC and Sustrans to ensure the development supports active travel routes and opportunities in the immediate vicinity of the development. This has included revisions to pedestrian crossings for improved connectivity and minor amendments to the National Cycle Network routes around the site. It is hoped that these minor changes will not only support better active travel to Eden Project North but support better walking and cycling routes for the local area.

10 FINANCIAL CAPITAL



10.1 Long-term value

10.1.1 Key requirements

The long-term value strategy for Eden Project North will seek to meet the relevant policy requirements which are summarised in the table below.

Table 21: Policy requirements

DRIVER	POLICY
NPPF	Building a strong, competitive economy
	Ensuring the vitality of town centres
LCC Local Plan	SO1 Delivery of a thriving local economy that foster investment and growth and support the opportunities to deliver the economic potential of the district
	SP4 Priorities for sustainable economic growth
	DM16 Town centre development
	DM22 Leisure facilities and attractions
	DM24 The creation and protection of cultural assets
	DM29 Key design principles

The value strategy is also targeting 'Best Practice' levels of performance across the regenerative sustainability framework. A summary of the key results and KPIs is presented in the table below.

Table 22: Regenerative Sustainability Framework key results and KPIs

THEME	FRAMEWORK KEY RESULT	UNITS	BEST PRACTICE TARGET VALUE
LONG-TERM VALUE	Regional economic benefit delivered per £ spent	Ratio	3.6
	Source catering supplies from local suppliers based within 25 miles of site	% of revenue spent	75

10.1.2 Strategy

Eden Project North represents a major economic regeneration opportunity for Morecambe, an area which suffers from higher-than-average levels of deprivation and unemployment. These issues have been exacerbated by a gradual decline in tourism to the local area and more recently the major economic impact caused by the COVID-19 pandemic. This project will be a major new tourism destination for the region, bringing hundreds of thousands of visitors each year to Morecambe and delivering wide reaching economic benefit.

In addition to jobs (see Employment theme) it is hoped that Eden Project north will provide major benefits through revitalising the visitor economy in the area. Visitors to Eden Project North will likely remain in the area after their visit spending money in local retail and catering facilities, staying in local accommodation, and visiting other nearby attractions.

With Eden's sustainability aspirations across all areas of design and operation, it is also hoped that the project can support a wider local supply chain to develop and provide sustainable goods and services to other local projects and organisations. As discussed in the Materials theme the possibility of local material sourcing will be explored in the next design stages, but it is also hoped to source a large proportion of the venue's catering supplies locally. Within Eden Project Cornwall after many years of effort and collaboration with local suppliers, 85% of all food and drink is now sourced from within Devon and Cornwall. This established supply chain is an asset to not only Eden Project Cornwall, but also provides high quality local produce to many other local organisations reducing the carbon emissions associated with these products at the same time. Lessons learnt from this work in Cornwall will be implemented in Morecambe to try and achieve similar outcomes.



10.2 Employment

10.2.1 Key requirements

The employment strategy for Eden Project North will seek to meet the relevant policy requirements which are summarised in the table below.

Table 23: Policy requirements

DRIVER	POLICY
LCC Local Plan	SO1 Delivery of a thriving local economy that foster investment and growth and support the opportunities to deliver the economic potential of the district
	SP5 The delivery of new jobs
	DM29 Key design principles
	DM14 Proposals involving employment and premises
	DM29 Key design principles

The employment strategy is also targeting 'Best Practice' levels of performance across the regenerative sustainability framework. A summary of the key results and KPIs is presented in the table below.

Table 24: Regenerative Sustainability Framework key results and KPIs

THEME	FRAMEWORK KEY RESULT	UNITS	BEST PRACTICE TARGET VALUE
EMPLOYMENT	Percentage of staff made up by apprentices	%	TBC
	Proportion of workforce living within 5 miles of the venue	%	TBC

10.2.2 Strategy

Eden Project North will create significant employment opportunities within Morecambe both directly and indirectly. The construction phase of the scheme will require a large local workforce, and it is expected that operation of the venue will directly support approximately 389 FTEs. Significant indirect employment is also expected to be created through the increased demand on the local visitor economy (catering, accommodation etc.) as well as within the local supply chain.

In order to maximise the local economic benefit of the project and minimise the impacts of staff commuting it is planned to recruit employees local to the venue as much as possible. This will also be supported with an apprenticeship scheme, offering young people within education the chance to work within various aspects of the venue's operations. This has been successful run in Eden Project Cornwall and would look to be expanded in Morecambe in collaboration with local education institutions. Opportunities for offering apprenticeships within the construction phase of the project will also be explored once a contractor has been appointed for the project.

11 BREEAM

11.1 Introduction

In response to policy DM30 which states that *'non-residential building development should enable achievement of the BREEAM 'Excellent' standard',* a pre-assessment for Eden Project North has been completed. Due to the typology of the building, it is proposed that the building will be certified under the 2018 New Construction scheme as an 'Other Building – Visitor Centre'.

At this stage of design, a pre-assessment of the scheme has been completed with the wider design team to ensure the project proposals are aligned with the BREEAM 'Excellent' requirements. Strategies proposed to achieve this level of performance have been discussed within each theme presented within this energy & sustainability statement.

In order to achieve an 'Excellent' rating there are several mandatory credits such as energy performance, and there are also time-sensitive credits which must be completed at certain stages within the project lifecycle. Appropriate analysis and evidence has been prepared to satisfy these requirements, details of which have been provided in the full pre-assessment appended to this report.

11.2 Pre-assessment

As the building design is at RIBA stage 2+, a large proportion of the information and evidence required for many of the credits has yet to be developed. The pre-assessment has therefore been completed based on the strategies proposed by the design team complimented with past project experience and knowledge of BREEAM by Carbon Consult and 3ADAPT. Targeted credits have been categorised as Basic and Additional within the pre-assessment. Basic credits are those which are known to be within the current design, whilst additional credits are those which are still targeted but either require further coordination or analysis in later deisgn stages to be confirmed.

The graph below demonstrates the current credit score for the scheme of 74.5% (78.3% including additional credits), with the threshold of 70% required for an Excellent rating. With all BREEAM assessments it is good practice to have a number of credits above the threshold as a 'buffer' to manage any risks as the project progresses.

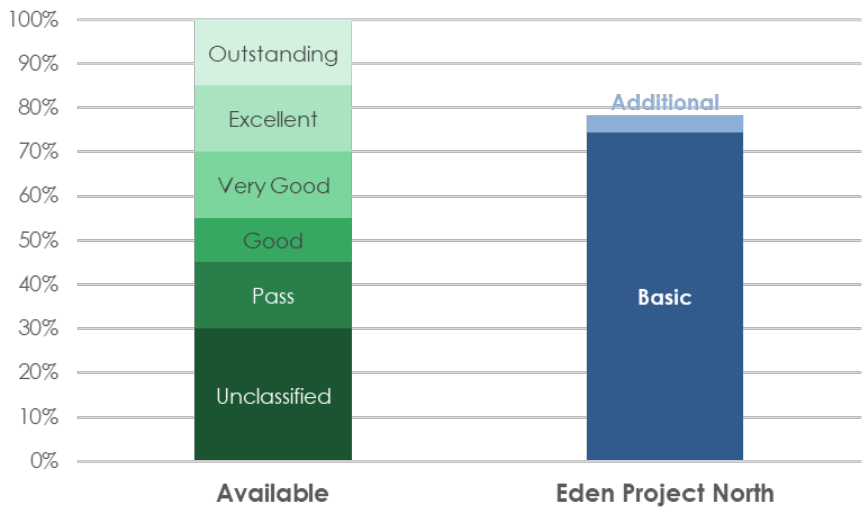


Figure 11: BREEAM Pre-assessment score

The potential to achieve an 'Outstanding' rating has also been explored with the design team, to ensure it remains an option for future consideration. At present this is not targeted, but design strategies required to 'futureproof' this rating have been co-ordinated with the design team and detailed implications of this on the design and the cost plan will be explored in further detail in the next design stages.

12 Appendix

12.1 BREEAM pre-assessment

Eden North, Morecambe
BREEAM Pre-Assessment and Strategy

For

3ADAPT

Prepared by
Carbon Consult Limited
Camerton Inn, 28 Meadgate
Camerton
Bath
BA2 0NW

Revision record

Description	Rev	Date	By	Checked
BREEAM Pre-Assessment and Certification Strategy	1.0	20/04/21	Gareth Sammons	Fleur Baguley
BREEAM Pre-Assessment and Certification Strategy (for planning)	2.0	23/08/21	Fleur Baguley	Fleur Baguley

Assessor Information

Assessor	BRE Assessor Number	BREEAM License
Fleur Baguley	CCONS-FB05	L300 2478
Gareth Sammons	CCONS-GS03	L300 2478



This report is provided for the sole purpose of providing information for the named Client. It is confidential to Carbon Consult and the named Client. Carbon Consult Limited accept responsibility that the report has been prepared with the skill, care and diligence. No responsibility is accepted whatsoever to any other parties. Any such parties rely upon the report at their own risk. Neither the whole nor any part of the report nor reference to it may be included in any published document, circulation or statement without Carbon Consult Limited and the named clients written approval of the form and content in which it may appear.

Disclaimer
This report is made on behalf of Carbon Consult Limited. By receiving the report and acting on it, the client - or any third party relying on it - accepts that no individual is personally liable in contract, tort or breach of statutory duty [including negligence].

Copyright
Copyright exists on the BREEAM logo and this may not be used or reproduced for any purpose without the prior written consent of the BRE Global Ltd.

The BREEAM name and logo are registered trademarks of the Building Research Establishment Limited.

TABLE OF CONTENTS

Table of Contents *3*

CHAPTER: 1 Executive summary *4*

CHAPTER: 2 Project Introduction *5*

2.1 Project details **5**

2.2 Application of BREEAM **6**

CHAPTER: 3 Background to BREEAM *7*

3.1 What is BREEAM **7**

3.2 Assessment Variations **9**

3.3 BREEAM Rating Benchmarks **10**

3.4 Performance requirements **11**

3.5 Minimum Standards **12**

3.6 Environmental Section Weightings **14**

3.7 Time bound performance requirements **15**

3.8 Stages of Assessment **16**

3.9 Certification **19**

3.10 Roles and Responsibilities **20**

CHAPTER: 4 Pre-Assessment & Development of assessment strategy *21*

4.1 Methodology **21**

4.2 Findings **22**

CHAPTER: 5 Route to Certification *25*

5.1 BREEAM Approach **25**

5.2 Registration and Early-Stage Credits **25**

5.3 Site Wide Actions **25**

5.4 Time bound performance elements **25**

5.5 Appointment of Specialists **25**

5.6 Formal Assessment **26**

Appendix A – BREEAM Pre Assessment Tracker *27*

CHAPTER: 1 EXECUTIVE SUMMARY

Carbon Consult Limited have undertaken a high level BREEAM Pre-Assessment for the proposed development of Eden North, Morecambe.

> *"Eden Project North is a unique and ambitious project that seeks to re-imagine the seaside resort for the twenty-first century. The project has far-reaching environmental, social and economic ambitions, but above all it will be a day out that inspires a sense of wonder and connection with the natural world."*
>
> *"As in Cornwall, Eden Project North combines exhibits, performance, learning, play, immersive experiences, world class horticulture, art, food, beverage and retail spaces, all integrated as essential parts of the overall experience, building on nearly 20 years of operational expertise"* [1]

In order to demonstrate the Sustainable performance of the buildings on site, they will be assessed against BREEAM. This aligns with the Local Plan for Morecambe, Policy DM35.

It is an expectation that a BREEAM Excellent (>70%) is achieved. The team will review further credits to consider if an aspiration of BREEAM Outstanding could be considered.

This report considers a route to BREEAM certification for the project and provides an indication of scoring and opportunities for achieving BREEAM 'Excellent'.

In order to undertake this evaluation, Carbon Consult have used a set of assessment criteria, scoped (using the BREEAM mechanism) for a New Construction, Other Building, Visitor Centre.

Using details already known of the project in conjunction with project experience and knowledge of BREEAM, a set of recommended "Basic" scores have been identified, which in combination with a further set of "Additional" scores will result in a BREEAM Excellent being achieved. The "Additional" scores require further: investigation, analysis, design development or specialist studies to support their achievement. The "Basic" scores incorporate all those which are mandatory or pre-requisites for the overall threshold achievement.

A scoring scenario has been outlined within this report, which if supported by relevant and appropriate documentary evidence, will result in the following achievement.

[1] Trivandi, EPN, Design Brief rev01, 210212

CHAPTER: 2 PROJECT INTRODUCTION

2.1 PROJECT DETAILS



Figure 1 – Early Conceptual artistic impression of the venue, EPN Design Brief, 210212

The project is a designed as a redevelopment of a sea front area on Morecambe Bay.

It aims to incorporate the following core venue experiences:

- Visitor Centre including Eden Café & Eden Retail
- Bay Hall
- Rhythm Machine
- Bay Glade
- Natural Observatory (Exhibitions & Science Engagement
- Other Front of House (Genera)
- Other Back of House (General)
- Tide Gardens
- Rhythm Gardens (Arenda)
- External Deck Areas

It is planned that the spaces will be connected through sustainably designed interventions. A total area of 17,186sqm is estimated.

2.2 APPLICATION OF BREEAM

It is an expectation that a BREEAM Excellent (>70%) is achieved. This aligns with the Local Plan for Morecambe, Policy DM35. The team will review further credits to consider if an aspiration of BREEAM Outstanding could be considered.

A BREEAM assessment can typically be undertaken on any stand alone, enclosed/ treated and permanently occupied space.

For the purpose of this strategy, we have considered a single assessment applied to all aspects. However, we would wish to clarify approach with the BREEAM certification body (BRE Global Ltd) when massing and arrangement of buildings has been further established.

CHAPTER: 3 BACKGROUND TO BREEAM

3.1 WHAT IS BREEAM

BREEAM [Building Research Establishment's Environmental Assessment Method] is the world's leading and most widely used environmental assessment method for buildings. At the time of writing, BREEAM has certified over 200,000 buildings since it was first launched in 1990.

3.1.1 AIMS OF BREEAM

The aims of BREEAM are to:

- To mitigate the life cycle impacts of buildings on the environment
- To enable buildings to be recognised according to their environmental benefits
- To provide a credible, environmental label for buildings
- To stimulate demand for sustainable buildings

3.1.2 OBJECTIVES OF BREEAM

The objectives of BREEAM are to:

- To provide market recognition of buildings with a low environmental impact
- To ensure best environmental practice is incorporated in building planning, design, construction and operation.
- To define a robust, cost-effective performance standard surpassing that required by regulations.
- To challenge the market to provide innovative, cost effective solutions that minimise the environmental impact of buildings.
- To raise the awareness amongst owners, occupants, designers and operators of the benefits of buildings with a reduced life cycle impact on the environment.
- To allow organisations to demonstrate progress towards corporate environmental objectives.

BREEAM has been developed to meet the following underlying principles:

- Ensure environmental quality through an accessible, holistic and balanced measure of environmental impacts.
- Use quantified measures for determining environmental quality.
- Adopt a flexible approach, avoiding prescriptive specification and design solutions.

- Use best available science and best practice as the basis for quantifying and calibrating a cost-effective performance standard for defining environmental quality.
- Reflect the social and economic benefits of meeting the environmental objectives covered.
- Provide a common framework of assessment that is tailored to meet the 'local' context including regulation, climate and sector.
- Integrate construction professionals in the development and operational processes to ensure wide understanding and accessibility.
- Adopts third party certification to ensure independence, credibility and consistency of the label.
- Adopts existing industry tools, practices and other standards wherever possible to support developments in policy and technology, build on existing skills and understanding and minimise costs.
- Stakeholder consultation to inform ongoing development in accordance with the underlying principles and the pace of change in performance standards [accounting for policy, regulation and market capability].

3.2 ASSESSMENT VARIATIONS

Assessment Scheme	Building Type	Extent of Works
BREEAM New Construction 2018 	Commercial: • Office • Industrial • Retail Public: • Education • Healthcare • Prison • Court Other: • Residential institution • Non-residential institution • Assembly and Leisure • Other • Bespoke	1. Fully fitted 2. Fully fitted simple building 3. Shell and Core 4. Shell only
BREEAM Refurbishment and Fit Out 2014 	As above	1. Fabric and Structure (part 1) 2. Core Services (part 2) 3. Local Services (part 3) 4. Interior Design (part 4)

Table 1: Current building specific BREEAM Assessment schemes

Typically, under BREEAM, each building or separable part of a building (based on use function) would require a separate Assessment and therefore achieve separate certification.

3.3 BREEAM RATING BENCHMARKS

The BREEAM rating benchmarks for new construction projects assessed using the 2018 version of BREEAM are as follows:

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

Table 2: BREEAM Rating Benchmarks [2]

The above BREEAM ratings assume that all the appropriate minimum standards for each BREEAM rating have been achieved in addition to the percentage score. *[Refer to the table in the minimum standards section below.]*

The BREEAM rating benchmark levels enable a client or other stakeholder to compare an individual building's performance with other BREEAM rated buildings and the typical sustainability performance of new non-domestic buildings in the UK.

In this respect each BREEAM rating level broadly represents performance equivalent to:

- Outstanding: Less than top 1% of UK new non-domestic buildings [innovator]
- Excellent: Top 10% of UK new non-domestic buildings [best practice]
- Very Good: Top 25% of UK new non-domestic buildings [advanced good practice]
- Good: Top 50% of UK new non-domestic buildings [intermediate good practice]
- Pass: Top 75% of UK new non-domestic buildings [standard good practice]

An unclassified BREEAM rating represents performance that is non-compliant with BREEAM, in terms of failing to meet either the BREEAM minimum standards of performance for key environmental issues or the overall threshold score required for formal BREEAM certification.

[2] BREEAM, BREEAM UK New Construction 2018, Non-Domestic Buildings, Technical Manual, SD5078, v3.0

3.4 PERFORMANCE REQUIREMENTS

Each performance requirement within BREEAM is referred to as a "Credit".

These credits are contained with 9 assessment categories, with each category carrying a different overall weighting when contributing to the overall BREEAM score.

Each credit has a number of performance standards with which compliance is required. Compliance is to be demonstrated by the project team by submitting documentary evidence of performance to the project Assessor.

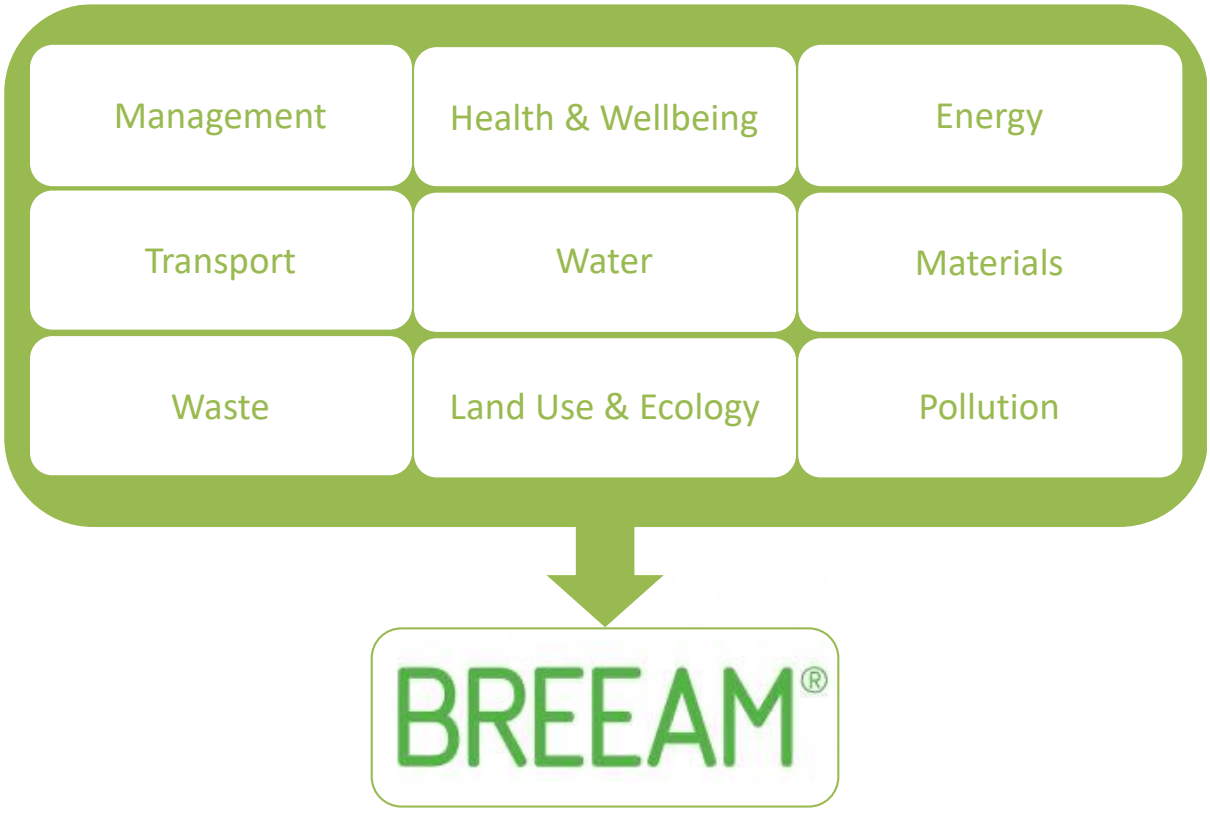


Figure 2 – BREEAM Assessment Categories

3.5 MINIMUM STANDARDS

To maintain a flexible system BREEAM adopts a 'balanced score-card' approach to the assessment and rating of building performance. This means that, to achieve a particular level of performance the majority of BREEAM credits can be traded, i.e. non-compliance in one area can be off-set through compliance in another to achieve the target BREEAM rating.

However, to ensure that performance against fundamental environmental issues is not over-looked in pursuit of a particular rating, BREEAM sets minimum standards of performance in key areas e.g. energy, water, waste etc. It is important to bear in mind that these are minimum acceptable levels of performance and, in that respect, they should not necessarily be viewed as levels that are representative of best practice for a BREEAM rating level.

To achieve a particular BREEAM rating, the minimum overall percentage score must be achieved in combination with the minimum standards detailed in the table below, applicable to the relevant rating.

	Minimum Standards/ Mandatory elements		
BREEAM Issues	**Very Good**	**Excellent**	**Outstanding**
MAN 03 Responsible Construction Practices	-	**One credit (Responsible construction management)**	**One credit (Responsible construction management)**
MAN 04 Commissioning and Handover	**One credit (commissioning-test schedule and responsibilities)**	**One credit (commissioning-test schedule and responsibilities)**	**One credit (commissioning-test schedule and responsibilities)**
MAN 04 Commissioning and Handover	**Criterion 11 (Building User Guide)**	**Criterion 11 (Building User Guide)**	**Criterion 11 (Building User Guide)**
MAN 05 Aftercare	-	**One credit (Commissioning implementation)**	**One credit (Commissioning implementation)**
ENE 01 Reduction of energy use and carbon emissions	-	**Four credits (Energy performance or Prediction of operational energy consumption)**	**Six credits (Energy Performance) and Four Credits (Prediction of operational energy consumption)**
ENE 02 Energy Monitoring	**One Credit (First sub-metering credit)**	**One Credit (First sub-metering credit)**	**One Credit (First sub-metering credit)**
WAT 01 Water Consumption	**One credit**	**One credit**	**Two credits**
WAT 02 Water Monitoring	**Criterion 1 only**	**Criterion 1 only**	**Criterion 1 only**
MAT 03 Responsible Sourcing of Materials	**Criterion 1 only**	**Criterion 1 only**	**Criterion 1 only**
WST 01 Construction Waste Management	-	-	**One credit**
WST 03 Operational Waste	-	**One credit**	**One credit**

Table 3: Minimum BREEAM standards for a Very Good, Excellent and Outstanding Buildings[3]

[3] BREEAM, BREEAM UK New Construction, Non-Domestic Buildings, Technical Manual, SD5078, v3.0

3.6 ENVIRONMENTAL SECTION WEIGHTINGS

Environmental weightings are fundamental to any building environmental assessment method as they provide a means of defining, and therefore ranking, the relative impact of environmental issues. BREEAM uses an explicit weighting system derived from a combination of consensus-based weightings and ranking by a panel of experts. The outputs from this exercise are then used to determine the relative value of the environmental sections used in BREEAM and their contribution to the overall BREEAM score.

The table below outlines the weightings for each of the nine environmental sections included in the BREEAM New Construction scheme, specifically for fully fitted out assessments:

Environmental Section	Weighting
Management	11%
Health & Wellbeing	14%
Energy	16%
Transport	10%
Water	7%
Materials	15%
Waste	6%
Land Use & Ecology	13%
Pollution	8%
Total	100%
Innovation	*10%*

Table 4: BREEAM Environmental section weightings[4]

Each of the above environmental sections consists of a differing number of assessment issues and BREEAM credits. As a result, each individual assessment issue and credit varies in terms of its contribution to a building's overall score.

[4] BREEAM, BREEAM UK New Construction 2018, Non-Domestic Buildings, Technical Manual, SD5078, v3.0

3.7 TIME BOUND PERFORMANCE REQUIREMENTS

Various aspects of BREEAM require time bound performance to be demonstrated. This ensures that the relevant advice/ actions occur at a stage of the project where it can still influence the design/ development. For Eden North, these items have already been discussed with the design team and evidence collated.

Typically, if the time bound elements are not met, they cannot be achieved retrospectively.

Time bound requirements exist within:

Credit Reference	Credit Name	Report Required	RIBA Stage (Mandatory in bold)
MAN01	Part A: Stakeholder Consultation	Consultation information including minutes of meetings, feedback, consultation plan etc.	**2 (C)**
MAN01	Part B: Sustainability Champion	AP reports for each RIBA Stage	**1 (A-B)**
MAN02	Part A: Elemental Life Cycle Cost (LCC)	Life Cycle Cost Report	**2 (C)**
MAN02	Part B: Component Level LCC Plan	Life Cycle Cost Report (repeat / update)	**4 (E-F)**
MAN04	Part A: Commissioning and Testing Schedule and Responsibilities	Appointment of commissioning manager (and complex systems commissioning manager)	**4 (E-F)**
HEA06	Security of Site and Building	Security Needs Assessment	**2 (C)**
ENE01 / 04	Reduction of CO2 Emissions	BRUKL Output (with and without renewables)	**2 (C)**
ENE04	Part A: Passive Design - Low Carbon Design	Passive Design analysis	**2 (C)**
ENE04	Part B: Low or Zero Carbon Technologies	Low Zero Carbon Feasibility Report	**2 (C)**
MAT01	Environmental Impacts from Construction Products	Building Life Cycle Assessments (LCA)	**2 (C)**
MAT06	Material Efficiency	Materials Efficiency Report - optimize material use	**1 (A-B), Repeat at 2,3,4**
WST05	Adaption to Climate Change	Structural and Fabric Resilience Appraisal	**1 (A-B)**

Credit Reference	Credit Name	Report Required	RIBA Stage (Mandatory in bold)
WST06	Functional Adaptability	Functional adaptation strategy appraisal	**1 (A-B)**
LE02-LE05	Ecology	Ecology Report to cover items LE02-LE05. Appointment letter required	**1 (A-B)**
POL03	Part A: Flood Risk	Flood Risk Assessment	2 (C)

Table 5: BREEAM 2018, Time Bound Performance Requirements

3.8 STAGES OF ASSESSMENT

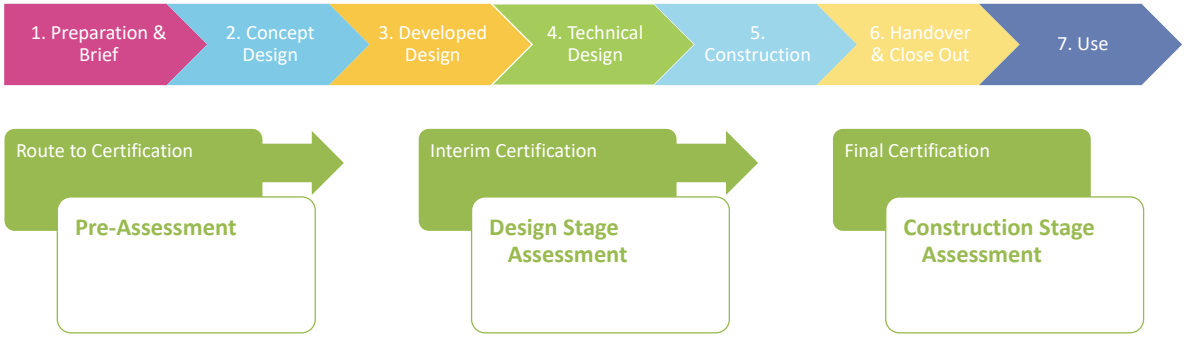


Figure 3: Simplified BREEAM process by RIBA Workstage

3.8.1 REGISTRATION

In order to undergo a BREEAM assessment, the first step is for a Licensed BREEAM Assessor to register the project with BRE Global as a live assessment.

Registration fixes the project to the relevant assessment scheme for a period of five years from the last live date of that scheme. In simple terms this means that a project is to be submitted recommending certification within five years from the date of the replacement of that assessment version.

It is a simple process, entailing submission to BRE of project information and payment of a fee. Registration will be undertaken soon.

Note: if the assessment/ project is transferred to a different assessor prior to submission of certification recommendation, the corresponding transfer of registration is subject to a fee.

If the registration of a project occurs before planning is submitted, it mitigates any risk associated with delays in the planning process e.g. if pre-planning performance against one version of BREEAM is considered, but not registered, yet post planning BREEAM has been updated. Then the newer version of BREEAM would apply which may be incrementally harder to achieve the same level of required performance.

Typically, in projects where there are multiple buildings, each is registered separately. It is usual for the assessor to liaise with BRE to confirm an approach to assessment e.g. combinations/ splits in assessment.

3.8.2 PRE-ASSESSMENT AND ESTABLISHING A STRATEGIC ROUTE TO CERTIFICATION

A Pre-Assessment is a voluntary stage of the BREEAM process. It is not submitted to BRE for certification; however, some Planning Authorities or Clients may ask for one to be created/ presented to demonstrate that the project team have identified a route to certification.

A Pre-Assessment should be used:

- To ensure awareness of requirements;
- To inform an approach to achieving certification;
- As a design tool to set performance parameters; and,
- To establish an indicative scoring range.

Whilst possible to undertake a Pre-Assessment without the contribution or input of a licensed BREEAM Assessor or qualified BREEAM Accredited Professional (AP), their involvement is recommended to ensure that all the aspects of the assessment are considered. Appointing a BREEAM AP at early stages also can assist in scoring specific BREEAM credits.



Carbon Consult Ltd, have both Licensed Assessors and BREEAM Accredited Professionals.

3.8.3 CERTIFIED ASSESSMENTS

There are two formal stages of BREEAM assessment

1. Design Stage, resulting in Interim Certification
2. Construction Stage, resulting in Final Certification

The corresponding assessment at each stage is submitted to BRE in the form of a **recommendation for certification** by the appointed assessor.

If the project is operating to short timescales, or for any other reason, it is possible to assess and certify the project solely based on the As-Built scenario. Typically, various parts of evidence relating to the Design are still required along with information pertaining to the Construction. This approach will also achieve Final Certification.

This two stage approach to formal assessment also mitigates risk associated with design aspects which otherwise would not be considered until installed.

Design Stage

The Design Stage Assessment is based on documentary evidence of design and can be submitted to BRE for certification any time up to completion.

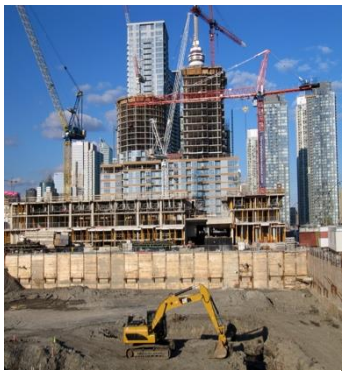
The types of evidence required to demonstrate compliance include:



- Commitments
- Drawings
- Specifications
- Models
- Feasibility/ Investigation reports

Construction Stage

The Construction Stage Assessment is based on documentary evidence of actions undertaken and the following-through of commitments, design decisions and specifications. The Construction assessment typically commences in parallel with construction and is submitted to BRE for certification after handover.



The types of evidence required to demonstrate compliance include:

- Monitoring data
- Verification statements
- Visual evidence
- Specialist verifications

3.9 CERTIFICATION

Upon completion of each stage of assessment, the assessor compiles a Certification recommendation report.


BREEAM UK

Final Certificate

Aurora
Finzels Reach
Counterslip
Bristol
BS1 6EU

BREEAM UK

BREEAM New Construction 2014: Office

Carbon Consult Limited

Outstanding

★★★★★

bre

This recommendation objectively summarises the performance of the building based on the documentary evidence of compliance presented to them by the project team.

The **Certification recommendation is submitted to BRE** (the certifying body for BREEAM) along with a complete set of auditable documents. Upon receipt, BRE assign and undertake a level of Quality Assurance on the submission and if deemed appropriate, will issue the corresponding certification.

It should be noted that the Quality Assurance stage can take some time depending on the level of QA assigned and BRE's own workload.

At the QA stage, BRE hold the right to ask for any further evidence of compliance, information or explanation. This may mean the assessor will need to liaise with the project team for further evidence.

BRE charge a certification fee in each case, which will be confirmed by the assessor.

3.10 ROLES AND RESPONSIBILITIES

BREEAM Assessor

- BREEAM Registration
- Assessment and verification of performance
- Compilation of Audit Trail
- Recommendation for Certification

The **BREEAM Assessor** is required to maintain a position of independence from the project team to ensure impartiality in assessment.

A **BREEAM Advisory/ Accredited Professional** (which can be part of the same organisation which provide the assessor) can hold a position between the Assessor and project team. Through which they can provide support to the team in the collation of evidence to demonstrate compliance as well as assisting the team in understanding requirements.

BREEAM Advisory/ Accredited Professional

- Team Support
- Consultation and Guidance

A degree of overlap can occur between the Assessor and the Advisory Role and often, provided no conflict of interest occurs can be undertaken by the same individual or same organisation.

Design/ Construction Team, Inc. Client

- Documentary evidence of Compliance e.g.
  - Drawings
  - Specifications
  - Calculations
  - Manufacturer literature

It is the **Project Design/ Construction team** (including client and stakeholders) who will be required to demonstrate the compliance with the various performance requirements through presentation of evidence, as per the requests of the assessor. The design/ construction team can be supported by **various specialists** who can produce specific reporting or compliance information.

Suitably Qualified Specialists

- Specialist Studies/ Reporting
- Surveys/ Investigations
- Design Advice

BRE Global Ltd

- Technical Clarification
- Independent Quality Assurance
- Certification

Upon completion of the assessment, the Assessor will recommend certification to **BRE Global Ltd**, who in turn undertake an independent review. Following which, assuming all deemed appropriate, they will issue the project certification. It should be noted that BRE hold the right to request any further project information or clarity to demonstrate compliance, which will be requested through the Assessor.

CHAPTER: 4 PRE-ASSESSMENT & DEVELOPMENT OF ASSESSMENT STRATEGY

4.1 METHODOLOGY

4.1.1 PRE-ASSESSMENT

In order to establish the most appropriate route to certification, Carbon Consult have undertaken a Pre-Assessment of the project considering a set of assessment criteria, filtered within the relevant BREEAM mechanism, to reflect a Visitor Centre.

This set of criteria reflect basic high level project details:

- Current BREEAM scheme: 2018
- New Construction
- Fully Fitted
- Non-standard assessment criteria "Other":
    - Visitor Centre

Indicative performance of the project has been established based on:

1. Requirement to achieve an Excellent as minimum
2. Aspiration to achieve an Outstanding
3. Aspirations to be both iconic and sustainable
4. Initial knowledge of the project and locational information

During this consideration, Carbon Consult have used their knowledge and experience to categorise likely performance against each performance requirement as either:

Category	Definition
Basic Credits in Scope	- Known to be within current design - Ties-in with the client design brief - Expected design performance - Standard practice

Additional Credits to achieve a higher score / rating	- Could be achieved with additional:
	  ○ effort;
	  ○ investigation;
	  ○ expenditure; and,
	  ○ design development.
	- Performance unknown at this stage

Table 6: Classification of scoring within Carbon Consults' BREEAM Pre-Assessment

Taking these two categories together, an indicative scoring range can be demonstrated with required actions and documentary evidence requirements noted.

Note: Credits will not be shown as Achieved until all the required documentary evidence is in place and no further action is anticipated to demonstrate compliance.

4.2 FINDINGS

Appendix 1, shows the full set of assessment criteria against which the project will be measured.

4.2.1 INDICATIVE SCORING

Based on the classification of performance as outlined within 4.1.1 above, we anticipate the following scoring scenario:

Recommendation	Score	Rating
Basic	74.45%	Excellent rating
Plus – Additional items	78.33%	Excellent rating with buffer

Table 7: Indicative outcome of BREEAM Pre-Assessment

Note: we would always recommend a scoring buffer over and above the threshold for each rating in order to manage any risk.

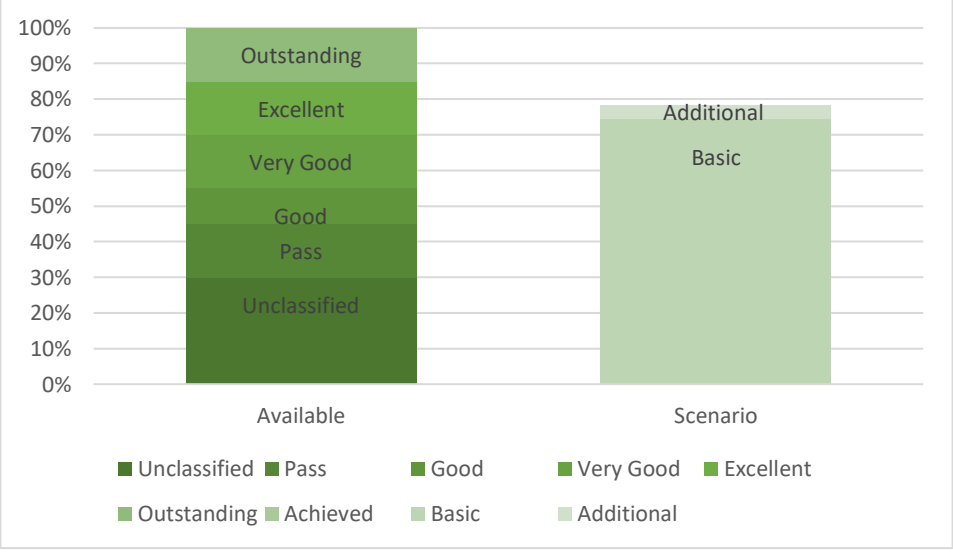


Figure 4: Graphic representation of BREEAM Pre-Assessment Eden North

4.2.2 SCORING SUMMARY

Basic Scores:

The basic prediction of 74.45% (Excellent) is based on items where likely performance is known, is underway or is anticipated, or is necessary to ensure an Excellent rating is achieved.

Additional Scores to achieve a higher BREEAM rating:

Those items identified as “Additional” (corresponding to a maximum potential of 3.88%) require additional: design development, investigation, commissions or other actions to be achieved during the next design stages.

These items could be considered “at risk” pending further clarification. These additional credits can be sought to push the score to a higher ‘Excellent’ level.

4.2.3 INDICATIVE SCORING PER SECTION:

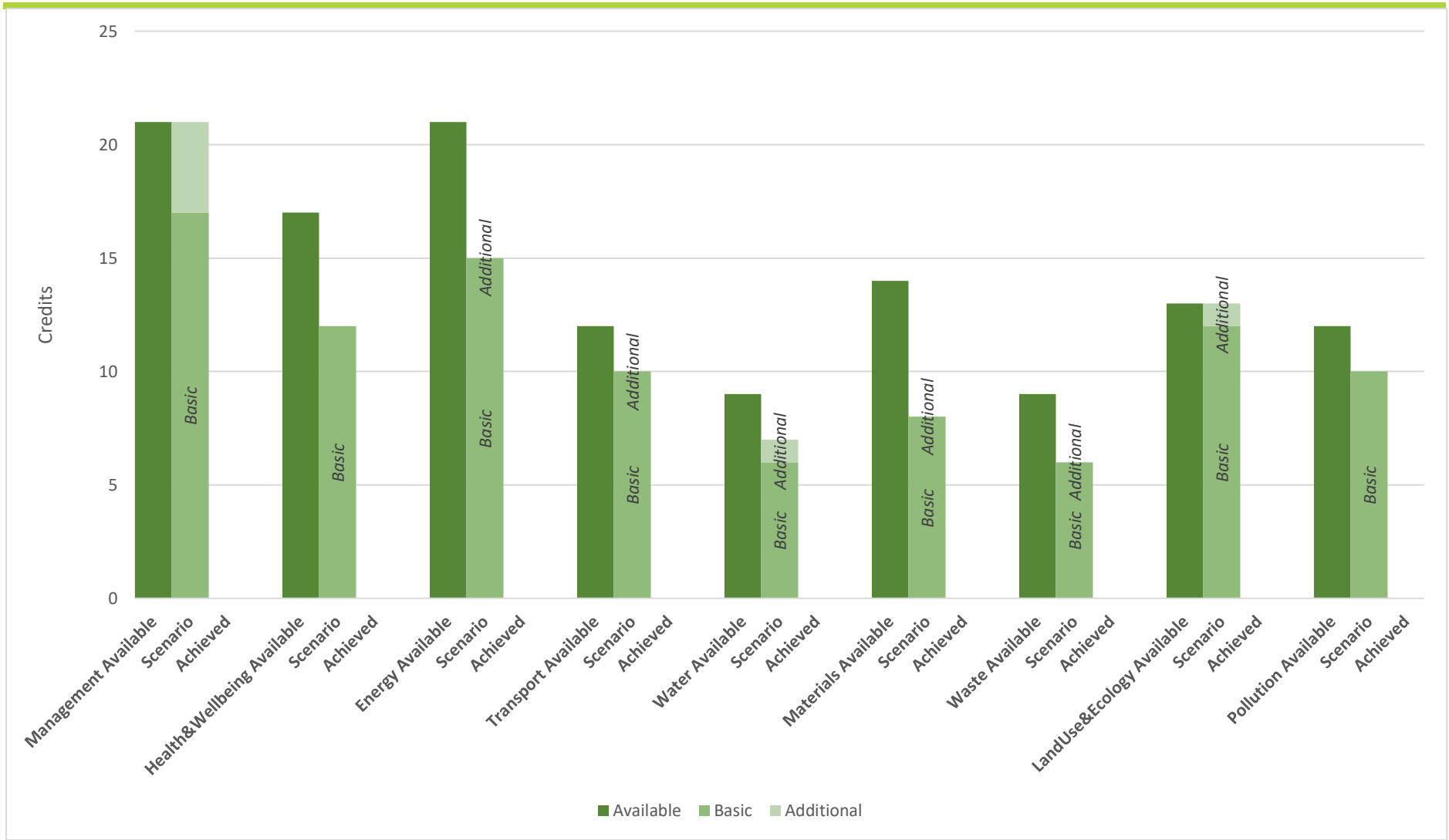


Figure 5: Graphic representation of Pre-Assessment Indicative scoring by section

CHAPTER: 5 ROUTE TO CERTIFICATION

5.1 BREEAM APPROACH

Eden North is being assessed under the latest BREEAM 2018 scheme version. It falls under Other Buildings – Visitor Centre.

5.2 REGISTRATION AND EARLY-STAGE CREDITS

The project will be registered with the BRE to fix the scheme version. A few credits under BREEAM 2018 requires early input. These items have already been picked up. Reports and the collation of various evidence are underway.

5.3 SITE WIDE ACTIONS

BREEAM credits often form a building specific of site wide requirement. A few site wide items include:

- Flood Risk Assessment and Drainage Strategy;
- Low and Zero Carbon Technologies feasibility and incorporation;
- Establishing ecological value, mitigation and enhancement; and,
- Baseline noise survey and identification of sensitive receptors.

5.4 TIME BOUND PERFORMANCE ELEMENTS

A number of performance requirements within BREEAM are bound to specific stages of a design development e.g. by the end of Concept Design.

It is essential therefore to commence the required actions at the listed times. Failure to do so may mean that an item is not achievable. As noted above, these items have already been picked up. Reports and the collation of various evidence are underway.

5.5 APPOINTMENT OF SPECIALISTS

In order to support the achievement of a number of BREEAM credits, suitably qualified specialists are required. These should be complimentary to the main design team and their contribution used to inform design decisions.

In each case, BREEAM defines the relevant expectations of the specialist and requires demonstration of qualification and also whether any specific reporting is required to demonstrate compliance. Further information for these items are detailed in the BREEAM credit tracker.

5.6 FORMAL ASSESSMENT

The formal stages of assessment are typically an iterative process, whereby the team meet with the assessor to agree targets, ownership, actions, necessary appointments and anticipated timings for the submission of documentary evidence for assessment.

The assessor is usually able to provide feedback on submissions prior to formally accepting as documentary evidence of compliance. In addition our approach at Carbon Consult includes the development of submission templates to assist the team with submission of documentary evidence.

Upon completion of the formal assessment, we will compile a comprehensive audit trail and present our recommendation to BRE for certification. We will maintain the audit trail on our files for a period post submission.

BRE do not set a specific time line for the completion of the various stages of assessment. The Design Stage assessment is typically completed prior to any significant works on site and the Construction Stage assessment commences at a similar time progressing throughout and post construction.

APPENDIX A – BREEAM PRE ASSESSMENT TRACKER

BREEAM Pre-Assessment

Scheme	**BREEAM New Construction 2018 - Other Building - Visitor Centre**

Project Name	**Eden North**
Assessment Stage	Pre-Assessment
Our Reference	217

Issue date	**23.08.2021**
Prepared by	Fleur Baguley, Carbon Consult Limited
Checked by	Fleur Baguley, Carbon Consult Limited
Revision no.	For Planning
Note	BREEAM Excellent sought

Credit Ref	Criteria	Action required Further details can be provided by the Assessor upon request.	Evidence Status	Responsibility	Credits Available	Recommendation Scenario Basic Credits: 74.45% (Excellent)	Recommendation Scenario Additional Credits: 78.33% (Excellent)	Notes
Management								
Man 01		**Part A: Project Brief and Design - Project Delivery planning**						
1 credit	Req 1	Documentation confirming that the project delivery stakeholders have met prior to completion of Concept Design to identify and define their roles, responsibilities and contributions for each of the key phases of project delivery		Client	1	1		
	Req 2	The following has been considered in defining the roles and responsibilities for each key phase of the project: a. End user requirement b. Aims of the design and design strategy c. Particular installation and construction requirements/limitation d. Occupiers budget and technical expertise in maintaining any proposed systems e. Maintainability and adaptability of the proposals f. Operational energy g. Requirements for the production of project and end user documentation h. Requirements for commissioning, training and aftercare support		Client				
	Req 3	Documentation/ Design drawings demonstrating how the project delivery stakeholder contribution and the outcomes of the consultation process have influenced or changed the Initial Project Brief, including if appropriate, the Project Execution Plan, Community Strategy and the Concept design		Client				
Man 01		**Part B: Project Brief and Design - Stakeholder Consultation**						
1 credit	Req 4	Documentation confirming that prior to completion of the Concept Design stage, all relevant third party stakeholders have been consulted with by the design team covering the minimum consultation content		Client	1	1		
	Req 5	Documentation/ Design drawings demonstrating how stakeholder contributions and outcomes of the consultation exercise have influenced or changed the Initial Project Brief and Concept Design		Client				
	Req 6	Documentation confirming that prior to completion of the detailed design (RIBA Stage 4), consultation feedback has been given to and received by all relevant parties.		Client				
Man 01		**Part C: Project Brief and Design - BREEAM Advisory Professional**						
Pre-Requisite	Req 8	Pre-assessment, contract document or similar to confirm that the project team, including the client, formally agree strategic performance targets		Client		Pre-Requisite		
1 credit	Req 9	Appointment letter/ meeting minutes and other documents confirming a BREEAM AP has been appointed to facilitate the setting and achievement of BREEAM performance target(s) for the project during concept design stage and to: 9a - Work with the project team, including the client, 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. 9b - Monitor progress against the performance targets agreed under criterion 8 above throughout all stages after their appointment where decisions critically impact BREEAM performance. 9c - Proactively identify risks and opportunities related to the achievement of the targets agreed under criterion 8 on the previous page. 9d - Provide feedback to the project team as appropriate, to support them in taking corrective actions and achieving their agreed performance targets. 9e - Monitor and, where relevant, coordinate the generation of appropriate evidence by the project team.		Carbon Consult	1	1		
1 credit	Req 10	Criteria 8 and 9 have been achieved.		Carbon Consult	1	1		
	Req 11	Letter / meeting minutes and other documents confirming the involvement of the BREEAM AP in the project at an appropriate time and level to: 11a - Work with the project team, including the client, to consider the links between BREEAM issues and to assist them in maximising the project's overall performance against BREEAM throughout Developed Design. 11b - Monitor progress against the performance targets agreed under criterion 8 throughout all stages where decisions critically impact the specification and tendering process and the BREEAM performance. 11c - Proactively identify risks and opportunities related to the achievement of the targets agreed under criterion 8 on the previous page. 11d - Provide feedback to the project team as appropriate, to support them in taking corrective actions and achieving their agreed performance targets. 11e - Monitor and, where relevant, coordinate the generation of appropriate evidence by the project team.		Carbon Consult				
Man 02		**Part A: Life Cycle Cost and Service Life Planning - Elemental Life Cycle Cost**						
2 credits	Req 1	Copy of an Elemental Life Cycle Cost Analysis/Plan carried out at Process stage (RIBA Stage 2) with design option appraisals in line with the 'Standardised method of life cycle costing for construction procurement PD 156865:2008		QS	2		2	
	Req 2	Copy of an Elemental Life Cycle Cost Analysis/Plan showing: a. An outline plan for the project based on the buildings basic structure and envelope, appraising a range of options and based on multiple cash flow scenarios e.g. 20,30,50 or 60 years b. Include service life, maintenance and operation costs		QS				
	Req 3	Specification/drawings demonstrating appropriate examples of how the component level LCC Plan has influenced the building and system design/specification to minimise life cycle costs and maximise critical value		QS				
Man 02		**Part B: Life Cycle Cost and Service Life Planning - Component Level LCC Plan**						
1 credit	Req 4	Copy of a Component Level LCC plan developed by end of Process Stage (RIBA Stage 4) in line with PD 156865:2008 AND including the following component types (if present): a. Envelope b. Services c. Finishes d. External Spaces		QS	1		1	
	Req 5	Specification/drawings demonstrating appropriate examples of how the component level LCC Plan has influenced the building and system design/specification to minimise life cycle costs and maximise critical value		QS				
Man 02		**Part C: Life Cycle Cost and Service Life Planning - Capital Cost Reporting**						
1 credit	Req 6	Confirmation of the capital cost for the building in pounds per square meter (£k/m2)		QS	1	1		
Man 03		**Responsible Construction Practices - Pre Requisite**						
Pre-Requisite	PRE 1	Documentation/Written confirmation that all timber based products used on the project is 'Legally harvested and traded timber'		Contractor		Pre-Requisite		

Credit Ref	Criteria	Action required Further details can be provided by the Assessor upon request.	Evidence Status	Responsibility	Credits Available	Basic Credits: 74.45% (Excellent)	Additional Credits: 78.33% (Excellent)	Notes
Man 03		**Part A: Responsible Construction Practices - Environmental Management**						
1 credit	Req 2	Certificate/Written confirmation that all parties who at any stage manage the construction site operates an Environmental Management System compliant with criteria specified in BREEAM		Contractor	1	1		
	Req 3	Documentation/Written confirmation that all parties who at any stage manage the construction site implements best practice pollution prevention policies and procedures on site in accordance with PPG6		Contractor				
Man 03		**Part B: Responsible Construction Practices - BREEAM AP (site)**						
Pre-requisite	Req 5	Written confirmation/ evidence that the contractor and client have agreed the BREEAM target.		Contractor		Pre-Requisite		
1 credit	Req 6	Appointment letter/ evidence confirming the involvement a BREEAM AP in the project at an appropriate time and level to: 6a - Work with the project team, including the client, 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. 6b - Monitor construction progress against the performance targets agreed under criterion 5 throughout all stages where decisions critically impact BREEAM performance 6c - Proactively identify risks and opportunities related to the procurement and construction process and the achievement of the targets agreed under criterion 5 6d - Provide feedback to the constructors and the project team as appropriate, to support them in taking corrective actions and achieving their agreed performance targets. 6e - Monitor and, where relevant, coordinate the generation of appropriate evidence by the project team and the provision to the assessor.		Contractor	1	1		
Man 03		**Part C: Responsible Construction Practices - Responsible Construction Management**						
1 or 2 credits **Mandatory element:** **- Excellent 1 credit** **- Outstanding 2 credits**	Req 7,8	Specification/ Written confirmation that the principal contractor evaluates the risks (on site and off site), plans and implements actions to minimise the identified risks, covering items required in table 4.1 of BREEAM Man 3 credit.		Contractor	2	2		
	Req 9	Two credits can be achieved for additional 6 items in addition to requirement 7.		Contractor				
Innovation credit	Req 23	Specification / written confirmation to achieve all items in Table 4.1.	3	Contractor		Innovation credit - Insert Scoring into Section Below		
Man 03		**Part D: Responsible Construction Practices - Monitoring of Construction Site Impacts**						
Pre-Requisite	PRE 10	Specification/ Written confirmation of the individual(s)responsible for monitoring, recording and reporting energy, water and Transport Consultant consumption data resulting from all construction processes. Confirmation is required that the person responsible has appropriate authority to request and access the data required.		Contractor		Pre-Requisite		
1 credit	**Utility consumption**				1	1		
	Req 11, 15	Criteria 10 has been achieved		Contractor				
	Req 12	Written confirmation that the contractor has set targets for the site energy consumption in kWh (and where relevant, litres of fuel used) as a result of the use of construction plant, equipment (mobile and fixed) and site accommodation.		Contractor				
	Req 13	Site record/ Written confirmation of monitoring and recording of energy consumption (kWh) from the use of construction plant, equipment (mobile and fixed) and site accommodation		Contractor				
	Req 14	Report the total carbon dioxide emissions (total KgCO2/project value) from the construction process		Contractor				
	Req 13	Site records/ Written confirmation of monitoring of water consumption (m3) from the use of construction plant, equipment (mobile and fixed) and site accommodation		Contractor				
	Req 16	Specification/ written confirmation that the contractor has set targets for the potable water consumption (m³) arising from the use of construction plant, equipment (mobile and fixed) and site accommodation.		Contractor				
	Req 17	Evidence to confirm monitoring and reporting the total net water consumption (m3), i.e. consumption minus any recycled water use		Contractor				
	Req 18	Use the collated data to report the total net water consumption (m³), i.e. consumption minus any recycled water use from the construction process via BREEAM Projects		Contractor				
1 credit	**Transportation of construction materials and waste**				1	1		
	Req 19	Criteria 10 has been achieved		Contractor				
	Req 20	Site records/ Written confirmation that the contractor set targets for transportation movements and impacts resulting from delivery of the majority of construction materials to site and construction waste from site. As a minimum cover: 20.a transportation of materials from the point of supply to the building site, including any transport, intermediate storage and point of supply. Monitor as a minimum: i. Materials used in major building elements (i.e. those defined in BREEAM issue Mat 01 Environmental impacts from construction products - Building life cycle assessment (LCA) on page 210). ii Ground works and landscaping materials. 20.b transportation of construction waste from the construction gate to waste disposal processing or recovery centre gate. This monitoring must cover the construction waste groups outlined in the project's resource management plan.		Contractor				
	Req 21	Monitor and record data for the transportation movements as described in criterion 20		Contractor				
	Req 22	Report the total fuel consumption (litres) and carbon emissions (kgCO2 eq), plus total distance travelled (km)		Contractor				
Man 04		**Part A: Commissioning and Handover - Testing schedule and responsibilities**						
1 credit **Mandatory element:** **- Very Good and above: test schedule and responsibilities**	Req 1	A copy of the schedule of commissioning and testing that identifies and includes suitable timescales for commissioning and re-commissioning of all complex and non-complex systems AND testing and inspecting of the building fabric		M&E	1		1	
	Req 2	Schedule confirming that all commissioning activities (including BMS) are carried out in accordance with current Building Regulation, BSRIA, CIBSE and any other guidelines		M&E				
	Req 3	Specification/ confirmation that where a building management system (BMS) is specified: 3.a Carry out commissioning of air and water systems when all control devices are installed, wired and functional 3.b Include physical measurements of room temperatures, off-coil temperatures and other key parameters, as appropriate, in commissioning results 3.c The BMS or controls installation should be running in auto with satisfactory internal conditions prior to handover 3.d All BMS schematics and graphics (if BMS is present) are fully installed and functional to user interface prior to handover 3.e Fully train the occupier or facilities team in the operation of the system.		M&E				
	Req 4	Appointment letter confirming the project team member(s) appointed to monitor and programme pre-commissioning, commissioning and, where necessary, re-commissioning on behalf of the Client		M&E				
	Req 5	Confirmation that the principal contractor accounts for the commissioning and testing programme, responsibilities and criteria within their budget and the main programme of works.		M&E				

Credit Ref	Criteria	Action required Further details can be provided by the Assessor upon request.	Evidence Status	Responsibility	Credits Available	Basic Credits: 74.45% (Excellent)	Additional Credits: 78.33% (Excellent)	Notes
Man 04		**Part B: Commissioning and Handover - Design and Preparation**						
1 credit	Req 6	Requirements 1 to 5 are achieved.		M&E	1	1		
	Req 7	Appointment letter/ Commissioning responsibilities schedule confirming a specialist commissioning manager is appointed during the design stage with responsibility for: a. Undertaking design reviews and giving advice on suitability for ease of commissioning b. Providing commissioning management input to construction programming and during installation stages c. Management of commissioning, performance testing and handover/post-handover stages		M&E				
Man 04		**Part C: Commissioning and Handover - Testing and Inspecting Building Fabric**						
1 credit	Req 8	Requirements 1 to 5 are achieved.		Contractor	1	1		
	Req 9	Specification/ Written confirmation the a thermographic survey and airtightness test will be carried out in accordance with the appropriate standard and by a suitably qualified professional (level 2 in thermography e.g. PCN, QCF or RQF or level 4 e.g. ABBE and air tightness testing by professional with membership with ATTMA or IATS)		Contractor				
	Req 10	Specification/ Written confirmation that any defects identified will be rectified prior to building handover and close out AND any remedial work will meet the required performance characteristic of the building/element		Contractor				
Man 04		**Part D: Commissioning and Handover - Handover**						
1 credit	Req 11 **Mandatory element: - Very Good and above**	Written confirmation or a copy of BUG to confirm that prior to handover, two building user guides will be developed (see Methodology) for the following users and the draft will be discussed with the users first: 11.a A non-technical user guide for distribution to the building occupiers. 11.b A technical user guide for the premises facilities managers.		Contractor	1	1		
	Req 11	A copy of the schedule of two training schedules timed appropriately around handover and proposed occupation plans for the following users: 12.a A non-technical training schedule for the building occupiers. 12.b A technical training schedule for the premises facilities managers. The training should include the following: For occupiers a. the building design intent For facilities managers b. the available aftercare provision and aftercare team main contact(s) including any schedules seasonal commissioning and post occupancy evaluation c. introduction to and demonstration of, installed systems and key features, particularly building management systems, controls and their interfaces d. introduction to the building user guide and other relevant building documentation e. maintenance requirements		Contractor				
Man 05		**Part A: Aftercare - Aftercare Support**						
1 credit	Req 1	Documentation/ Written confirmation that there is a operational infrastructure and resources in place to provide aftercare support to the building occupiers which includes the following as a minimum: 1.a 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: a.i Introduce the aftercare support available, including the content of the building user guide (where it exists) and training schedule. a.ii 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. 1.b On-site facilities management training including: b.i a walkabout of the building b.ii introduction to and familiarisation with the building systems, their controls and how to operate them in accordance with the design intent and operational demands. 1.c 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). 1.d 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.		Client	1	1		
	Req 2	Documentation/ Written confirmation of either existing procedures or a commitment/contract to put in place a mechanism to: a. Collect and monitor energy and water consumption data for at least 12 months after occupation b. Analyse any discrepancies between actual and predicted performance with a view of adjusting systems if necessary		Client				
Man 05		**Part B: Aftercare - Commissioning Implementation**						
1 credit **Mandatory element: - Excellent and above**	Req 3	Specification/Commissioning Schedule/Programme confirming that the seasonal commissioning will be completed over a minimum 12 month period once the building becomes substantially occupied: 3a. Complex Systems - Specialist Commissioning Manager will: 3a.i Identify changes made by the owner or operator that might have caused impaired or improved performance. 3a.ii 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). 3a.iii Where applicable, carry out testing during periods of extreme (high or low) occupancy. 3a.iv Interview building occupants (where they are affected by the complex services) to identify problems or concerns regarding the effectiveness of the systems. 3a.v Produce monthly reports comparing sub-metered energy performance to the predicted one (see Ene 01 Reduction of energy use and carbon emissions on page 121). 3a.vi Identify inefficiencies and areas in need of improvement. 3a.vii 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. 3b Simple systems (naturally ventilated): The external consultant, aftercare team or facilities manager will: 3b.i Review thermal comfort, ventilation, and lighting, at three, six and nine month intervals after initial occupation, either by measurement or occupant feedback. 3b.ii Identify deficiencies and areas in need of improvement. 3b.iii Re-commission systems and incorporate any relevant revisions in operating procedures into the O&M manuals.		Contractor / M&E	1	1		

Credit Ref	Criteria	Action required Further details can be provided by the Assessor upon request.	Evidence Status	Responsibility	Credits Available	Basic Credits: 74.45% (Excellent)	Additional Credits: 78.33% (Excellent)	Notes
Man 05		**Part C: Aftercare - Post Occupancy Evaluation**						
1 credit	Req 4	Signed and dated commitment by the client/developer or future building occupier to carry out a Post Occupancy Evaluation (POE) one year after building occupation, to gain building performance feedback		Client	1	1		
	Req 5	An independent party must carry out the POE covering: 5.a A review of the design intent and construction process (review of design, procurement, construction and handover processes). 5.b Feedback from a wide range of building users including facilities management on the design and environmental conditions of the building covering: 5.b.i Internal environmental conditions (light, noise, temperature, air quality) 5.b.ii Control, operation and maintenance 5.b.iii Facilities and amenities 5.b.iv Access and layout 5.b.v Energy and water consumption 5.b.vi Other relevant issues, where appropriate		Client				
	Req 7	Confirmation that the independent party provides a report with lessons learned to the client and building occupiers.		Client				
	Req 6	A report of lessons learnt by the third party to client and contractor		Client				
	Req 7	Appointment letter / confirmation that an appropriate third party will be appointed to carryout out POE and the client / contractor has committed funds in advance for the POE.		Client				
				Totals	**21**	**17**	**4**	**0**
			Weighted	11%		**8.90%**	**2.10%**	**0.00%**
Health and Wellbeing								
Hea 01		**Part A: Visual comfort - Glare Control**						
1 credit	Req 1	A copy/ letter of intent for glare control assessment		Architect	1	1		
	Req 2	Specifications/ drawings/ glare control strategy to design glare out in the relevant building areas where risk is identified		Architect				
	Req 3	Specification/Design drawings confirming that the glare control strategy avoids increasing energy consumption by: a. Maximising daylight levels under all conditions AND b. The use or location of shading does not conflict with the operation of lighting control systems		Architect				
Hea 01		**Part B: Visual comfort - Daylighting**						
2 credits	Req 4	Calculations/Design drawings/ Specification confirm that 80% (or as per type of assessment) of the building area/rooms are compliant with table 5.1 and 5.2: 1. a average daylight factor of 2% (or as per table 5.2) has been achieved in occupied areas OR 2. a uniformity ration of at least 0.3 OR a minimum point daylight factor of at least 0.3 times the average daylight factor OR 3. A view if sky from desk or table height (0.7m) AND a room depth criterion d/w+d/HW<2/(1-RB)	N/T	Architect	1			
	Req 4	For Occupied Areas: Calculations/ Design drawings/ Specification confirm that for 80% of the building area a average daylight illuminance of at least 300 lux AND a minimum daylight illuminance at worst lit point of at least 90 lux has been achieved for 2000 hours per year or more.	N/T	Architect				
Innovation credit	Req 15	Calculations/ specifications to confirm that daylighting criteria have been met using either of the following options: 15.a Relevant building areas meet exemplary daylight factors and the relevant criteria in Table 5.8 15.b Relevant building areas meet exemplary average and minimum point daylight illuminance criteria in Table 5.9	N/T	Architect		Innovation credit - Insert Scoring into Section Below		
Hea 01		**Part C: Visual Comfort - View Out**						
1 credit (2 for healthcare)	Req 5	Design drawings confirming that 95% of the floor area in 95% of the spaces for each relevant building area is within 8m of an external wall with window or opening with adequate view out	N/T	Architect	1			
	Req 6	Design drawings/ Calculations demonstrating that window/opening ≥20% of the surrounding wall area. Where the room depth is greater than 8 m, compliance is only possible where the percentage of window or opening is the same as, or greater than, the values in Table 1.0 of BS 8206: part 2	N/T	Architect				
Hea 01		**Part D: Visual comfort - Internal and External Lighting Levels, zoning and controls**						
1 credit	Req 8	Specification/ Design drawings confirming illuminance (lux) levels in all internal building areas are in accordance with SLL Code for Lighting 2012 or other relevant standard		M&E	1	1		
	Req 9	Specification confirming where computer screens are regularly used the lighting design complies with CIBSE Lighting Guide 7		M&E				
	Req 10	Specification/ Design drawings confirming illuminance levels for lighting in all external areas within the construction zone are specified in accordance with BS5489-1:2013 and BS EN 12464-2:2014		M&E				
	Req 11	Written confirmation where no external light fittings are specified (either separate from or mounted on the external building façade or roof) so that the criteria relating to external lighting do not apply and the credit can be awarded on the basis of compliance with criteria 8 - 9.		M&E				
	Req 12	Specification/ Design drawings confirming BREEAM compliant light zones and controls. E.g. Office - no more than four workplaces, Seminar and lecture rooms - zoned for presentation and audience areas		M&E				
	Req 13	Where relevant - Specifications/ Design drawings confirming areas used for teaching, seminar or lecture purposes have lighting controls provided in accordance with CIBSE lighting Guide 5		M&E				
Innovation credit	Req 16	Specification, drawings manufacturer's literature to confirm that 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.		M&E		Innovation credit - Insert Scoring into Section Below		
Hea 02		**Part A: Indoor Air Quality - Indoor Air Quality Plan**						
Pre-requisite	Req 1	Copy of the indoor air quality plan which considers: a. Removal of contaminant sources b. Dilution and control of contaminant sources c. Procedures for pre-occupancy flush out d. 3rd party testing and analysis e. Maintaining indoor air quality in-use		M&E		Pre-Requisite		

Credit Ref	Criteria	Action required Further details can be provided by the Assessor upon request.	Evidence Status	Responsibility	Credits Available	Basic Credits: 74.45% (Excellent)	Additional Credits: 78.33% (Excellent)	Notes
Hea 02		**Part B: Indoor Air Quality - Ventilation**						
1 credit	Req 2	Specification/ Design drawings confirming that the building has been designed to avoid concentration and circulation of pollutants as below:		M&E	1	1		
	Req 2a	- Provide fresh air into the building in accordance with the criteria of the relevant standard for ventilation		M&E				
	Req 2b	Ventilation pathways are designed to minimise the ingress and build-up of air pollutants inside the building		M&E				
	Req 2c	Where present, HVAC systems must incorporate suitable filtration to minimise external air pollution, as defined in BS EN 13779:2007 Annex A3. The specified filters should achieve a minimum Indoor Air Quality of IDA2		M&E				
	Req 2d	Areas of the building subject to large and unpredictable or variable occupancy patterns have carbon dioxide (CO_2) or air quality sensors specified and: 2.d.i In mechanically ventilated buildings or spaces: sensors are linked to the mechanical ventilation system and provide demand-controlled ventilation to the space 2.d.ii 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		M&E				
	Req 2e	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		M&E				
Hea 02		**Part C: Indoor Air Quality - Emission from Construction Products**						
1 credit	Req 3	Specification/ Contract confirming that three out of the five product types meet the emission limits, testing requirements and any additional requirements listed in Table 5.11	N/T	Architect	2			
	Req 3	Specification/ Contract confirming that where wood-based products are not one of three selected product types, all wood-based products used for internal fixtures and fittings must be tested and classified as formaldehyde E1 class as a minimum.	N/T	Architect				
Or 2 credits	Req 4	Specification/ Contract confirming that all of the product types meet the emission limits, testing requirements and any additional requirements listed in Table 5.11	N/T	Architect				
Innovation credit	Req 11	Specification / written confirmation that three of the product types listed meet the emission limits, testing requirements and any additional requirements listed in Table 5.12. Where wood-based products are not one of the three selected product types, all wood-based products used for internal fixtures and fittings must be tested and classified as formaldehyde E1 class as a minimum.	N/T	Architect	Innovation credit			
Hea 02		**Part D: Indoor Air Quality - Post Construction Indoor Air Quality Measurement**						
1 credit	Req 5	Specification/ Written confirmation that the formaldehyde concentration in indoor air is measured post construction (but preoccupancy) and does not exceed 100 µg/ m³ averaged over 30 minutes (World Health Organization guidelines for indoor air quality: Selected pollutants, 2010	N/T	M&E	1			
	Req 6	Specification/ Written confirmation that the formaldehyde sampling and analysis is performed in accordance with ISO 16000-2 and ISO 16000-3	N/T	M&E				
	Req 7	Results or Specification/ Written confirmation that the total volatile organic compound (TVOC) concentration in indoor air is measured post construction (but pre-occupancy) and does not exceed 500 µg/ m³over 8 hours	N/T	M&E				
	Req 8	Specification/ Written confirmation that the TVOC sampling and analysis is performed in accordance with ISO 16000-5 and ISO 16000-6 or ISO 16017-1	N/T	M&E				
	Req 9	Where levels are found to exceed these limits, the project team should confirm 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/T	M&E				
	Req 10	The measured concentration levels of formaldehyde (µg/ m³) and TVOC (µg/ m³) are reported, via the BREEAM Scoring and Reporting Tool	N/T	M&E				
Hea 04		**Part A: Thermal Comfort - Thermal modelling**						
1 credit	Req 1&2	Specification/ Written confirmation that a full dynamic thermal analysis will be carried out using software in accordance with CIBSE AM11 Building Energy and Environmental Modelling		M&E	1	1		
	Req 3a.	Thermal modelling results demonstrating that for air-conditioned buildings the building design and services strategy will deliver summer and winter operative temperatures in occupied spaces in accordance with the criteria set out in CIBSE Guide A Environmental Design, table 1.5 or appropriate industry standard		M&E				
	Req 3b.	Thermal modelling results demonstrating that for naturally ventilated buildings the building design and services strategy will deliver winter operative temperatures in occupied spaces in accordance with the criteria set out in CIBSE Guide A Environmental Design AND Limit the risk of overheating, in accordance with the adaptive comfort methodology outlined in CIBSE TM52 or TM59		M&E				
	Req 4	Thermal modelling results confirming the Predicted Mean Vote (PMV) and Predicted Percentage of Dissatisfied (PPD) indices for the air conditioned buildings.		M&E				
Hea 04		**Part B: Thermal Comfort - Design for future thermal comfort**						
1 credit	Req 5	Criteria 1 to 4 have been achieved		M&E	1	1		
	Req 6	Thermal modelling results demonstrating that the relevant requirements set out in criteria 3 are achieved for a projected climate change environment		M&E				
	Req 7	Specifications/Drawings demonstrating that where thermal comfort criteria have not been met how the building has been adapted or designed to easily adapt using passive design solutions in order to meet requirements under criterion 6		M&E				
	Req 8	Thermal modelling results confirming the Predicted Mean Vote (PMV) and Predicted Percentage of Dissatisfied (PPD) indices for the air conditioned buildings.		M&E				
Hea 04		**Part C: Thermal Comfort - Thermal zoning and controls**						
1 credit	Req 9	Criteria 1 to 4 are achieved		M&E	1	1		
	Req 10	Thermal comfort strategy confirming that the thermal modelling analysis has informed the temperature control strategy for the building and its users.		M&E				
	Req 11	Specification/ Design drawings demonstrating that the strategy for proposed heating / cooling system(s) demonstrates has addressed the following: a. Zones within the building (central areas of the building and external perimeter) b. The level of occupant control required for these zones and considers: i. User knowledge of building services, ii. Occupancy type, patterns and room functions appropriate level of control required), iii. How the user is likely to operate/interact with the system(s) iv. The user expectations and degree of individual control (balance between occupant preferences) c. How the proposed systems will interact with each other (where there is more than one system) and how this may affect the building occupants thermal comfort. d. The need or otherwise for an accessible building user actuated manual override for any automatic systems.		M&E				

Credit Ref	Criteria	Action required Further details can be provided by the Assessor upon request.	Evidence Status	Responsibility	Credits Available	Basic Credits: 74.45% (Excellent)	Additional Credits: 78.33% (Excellent)	Notes
Hea 05		**Acoustic Performance**						
1 credit (shell and core)	Req 1	Report/ Calculations confirming that the building meets the appropriate acoustic performance standards and testing requirements for: a. Sound insulation - - compliance with Section 7 of BS 8233:2014 b. Indoor ambient noise level - Section 7 of BS 8233:2014 c. Reverberation times - - Section 7 of BS 8233:2014		Acoustician	3	3		
	Req 2	Appointment letter/ correspondence confirming that a suitably qualified acoustician has been appointed to carry out a noise assessment		Acoustician				
	Req 3	Evidence/ Written confirmation that the acoustician is suitably qualified i.e. holding a recognised acoustic qualification and membership of an appropriate professional body		Acoustician				
Hea 06		**Part A. Safety and security - Security of site and building**						
1 credit	Req 1	Appointment letter, written confirmation that a Suitably Qualified Security Specialist (SQSS) has conducted an evidence-based Security Needs Assessment (SNA) during or prior to Concept Design (RIBA Stage 2 or equivalent).		Architect / Client	1	1		
	Req 2	Meeting minutes, document highlighting security controls and recommendations by the SQSS for incorporation into the proposals. Those controls and recommendations shall directly relate to the threats and assets identified in the preceding SNA		Architect / Client				
	Req 3	Specifications/ drawings/ written confirmation that the controls and recommendations shall be incorporated into proposals and implemented in the as-built development and any deviation from those controls and recommendations shall be justified and agreed with the SQSS.		Architect / Client				
Innovation credit	Req 4	Written confirmation/ report/ meeting minutes to confirm that a compliant risk based security scheme is used and the performance against the scheme has been confirmed by independent assessment and verification.	N/T	Architect / Client		Innovation credit - Insert Scoring into Section Below		
Hea 07		**Part A: Safe and Healthy Surroundings - Safe Access**						
1 credit	Req 1	Drawings/ Specifications confirming that dedicated and safe cycle paths are provided from the site entrance to any cycle storage, and connect to offsite cycle paths where applicable.		Architect	1	1		
	Req 2	Drawings/ Specifications confirming that dedicated and safe footpaths are provided on and around the site providing suitable links for the following: 2.a The site entrance to the building entrance, 2.b Car parks (where present) to the building entrance 2.c The building to outdoor space 2.d Connecting to off-site paths where applicable.		Architect				
	Req 3	Drawings/ Specifications confirming that pedestrian drop-off areas are designed off, or adjoining to, the access road and should provide direct access to other footpaths.		Architect				
	Req 4	Drawings / Specifications confirming that delivery areas are not accessed through general parking areas and do not cross or share the following: 4.a pedestrian and cyclist paths 4.b outside amenity areas accessible to building users and general public.		Architect				
	Req 5	Drawings/ Specifications confirming that There is a dedicated parking or waiting area for goods vehicles with appropriate separation from the manoeuvring area and staff and visitor car parking.		Architect				
	Req 3	Specifications/ drawings confirming that 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.		Architect				
Hea 07		**Part B: Safe and Healthy Surroundings - Outside Space**						
1 credit	Req 1	Drawings/ Specifications confirming that there is an outside space providing building users with an external amenity area that must: – be of an appropriate size to provide enough amenity for the predicted number of building users – be an outdoor landscaped area, for example a garden, balcony or terrace; the majority of the space should be open to the sky – have appropriate seating areas and be non-smoking, – be located to ensure it is accessible to all building users and avoids areas that will have disturbances from sources of noise (e.g. building services, car parks, busy roads, delivery areas etc.).		Architect	1	1		
				Totals	**17**	**12**	**0**	**0**
			Weighted	14%		**9.88%**	**0.00%**	**0.00%**
Energy								
Ene 01		**Part A: Reduction of Energy Use and Carbon Emissions - Energy Performance**						
Up to 9 credits **Mandatory element from Reqs 1 - 5:** **- Excellent 4 credit** **- Outstanding 6 credits**	Req 1	A copy of the Building Regulations Output Document from the approved software England Wales (Part L): Approved Documents checks (BRUKL Output Document) based on the EPR_{NC}		M&E	9	4		
Ene 01		**Part B: Reduction of Energy Use and Carbon Emissions - Prediction of Operational Energy Consumption**						
Pre-requisite	Req 2	Meeting minutes/ Written confirmation that prior to completion of the Concept Design, relevant members of the design team held a preliminary design workshop focusing on operational energy performance		M&E		Pre-Requisite		
4 credits	Req 3	A copy of the energy modelling during the design and post-construction stage to generate predicted operational energy consumption figures		M&E	4	4		
	Req 4	Report covering predicted energy consumption targets by end use, design assumptions and input data		M&E				
	Req 5	A copy of risk assessment to highlight any significant design, technical, and process risks that should be monitored and managed throughout the construction and commissioning process		M&E				
Up to 2 Innovation credits	Req 6	**Beyond zero net regulated carbon:** BRUKL document confirmed that the building achieves an EPR NC ≥ 0.9 and zero net regulated CO_2 emissions		M&E		Innovation credit - Insert Scoring into Section Below		
	Req 7	Calculations confirming 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		M&E				
	Req 8	Calculations confirming the percentage of additional emissions from unregulated energy that are offset by LZC sources		M&E				
3 Innovation credits	Req 9	**Carbon negative:** Calculations to confirm that the building is deemed carbon negative where > 100% (see Table 6.2 below) of carbon emissions from unregulated (and regulated) energy use are offset by energy generated from on-site and near-site LZC sources		M&E		Innovation credit - Insert Scoring into Section Below		

Credit Ref	Criteria	Action required Further details can be provided by the Assessor upon request.	Evidence Status	Responsibility	Credits Available	Basic Credits: 74.45% (Excellent)	Additional Credits: 78.33% (Excellent)	Notes
2 Innovation credits	Req 10	**Post-occupancy stage:** Confirmation that maximum available credits in Ene 02 Energy monitoring are achieved. 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		M&E		Innovation credit - Insert Scoring into Section Below		
	Req 11	Appointment letter of assessor / contract/ written confirmation that the client or building occupier have committed funds to pay for the post occupancy stage		M&E				
	Req 12	A copy of the energy model as per requirement 3 and commitment that the same will be; 12.a Submitted to BRE and 12.b Retained by the building owner.		M&E				
Ene 02		**Part A: Energy Monitoring - Sub-metering of End-Use Categories**						
1 credit **Mandatory element: - Very Good and above**	Req 1	Specification/Calculations/ drawings confirming the installation of energy metering systems so that at least 90% of the estimated annual energy consumption of each fuel is assigned to the end-use categories		M&E				
	Req 2	Specification/Schematics confirming that energy consumption in building is metered according to a total useful floor area as below: 2.a If the area is greater than 1,000 m², by end-use category with an appropriate energy monitoring and management system. 2.b If the area is less than 1,000 m², use either: 2.b.i an energy monitoring and management system or 2.b.ii separate accessible energy sub-meters with pulsed or other open protocol communication outputs, for future connection to an energy monitoring and management system		M&E	1	1		
	Req 3	Specification confirming that the end energy consuming uses are identifiable to the building users i.e. labels/data outputs		M&E				
Ene 02		**Part B: Energy Monitoring - Sub-metering of high energy load and tenancy areas**						
1 credit	Req 4	Specification/Schematic confirming the provision as below: Monitor a significant majority of the energy supply with: 4.a An accessible energy monitoring and management system for: 4.a.i tenanted areas or 4.a.ii relevant function areas or departments in single occupancy buildings. OR 4.b Separate accessible energy sub-meters with pulsed or other open protocol communication outputs for future connection to an energy monitoring and management system for: 4.b.i tenanted areas or 4.b.ii relevant function areas or departments in single occupancy buildings.		M&E	1	1		
	Req 5	Specifications/ Drawings confirming sub-meter per floor plate in large single occupancy or single-tenancy buildings with one homogeneous function		M&E				
Ene 03		**External Lighting**						
1 credit	Req 1	Specification/Written confirmation that the building has been designed to operate without the need for external lighting (including on buildings, signs and at entrances) **OR**		M&E				
	Req 2	Specification/Calculations confirming that the external light fittings within construction zone are specified with: 2.a Average initial luminous efficacy of not less than 70 luminaire lumens per circuit Watt 2.b Automatic control to prevent operation during daylight hours 2.c Presence detection in areas of intermittent pedestrian traffic.		M&E	1	1		
Ene 04		**Part A: Low carbon Design - Passive Design Analysis**						
1 credit	Req 1	First credit within Hea04 Thermal Comfort has been achieved		Architect / M&E				
	Req 2	Report confirming that an analysis of the proposed building design/development to influence decisions made during Concept Design (RIBA Stage 2) and to identify opportunities for the implementation of passive design solutions As a minimum, the passive design analysis should cover: 1. Site location 2. Site weather 3. Microclimate 4. Building layout 5. Building orientation 6. Building form 7. Building fabric 8. Thermal mass or other fabric thermal storage 9. Building occupancy type 10. Daylighting strategy 11. Ventilation strategy 12. Adaptation to climate change.		Architect / M&E	1	1		
	Req 3	Specification/Drawings confirming that the building uses passive design measures to reduce the total heating, cooling, mechanical ventilation and lighting loads and energy consumption in line with the analysis		Architect / M&E				
	Req 4	Calculations confirming the reduced total energy demand and carbon dioxide (CO_2) emissions resulting from the passive design measures.		Architect / M&E				
Ene 04		**Part B: Low Carbon Design - Free Cooling**						
1 credit	Req 5	First credit has been achieved	N/T	M&E				
	Req 6,7	Report from criterion two confirmed the analysis of free cooling and identified opportunities for the implementation of free cooling solutions	N/T	M&E				
	Req 8	Specification/Drawings confirming that the building uses a free cooling strategy to reduce the cooling energy demand i.e. it does need active cooling. The free cooling analysis should demonstrate consideration of the following technologies: 1. Night time cooling (which could include the use of a high exposed thermal mass) 2. Ground coupled air cooling 3. Displacement ventilation (not linked to any active cooling system) 4. Ground water cooling 5. Surface water cooling 6. Evaporative cooling, direct or indirect 7. Desiccant dehumidification and evaporative cooling, using waste heat 8. Absorption cooling, using waste heat.	N/T	M&E	1			
Ene 04		**Part C: Low Carbon Design - Low and Zero Carbon Technologies**						
1 credit	Req 9	Report confirming that a feasibility study has been carried out by the completion of Concept Design (RIBA Stage 2) by an energy specialist		M&E				
	Req 10	The report establishes the most appropriate recognised local (on-site or near-site) low or zero carbon (LZC) energy sources for the building or development		M&E				
	Req 11	Specification/Drawings confirm that a local LZC technology(s) have been specified for the building in line with the recommendation from the feasibility study		M&E	1	1		
	Req 12	Calculations to quantify the reduced regulated carbon dioxide (CO_2) emissions resulting from the feasibility study.		M&E				
Ene 05		**Part A: Energy efficient cold storage - Refrigeration Energy Consumption**						
Ene 05		**Part B: Energy efficient cold storage - Indirect Greenhouse Gas Emissions**						

Credit Ref	Criteria	Action required Further details can be provided by the Assessor upon request.	Evidence Status	Responsibility	Credits Available	Basic Credits: 74.45% (Excellent)	Additional Credits: 78.33% (Excellent)	Notes
Ene 06		**Part A: Energy Efficient Transportation Systems - Energy Consumption**						
1 credit	Req 1	Professional report / study of transportation analysis **AND/OR** calculations confirming: a. An analysis of the transportation demand and usage patterns for the building has been carried out by the design team to determine the optimum number and size of lifts, escalators and/or moving walks. b. The energy consumption has been estimated for one of the following: i. At least two types of system (for each transportation type required) or ii. An arrangement of systems (e.g. for lifts, hydraulic, traction, MRL) or iii. A system strategy which is 'fit for purpose' (scheduling) c. The use of regenerative drives should be considered, subject to requirements in CN6 d. The transportation system with the lowest energy consumption is specified		M&E	1	1		
Ene 06		**Part B: Energy Efficient Transportation Systems - Energy Efficient Features**						
1 credits	Req 2	Criteria 1 has been achieved		M&E	1	1		
	Req 3	Specification **AND EITHER** manufacturers products details **OR** formal letter of commitment from the system(s) manufacturer/supplier that the specified lifts will include the following three energy-efficient features: a. The lifts will operate in a stand-by condition during off-peak periods. b. The lift car lighting and display lighting provides an average luminous efficacy across all fittings in the car of > 70 luminaire lumens per circuit Watt c. The lift will use a drive controller capable of variable-speed, variable-voltage and variable-frequency		M&E				
	Req 4	Specification **AND EITHER** manufacturers products details **OR** formal letter of commitment from the system(s) manufacturer/supplier that where the use of regenerative drives is demonstrated to save energy, they are specified		M&E				
Ene 07		**Part A: Energy Efficient Laboratory Systems - Design Specification**						
Ene 07		**Part B: Energy Efficient Laboratory Systems - Best Practice Energy Efficient Measures**						
Ene 08		**Energy Efficient Equipment**						
				Totals	**21**	**15**	**0**	**0**
			Weighted	16%		**11.43%**	**0.00%**	**0.00%**
Transport								
Tra 01		**Transport Assessment and Travel Plan**						
2 credits	Req 1	A copy of travel plan prepared during feasibility and design stage, based on site specific transport assessment			2	2		
	Req 2	A copy of the site-specific travel assessment or statement which covers as a minimum: 2.a Existing travel patterns and opinions of existing building or site users towards cycling and walking, identifying constraints and opportunities, if relevant 2.b Travel patterns and transport impact of future building users 2.c Current local environment for walkers and cyclists (accounting for visitors who may be accompanied by young children) 2.d Reporting of the number and type of existing accessible amenities, see Table 7.1 below, within 500m of the site 2.e Disabled access (accounting for varying levels of disability and visual impairment) 2.f Calculation of the existing public transport Accessibility Index (AI), see Methodology on the next page 2.g Current facilities for cyclists						
	Req 3	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.						
	Req 4	Meeting minutes / other documents to confirm that If the occupier is known, then they are involved in the development of the travel plan						
	Req 5	Contract/ commitment letter/ specifications confirming that the travel plan will be implemented post construction and be supported by the building's management in operation.						
Tra 02		**Sustainable Transport Measures**						
Pre-Requisite	Req 1	Tra 1 credits are achieved.				Pre-Requisite		
Tra 02		**Part A: Sustainable Transport Measures - Transport Options Implementation**						
10 credits	Req 2	Drawings/ Specifications/ maps/ other evidence to confirm that the sustainable transport measures were identified as per Table 7.4 of BREEAM TRA 2.			10	8		
	Req 3	Confirm the Accessibility Index for this site as per table 7.3.						
				Totals	**12**	**10**	**0**	**0**
			Weighted	10.0%		**8.33%**	**0.00%**	**0.00%**
Water								
Wat 01		**Water Consumption - domestic water consuming components**						
Up to 5 credit **Mandatory element:** **- Good and above 1 credit** **- Outstanding 2 credits**	Req 1	Design drawings/Specification confirming the type and area (m2) of the main activity areas		Architect / M&E	5	2	1	
	Req 2	Report total net water consumption in L/person/day, compared to the baseline performance table using the BREEAM WAT01 calculator		Architect / M&E				
	Req 2b	Specification/ Manufacturers literature confirming the technical details of the sanitary components including: • WCs: Flush type (single/dual), effective flush volume (litres), • Urinals: Operation (cistern/pressure, manual/automatic, waterless), flush volume (litres), number of urinal bowls • Taps: Flow rate of each tap (litres/minute) at 3±0.2 bar • Showers: Flow rate of each shower (litres/minute) at T ≤ 30˚ C) and 3±0.2 bar • Baths • Dishwasher: Litres/cycle for domestic appliances or litres/rack for domestic or commercial sized appliances • Washing machines (domestic and commercial or industrial sized) **OR** Where detailed documentary evidence is not available at this stage; a letter of instruction to a contractor/supplier or a formal letter from the developer giving a specific undertaking, providing sufficient information to allow the water calculations to be completed		Architect / M&E				
	Req 4a	Specification/ Design drawings/ Written confirmation that the rainwater harvesting system has/will be specified and installed in compliance with BS8515:2009 Rainwater Harvesting Systems - Code of practice		Architect / M&E				
	Req 3a	Specification/ Written confirmation of the storage capacity for the proposed system: Rainwater: in accordance with BS8515 'intermediate approach': 1. Collection area (m2) 2. Rainfall (average mm/year) 3. Hydraulic filter efficiency (%) 4. Yield co-efficient (%) **OR** Rainwater: in accordance with BS8515 'detailed approach': 1. Daily rainfall collection (litres)		Architect / M&E				

Credit Ref	Criteria	Action required Further details can be provided by the Assessor upon request.	Evidence Status	Responsibility	Credits Available	Basic Credits: 74.45% (Excellent)	Additional Credits: 78.33% (Excellent)	Notes
	Req 4b	Specification/ Written confirmation hat the greywater systems will be in compliance with BS8525-1:2010 Greywater Systems - Part 1 Code of Practice		Architect / M&E				
	Req 3b	Specification/ Written confirmation of the greywater source and the proposition collected (%). Applicable building components include the following: a. Wash hand basin taps b. Shower c. Kitchen taps - kitchenette d. Kitchen taps - pre-rinse nozzle e. Dishwasher - food preparation area d,. Other If others please state the typical greywater yield (litres) and the frequency of yield (days)		Architect / M&E				
	Req 3c	Specification/ Written confirmation of the components and proportions of the components using greywater and/or rain water yield (%) Applicable building components include the following a. WC Flushing b. Urinal Flushing c. Other If others please state the type of component and the proportion		Architect / M&E				
Innovation credit	Req 7	Criteria 1 to 4 are achieved.		Architect / M&E		Innovation credit - Insert Scoring into Section Below		
	Req 8	Calculation / Wat 1 tool confirming that the water consumption (litres/person/day) for the assessed building achieves the 65% improvement described as exemplary performance in Table 8.1 of BREEAM manual.		Architect / M&E				
Wat 02		**Water Monitoring**						
1 credit	Req 1 **Mandatory for Good and above**	Specification/ Design drawings confirming that a water meter has been specified on the mains water supply to each building including on supplies with boreholes and private sources		M&E	1	1		
	Req 2	Specifications/ Drawings confirm that for water-consuming plant or building areas consuming 10% or more of the building's total water demand: 2.a Fit easily accessible sub-meters OR 2.b Install water monitoring equipment integral to the plant or area.		M&E				
	Req 3	Specifications / Drawings confirm that for each meter (main and sub) following is in place: 3.a Install a pulsed or other open protocol communication output AND 3.b Connect it to an appropriate utility monitoring and management system, e.g. a building management system (BMS), for the monitoring of water consumption. If there is no BMS system in operation at Post- Construction stage, confirmation is required that the system used enables connection when the BMS becomes operational.		M&E				
	Req 6	Additionally for those pursuing a post occupancy stage certification: Specifications/ Drawings/ Written confirmation that the water monitoring strategy used enables the identification of all water consumption for sanitary uses as assessed under Wat 01 (litres/person/day), if a post occupancy stage certification is sought.		M&E				
Wat 03		**Water leak detection**						
	Req 1	Specification/ Design drawings/ Manufacturers literature confirming that there will be a leak detection system capable of detecting a major water leak on the mains water supply within the building and between the building and the utilities water meter.		M&E				
1 credit	Req 2	Specification/ Manufacturers literature confirming the leak detection system specified will be: a. A permanent automated water leak detection system that alerts the building occupants to the leak OR an in-built automated diagnostic procedure for detecting leaks is installed b. Activated when the flow of water passing through the water meter/ data loggers is at a flow rate above a pre-set maximum for a pre-set period of time c. Able to identify different flow and therefore leakage rates .e.g. continuous, high/low, over set time periods d. Programmable to suite the owner/occupier water consumption criteria e. where applicable, designed to avoid false alarms caused by normal operation of large water-consuming plant		M&E	1	1		
1 credit	Req 3	Specification/ Design drawings/ Manufacturers literature confirming that one of the following types of flow control device will be fitted to each WC area/facility to ensure water is supplied only when needed: a. A time controller b. A programmed time controller c. A volume controller d. A presence detector and controller e. A central control unit		M&E	1	1		
Wat 04		**Water efficient equipment**						
1 credit	Req 1	Identify all water demands from uses other than those listed under Assessment scope - Table 8.1 (Wat1) that could be realistically mitigated or reduced. Where there is no water demand from uses other than domestic-scale, sanitary use components in the building, this issue is not applicable. **Non-domestic scale, non-sanitary water uses -** This includes, but is not limited to the following: – Swimming pools – Recreational hot tubs and hydrotherapy pools – Equipment used for irrigation – Vehicle wash equipment – Project-specific industrial processes – Water filtration and treatment processes – Building services (e.g. cooling towers and humidification systems) **Vehicle wash** A commercial-scale automatic, semi-automatic or manual system for washing vehicles. This includes wheel and chassis wash, fixed gantry and screen wash systems using brushes, spray or handheld jet hoses.		Architect / M&E	1	1		
	Req 2	Specification/ Calculations demonstrating a meaningful reduction in the unregulated water demand through as a result of the design or specification		Architect / M&E				
				Totals	**9**	**6**	**1**	**0**
			Weighted	7.0%		**4.67%**	**0.78%**	**0.00%**
Materials								
Mat 01		**Environmental impacts from construction products - Building Life Cycle Assessments (LCA)**						
	Req 1	**Comparison with the BREEAM benchmark during Concept Design (offices, industrial and retail buildings only)** 1a. A copy of either the BREEAM Simplified Building LCA tool or an IMPACT Compliant LCA tool confirming that a building LCA on of the superstructure design has been carried out using the BREEAM compliant methodology. 1b. 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).		Architect / LCA Consultant				
	Req 2	**Comparison with the BREEAM benchmark during Technical Design (offices, industrial and retail buildings only)** During Technical Design, demonstrate the environmental performance of the building as follows: 2.a As criterion 1.a 2.b Submit the Mat 01/02 Results Submission Tool to BRE at the end of Technical Design. Where a project has not achieved criterion 1, criterion 2 may still be achieved.		Architect / LCA Consultant				

Credit Ref	Criteria	Action required Further details can be provided by the Assessor upon request.	Evidence Status	Responsibility	Credits Available	Basic Credits: 74.45% (Excellent)	Additional Credits: 78.33% (Excellent)	Notes
6 credits (Super structure)	Req 3 & 4	**Option appraisal during Concept Design (all building types)** Criterion 1 is achieved. A copy of LCR confirming that during Concept Design, opportunities were identified for reducing environmental impacts as follows: 4.a Carry out building LCA options appraisal of 2 to 4 significantly different superstructure design options (applicable to the Concept Design stage) according to BREEAM compliant methodology. 4.b Use a building LCA tool that is recognised by BREEAM (as suitable for assessing superstructure during Concept Design) according to BREEAM compliant methodology 4.c For each design option, fulfil the same functional requirements specified by the client and all statutory requirements (to ensure functional equivalency). 4.d Integrate the LCA options appraisal activity within the wider design decision-making process. Record this in an options appraisal summary document. 4.e Record the following in the Mat 01/02 Results Submission Tool: The differences between the design options; the design option selected by the client to be progressed beyond Concept Design; the reasons for selecting it and the reasons for not selecting the other design options. 4.f 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).		Architect / LCA Consultant	6	4		
	Req 5	**Options appraisal during Technical Design (all building types)** Evidence confirming that during Technical Design opportunities are identified for reducing environmental impacts as follows: 5.a Carry out building LCA options appraisal of 2 to 3 significantly different superstructure design options (based on the selected Concept Design option and as applicable to the Technical Design stage. 5.b Use a building LCA tool that is recognised by BREEAM (as suitable for assessing superstructure during Technical Design) according to the BREEAM compliant methodology 5.c As criteria 4.c to 4.e above Where an options appraisal summary document was produced during Concept Design, update it to include the Technical Design options. 5.d Submit the Mat 01/02 Results Submission Tool to BRE at the end of Technical Design. Where a project has not achieved criteria 3 and 4, criterion 5 may still be achieved.		Architect / LCA Consultant				
1 credit	Req 6 & 7	**Substructure and hard landscaping options appraisal during Concept Design (all building types)** Criteria 3 and 4 are achieved. Evidence confirming that during Concept Design opportunities are identified for reducing environmental impacts as follows: 7.a 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). 7.b 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 7.c As criteria 4.c to 4.f above		Architect / LCA Consultant	1			
Innovation credit - 1	Req 8 & 9	**One credit – Core building services options appraisal during Concept Design (all building types)** Criteria 3 and 4 are achieved. Evidence confirming that during Concept Design opportunities are identified for reducing environmental impacts as follows 9.a Carry out building LCA options appraisal of at least 3 significantly different core building services design options. 9.b Use a building LCA tool that is recognised by BREEAM (as suitable for assessing core building services during Concept Design) according to the methodology 9.c As criteria 4.c to 4.f above .		Architect / LCA Consultant		Innovation credit - Insert Scoring into Section Below		
Innovation credit - 2	Req 10	**One credit – LCA and LCC alignment (all building types)** Criteria 3 to 5 are achieved.		Architect / LCA Consultant		Innovation credit - Insert Scoring into Section Below		
	Req 11	Evidence confirmed that Elemental LCC plan and Component Level LCC options appraisal credits are achieved. (Man 02 Life cycle cost and service life planning)		Architect / LCA Consultant				
	Req 12	Evidence confirming to Include design options appraised for criteria 3 to 4 (and 6 to 7 and 8 to 9 , if pursued) during Concept Design in Assessment scope - The elemental LCC plan		Architect / LCA Consultant				
	Req 13	Evidence confirming to Include the design options appraised for criterion 5 during Concept Design in the 'Component level LCC option appraisal' (in Man 02 Life cycle cost and service life planning)		Architect / LCA Consultant				
	Req 14	Record of an options appraisal summary document including the relevant cost information from the 'elemental LCC plan' and 'Component level LCC option appraisal confirming the integration of the aligned LCA and LCC options appraisal activity within the wider design decision-making process.		Architect / LCA Consultant				
Mat 02		**Environmental impacts from construction products - Environmental Product Declarations (EPD)**						
1 credit	Req 1	Specifications of construction products with EPD that achieve a total EPD points score of at least 20, according to the Methodology in BREEAM manual.		Architect / Contractor	1			
	Req 2	Mat1 /2 calculator tool showing the details of each EPD including the material category classification.		Architect / Contractor				
Mat 03		**Responsible Sourcing of Construction Products - Prerequisite**						
Pre-Requisite	Req 1 **Mandatory for all**	Policy/ contract/ specification/ written confirmation that all timber and timber-based products used on the project are legally harvested and traded timber as per the UK Government's Timber Procurement Policy (TPP)		Contractor		Pre-Requisite		
Mat 03		**Part A: Responsible Sourcing of Construction Products - Enabling sustainable procurement**						
1 credit	Req 2	A copy of the sustainable procurement plan used by the design team to guide specification towards sustainable construction products. The plan must: 2.a Be in place before Concept Design. 2.b Include sustainability aims, objectives and strategic targets to guide procurement activities. 2.c Include a requirement for assessing the potential to procure construction products locally. There must be a policy to procure construction products locally where possible. 2.d Include details of procedures in place to check and verify the effective implementation of the sustainable procurement plan. In addition, if the plan is applied to several sites or adopted at an organisational level it must: 2.e Identify the risks and opportunities of procurement against a broad range of social, environmental and economic issues following the process set out in BS ISO 20400:2017		Contractor	1	1		

Credit Ref	Criteria	Action required Further details can be provided by the Assessor upon request.	Evidence Status	Responsibility	Credits Available	Basic Credits: 74.45% (Excellent)	Additional Credits: 78.33% (Excellent)	Notes
Mat 03		**Part B: Responsible sourcing of Construction Products - Measuring Responsible Sourcing**						
3 credits	Req 3a	Specification/ Design Drawings confirming details of the following locations/elements and their constituent materials: Location/Use Categories 1. Frame 2. Upper Floors 3. Roof (incl roof lights) 4. Stairs and ramps 5. External Wall (inc cladding, lining, rendering and finishes) 6. Windows and External doors 7. Internal walls and partitions 8. Substructures (incl foundations, basement excavations, retaining walls, lowest floor construction) 9. External works (incl roads, paths and pavings) 10. Finishes (incl wall, floor, ceiling etc.) 11. Building services (incl heat source, heating and air conditioning, ventilation, fuel installation and system, etc) Material categories: 1. Timber or timber-based products 2. Concrete or cementitious 3. Metal 4. Stone or aggregate 5. Clay-based 6. Gypsum 7. Glass 8. Plastic, polymer, resin, paint, chemicals and bituminous 9. Animal fibre, skin, cellulose fibre 10. Other.		Contractor	3	1		
	Req 3b	A copy of the output from the BREEAM Mat 03 calculator confirming that maximum credits are achieved for a certain number of element types for the construction products specified or procured		Contractor				
	Req 3c	A copy of the relevant responsible sourcing scheme certificate(s) for the relevant specifications/products		Contractor				
Mat 05		**Designing for Durability and Resilience**						
1 credit	Req 1	Design drawings/ Specifications confirming that protection measures are incorporated into the building's design and construction to reduce damage to the building's fabric or materials in case of accidental or malicious damage occurring. These measures must provide protection against: 1.a Negative impacts of high user numbers in relevant areas of the building (e.g. corridors, lifts, stairs, doors etc.). 1.b Damage from any vehicle or trolley movements within 1m of the internal building fabric in storage, delivery, corridor and kitchen areas. 1.c External building fabric damage by a vehicle. Protection where parking or manoeuvring areas are within 1 metre of the building façade and where delivery areas or routes are within 2 metres of the façade, i.e. specifying bollards or protection rails. 1.d Potential malicious damage to building materials and finishes, in public and common areas where appropriate.		Architect	1	1		
	Req 2	Design drawings/ Specification confirming that key exposed building elements have been designed and specified to limit long and short term degradation due to environmental factors. This can be demonstrated through one of the following: 2.a The element or product achieving an appropriate quality or durability standard or design guide (table 9.14) . If none are available, use BS 7543:2015 as the default appropriate standard OR 2.b A detailed assessment of the element's resilience when exposed to the applicable material degradation and environmental factors		Architect				
	Req 3	Design drawings/ Specification confirming that convenient access to the roof and façade are provided for cost-effective cleaning, replacement and repair in the building's design.		Architect				
	Req 4	Design drawings/ Specification confirming that the roof and façade are designed to prevent water damage, ingress and detrimental ponding.		Architect				
Mat 06		**Material Efficiency**						
1 credit	Req 1	Report/ Documentation confirming that opportunities have been identified, targets are set and appropriate measure investigated to optimise the use of materials each of the following stages: 1.a Preparation and Brief 1.b Concept Design 1.c Developed Design 1.d Technical Design 1.e Construction		Architect	1	1		
	Req 2	Design drawings/ Specification confirming that the implementation of material efficiency measures were developed and recorded as per Table 9.15 during: 2.a Developed Design 2.b Technical Design 2.c Construction		Architect				
	Req 3	Report confirming the targets and actual material efficiencies achieved.		Architect				
				Totals	**14**	**8**	**0**	**0**
			Weighted	15.0%		**8.57%**	**0.00%**	**0.00%**
Waste								
Wst 01		**Part A: Construction Waste Management - Pre-Demolition Audit**						
1 credit **Mandatory element from Reqs 1 - 7: - Outstanding 1 credit**	Req 1	A copy of pre-demolition audit of any existing buildings, structures or hard surfaces being considered for demolition to determine whether refurbishment or reuse is feasible and, in the case of demolition, to maximise the recovery of material for subsequent high grade or value applications. The audit must cover the content of Pre-demolition audit scope as per BREEAM and 1.a Be carried out at Concept Design stage (RIBA Stage 2) by a competent person prior to strip-out or demolition works 1.b Guide the design, consider materials for reuse and set targets for waste management 1.c Engage all contractors in the process of maximising high grade reuse and recycling opportunities 1.d Compare actual waste arisings and waste management routes used with those forecast and investigate significant deviations from planned targets.	N/A	Contractor	N/A			
	Req 2	Make reference to the audit in the resource management plan (RMP)	N/A	Contractor				
Wst 01		**Part B: Construction Waste Management - Construction resource efficiency**						
3 credits	Req 3	A copy of the Resource Management Plan (RMP) for the non-hazardous waste (on-site construction and dedicated off-site manufacture or fabrication), demolition and excavation waste generated, covering the following as a minimum: 1. A target benchmark for resource efficiency i.e. m3 of waste per 100m2 or tonnes of waste per 100m2 2. Procedures and commitments for minimising non-hazardous waste in line with the benchmark 3. Procedures for minimising hazardous waste 4. A waste minimisation target and details of waste minimisation actions undertaken 5. Procedures for estimation, monitoring, measuring and reporting hazardous and non-hazardous site waste 6. Procedures for sorting, reusing and recycling construction waste into defined waste groups 7. Procedures for reviewing and updating the plan 8. The name or job title of the individual responsible for implementing the above.		Contractor	3	1		
	Req 4	Specification/ Written confirmation that construction waste related to onsite-construction and dedicated off site manufacture/fabrication (excluding demolition and excavation waste) meet or is lower than the following: • 1st Credit: 13.3m3 or 11.1tonnes per 100m^2 (gross internal floor area) • 2nd credit: 7.5m3 or 6.5tonnes per 100m^2 (gross internal floor area) • 3rd credit: 3.4m3 or 3.2tonne per 100m^2 (gross internal floor area) • Innovation credit: 1.6m3 or 1.9tonne per 100m2 (gross internal floor area)		Contractor				

Credit Ref	Criteria	Action required Further details can be provided by the Assessor upon request.	Evidence Status	Responsibility	Credits Available	Basic Credits: 74.45% (Excellent)	Additional Credits: 78.33% (Excellent)	Notes
Wst 01		**Part C: Construction Waste Management - Diversion of resources from landfill**						
1 credit	Req 5	Specification/ Written confirmation that percentage of non-hazardous construction (onsite-construction and dedicated off site manufacture/fabrication), demolition and excavation waste generated by the project will be diverted from landfill. 1st Credit: Non demolition projects - 70% by volume or 80% by tonnage Demolition project - 80% by volume or 90% by tonnage		Contractor	1	1		
	Req 6	Specification/ Documentation/ Written confirmation that waste materials will be sorted into separate key waste groups either onsite or through a licensed contractor for recovery .		Contractor				
Innovation credit	Req 7	Non-hazardous construction waste generated, excluding demolition and excavation waste, is less than or equal to the exemplary level resource efficiency benchmarks <1.6m3 or <1.9tonnes per 100m2		Contractor		Innovation credit - Insert Scoring into Section Below		
	Req 8	Innovation Credit: Non Demolition project - 85% by volume or 95% by tonnage Demolition project - 85% by volume or 95% by tonnage Excavation project - 95% by volume or 95% by tonnage		Contractor				
Wst 02		**Use of Recycled and Sustainably Sourced Aggregates - Pre-requisite**						
Pre-Requisite	Req 1	Evidence that a pre-completion audit has been completed If demolition occurs on site, to encourage the reuse of site-won material on site, as per Wst1 criterion 1		Civils / Structural Engineer		Pre-Requisite		
Wst 02		**Use of Recycled and Sustainably Sourced Aggregates - Project Sustainable Aggregate Points**						
1 credit	Req 2	Document confirming that all aggregate uses and types are identified on the project Table 10.5 and Table 10.6	N/T	Civils / Structural Engineer	1			
	Req 3	Specification/ documentation confirming the quantity in tonnes for each identified use and aggregate type.	N/T	Civils / Structural Engineer				
	Req 4	Confirmation of the regions in which the aggregate sources are located and	N/T	Civils / Structural Engineer				
	Req 5	Calculations showing the distance in kilometres travelled by all aggregates by transport type.	N/T	Civils / Structural Engineer				
	Req 6	Wst2 Calculator tool indicating project sustainable aggregate points between 3.5 - 6	N/T	Civils / Structural Engineer				
Innovation credit	Req 7	Wst2 Calculator tool indicating project sustainable aggregate points between >6	N/T	Civils / Structural Engineer		Innovation credit - Insert Scoring into Section Below		
Wst 03		**Operational Waste**						
1 credit **Mandatory element: - Excellent and above**	Req 1	Design drawings/ Specification confirming that there will be a dedicated space(s) to cater for the segregation and storage of operational recyclable waste generated by the assessed building; the facility must be: a. Clearly labelled, to assist with segregation, storage and collection of the recyclable waste streams b. Accessible to building occupants / facilities operators for the deposit of materials and collections c. Of appropriate capacity to the building type, size, number of units (if relevant) and predicted waste volumes		Waste Consultant	1	1		
	Req 1b	Meeting minutes/ Written confirmation of the likely building waste streams and indicative volumes		Waste Consultant				
	Req 2	Design drawings/ Specification confirming that where consistent generation in volume of the appropriate operational waste streams is likely to exist, e.g. large amounts of packaging or compostable waste generated by the building's use and operation, the following facilities are provided as part of its waste management strategy: a. Static waste compactor(s) or baler(s); situated in a service area or dedicated waste management space. b. Vessel(s) for composting suitable organic waste resulting from the building's daily operation and use OR adequate space(s) for storing segregated food waste and compostable organic material prior to collection and delivery to an alternative composting facility. c. Where organic waste is to be stored/composted on site, a water outlet is provided adjacent to or within the facility for cleaning and hygiene purposes.		Waste Consultant				
Wst 04		**Speculative Finishes (Offices Only)**						
Wst 05		**Adaptation to Climate Change - Resilience of structure, fabric, building services and renewables installation**						
1 credit	Req 1	A copy of the climate change adaptation strategy appraisal; A systematic (structural and fabric resilience specific) risk assessment to identify and evaluate the impact on the building over its projected life cycle from expected extreme weather conditions arising from climate change and where feasible, mitigate against these impact, covering the following stages as minimum: a. Hazard Identification b. Hazard Assessment c. Risk Estimation d. Risk Evaluation e. Risk Management		Architect / Structural Engineer	1	1		
	Req 2	Written confirmation that the climate change adaptation strategy appraisal for structural and fabric resilience was conducted before or during the Concept Design (RIBA Stage 2) in accordance with the requirements above.		Architect / Structural Engineer				
	Req 3	Written confirmation that an update during Technical Design is developed demonstrating how the recommendations or solutions proposed at Concept Design have been implemented where practical and cost effective.		Architect / Structural Engineer				
Wst 05		**Adaptation to Climate Change - Responding to Climate Change**						
Innovation credit	Req 4 & 5	Criterion 1 to 3 are achieved. A holistic approach to the design and construction of the current buildings life cycle to mitigate against the impacts of climate changes is represented by the achievement of these criteria: Hea 04 - criteria 6 has been achieved Ene 01 - 6 credits have been achieved Ene 04 - 1 credit has been achieved for passive design analysis Wat 01 - 3 credits have been achieved Mat 05 - criteria 2 - 4 have been achieved Pol 03 - 1 credit has been achieved for flood risk Pol 03 - 2 credits have been achieved for surface water run off		Carbon Consult		Innovation credit - Insert Scoring into Section Below		

Credit Ref	Criteria	Action required Further details can be provided by the Assessor upon request.	Evidence Status	Responsibility	Credits Available	Basic Credits: 74.45% (Excellent)	Additional Credits: 78.33% (Excellent)	Notes
Wst 06		**Part A: Design for disassembly and adaptability - Recommendations**						
1 credit	Req 1	A copy of the building specific functional adaptation strategy study undertaken by Concept Design (RIBA Stage 2) which includes recommendations for measures to be incorporated to facilitate future adaptation. This should consider: – Feasibility: The likelihood to contain multiple or alternative building uses, area functions and different tenancies over the expected life cycle, e.g. related to the structural design of the building. – Accessibility: Design aspects that facilitate the replacement of all major plant within the life of the building, e.g. panels in floors and walls that can be removed without affecting the structure, providing lifting beams and hoists. Accessibility also involves access to local services, such as local power, data infrastructure etc. – Versatility: The degree of adaptability of the internal environment to accommodate changes in working practices. – Adaptability: The potential of the building ventilation strategy to adapt to future building occupant needs and climatic scenarios. – Convertibility: The degree of adaptability of the internal physical space and external shell to accommodate changes of in-use. – Expandability: The potential for the building to be extended, horizontally or vertically. – 'Refurbishment potential': The potential for major refurbishment, including replacing the façade.		Architect / M&E / Structural Engineer	1	1		
	Req 2	A copy of recommendations or solutions based on the study during or prior to Concept Design, that aim to enable and facilitate disassembly and functional adaptation		Architect / M&E / Structural Engineer				
Wst 06		**Part B: Design for disassembly and adaptability - Implementation**						
1 credit	Req 3	Criteria 1 and 2 are achieved		Architect / M&E / Structural Engineer	1	1		
	Req 4	Specification/ Design Drawings confirming the implementation of functional adaptation measures as below: 4.a How the recommendations or solutions proposed by Concept Design have been implemented where practical and cost effective. 4.b Changes to the recommendations and solutions during the development of the Technical Design. 4.c Justification of any omissions This should cover as a minimum: – Options for multiple building uses and area functions based on design details, e.g. modularity. – Routes and methods for major plant replacement, e.g. networks and connections have flexibility and capacity for expansion. – Accessibility for local plant and service distribution routes, e.g. detailed information on building conduits and connections infrastructure. – The potential for the building to be extended, horizontally or vertically.		Architect / M&E / Structural Engineer				
	Req 5	A copy of building adaptability and disassembly guide to communicate the characteristics allowing functional adaptability and disassembly to prospective tenants.		Client				
				Totals	**9**	**6**	**0**	**0**
			Weighted	6.0%		**4.00%**	**0.00%**	**0.00%**
Land Use and Ecology								
LE 01		**Part A: Site selection - Previously developed land**						
1 credit	Req 1	Design drawings (including existing and proposed site plan)/ Report/ Photographs confirming: a. Type and duration of previous land use b. Area (m2) of previous land use c. Location and footprint (m2) of proposed development and temporary works Note: At least 75% of the proposed development footprint must be previously developed land		Architect	1	1		
LE 01		**Part B: Site selection - Contaminated land**						
1 credit	Req 2	A copy of the specialist's land contamination report that identifies: a. The degree of contamination. b. The contaminant sources/types. c. The options for remediating sources of pollution which present an unacceptable risk to the site.		GI Specialist	1		1	
	Req 3a	A copy of the remediation strategy and implementation plan for the site		GI Specialist				
	Req 3b	Written confirmation that the remediation of the site will be carried out in accordance with the remediation strategy and its implementation plan recommended by the contaminated land professional		GI Specialist				
LE 02		**Identifying and Understanding the Risk and Opportunities of the Project - Prerequisite**						
Pre-Requisite	Req 1	A confirmation of the assessment route for the project has been determined using BREEAM Guidance Note GN34 BREEAM Ecological Risk Evaluation Checklist.		Ecologist		Pre-Requisite		
	Req 2	Evidence/ Written confirmation from the client or contractor that the compliance is monitored against all relevant UK and EU or international legislation relating to the ecology of the site.		Ecologist		Pre-Requisite		
LE 02		**Part A: Identifying and Understanding the Risk and Opportunities of the Project - Survey and Evaluation**						
1 credit	Req 3	**Route 1** (as identified within GN34) A copy of the BREEAM Ecological Risk Evaluation Checklist indicating **Assessment route 1** for the evaluation of site	N/A		1	1		
	OR							
	Req 4a	**Route 2** (as identified within GN34) A copy of appointment/ confirmation indicating SQA's early involvement in site configuration and, where necessary, SQA can influence strategic planning decisions		Ecologist				
	Req 4b	Evidence/ Written confirmation that the ecologist is suitably qualified i.e. qualification, experience, professional membership and appointment of SQA		Ecologist				
	Req 5	A copy of appropriate level survey and evaluation carried out prior to the completion of the preparation and brief, to determine the ecological baseline of the site, taking account of the zone of influence to establish: 5.a Current and potential ecological value and condition of the site, and related areas within the zone of influence. 5.b Direct and indirect risks to current ecological value 5.c Capacity and feasibility for enhancement of the ecological value of the site and, where relevant, areas within the zone of influence.		Ecologist				
	Req 6	Correspondence showing that data are collated and shared with project team to inform the site preparation, design or construction works.		Ecologist				
LE 02		**Part B: Identifying and understanding the risks and opportunities for the project - Determining the ecological outcomes for the site (Routes 1 and 2)**						
	Req 7	Survey and evaluation criteria (criteria 3–6 above) relevant to the chosen route have been achieved.		Ecologist				
	Req 8	Correspondence / Meeting minutes showing that during Concept Design, the project team liaise and collaborate with representative stakeholders to identify and consider ecological outcome for the sites		Ecologist				

Credit Ref	Criteria	Action required Further details can be provided by the Assessor upon request.	Evidence Status	Responsibility	Credits Available	Basic Credits: 74.45% (Excellent)	Additional Credits: 78.33% (Excellent)	Notes
1 credit	Req 9	Documents showing the determination process for 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: 9.a avoidance 9.b protection 9.c reduction or limitation of negative impacts 9.d on site compensation and, 9.e enhancement, considering the capacity and feasibility within the site, or where viable, off-site.		Ecologist	1	1		
	Req 10	Evidence/ Specification confirming that the optimal ecological outcome for the site is selected after liaising with representative stakeholders and the project team.		Ecologist				
Innovation Credit	Req 11	Criteria 8 to 10 are achieved.		Ecologist		Innovation credit - Insert Scoring into Section Below		
	Req 12	Report confirming that while determining the optimal ecological outcome for the site consider, in addition to those outlined in criteria 8 to 10, the wider site sustainability-related activities and the potential for ecosystem service related benefits.		Ecologist				
	Req 13	Following credits are achieved: 13.a - Hea07 - Achieved both credits 13.b - Pol03 - Achieved credits for 'Surface water run-off' and 'Minimising watercourse pollution' 13.c - Pol05 - Achieved credits		Ecologist				
LE 03		**Managing negative impacts on ecology - Pre-requisite**						
Pre-Requisite	Req 1	LE2 credit is achieved.		Ecologist		Pre-Requisite		
	Req 2	The client or contractor has confirmed that compliance is monitored against all relevant UK, and EU or International legislation relating to the ecology of the site		Ecologist		Pre-Requisite		
LE 03		**Part A: Managing negative impacts on ecology - Planning, liaison, implementation and data**						
1 credit	Req 3	Written confirmation that roles and responsibilities have been clearly defined, allocated and implemented to support successful delivery of project outcomes at an early enough stage to influence the concept design or design brief.		Ecologist	1	1		
	Req 4	Written confirmation/ Contract/ Program confirming that site preparation and construction works have been planned for and are implemented at an early project stage to optimise benefits and outputs.		Ecologist				
	Req 5	Specifications/ Drawings/ Report to confirm that the project team liaising and collaborating with representative stakeholders, taking into consideration data collated and shared, have implemented solutions, and measures have been selected (as per LE2), during site preparation and construction works.		Ecologist				
LE 03		**Part B: Managing negative impacts on ecology - Managing negative impacts of the project**						
1 credit OR	Req 6	**Route 1** (as identified within GN34) Criteria 3 and 4 have been achieved	N/A		2	2		
	Req 7	Written confirmation that negative impacts from site preparation and construction works have been managed according to the hierarchy and no overall loss of ecological value has occurred.	N/A					
OR								
	Req 7	**Route 2** (as identified within GN34) Criteria 3-5 have been achieved		Ecologist				
2 credits or	Req 8a	Written confirmation that negative impacts from site preparation and construction works have been managed according to the hierarchy and: - no overall loss of ecological value has occurred.		Ecologist				
1 credit	Req 8b	- the loss of ecological value has been minimised		Ecologist				
LE 04		**Change and Enhancement of Ecological Value - Pre requisite**						
Pre-Requisite	Req 1	LE 03 has been achieved. Including the following, specific to the aims of this issue: 1.a Roles and responsibilities have been clearly defined, allocated and implemented to support successful delivery of project outcomes 1.b 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.		Ecologist		Pre-Requisite		
Pre-Requisite	Req 2	The client or contractor confirms compliance is monitored against all relevant UK, EU or international legislation relating to the ecology of the site.		Ecologist		Pre-Requisite		
LE 04		**Part A: Change and Enhancement of Ecological Value - Enhancement of Ecology**						
1 credit OR	Req 3	**Route 1:** Specifications/ drawings/ site reports/ ecologist's report confirming that 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.	N/A		3	3		
LE04: ROUTE 1, PART A (above) OR ROUTE 2. PARTS A and B (below)								
LE 04		**Part A: Change and Enhancement of Ecological Value - Enhancement of Ecology**						
Up to 3 credits	Req 6	**Route 2:** Ecologist's report LE04 calculator confirming that 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 GN 36 - BREEAM, CEEQUAL, HQM Ecology Assessment Issues – Route 2 One credit for 75-94% Two credits for 95-104% Three credits 105-109%		Ecologist				
LE 04		**Part B: Change and Enhancement of Ecological Value - Liaison, implementation and data collation**						
1 Credit	Req 4	**Route 2:** A copy of the Ecology Report/ drawings/ specifications confirming that 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: 5.a On site; and where this is not feasible, 5.b Off site within the zone of influence.		Ecologist	1	1		
	Req 5	Confirmation that data collated is provided to the local environmental records centres nearest to, or relevant for, the site.		Ecologist				

Credit Ref	Criteria	Action required Further details can be provided by the Assessor upon request.	Evidence Status	Responsibility	Credits Available	Basic Credits: 74.45% (Excellent)	Additional Credits: 78.33% (Excellent)	Notes
Innovation credit	Req 7	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 Achieving a significant net gain of ecological value (Percentage score of over 110)		Ecologist		Innovation credit - Insert Scoring into Section Below		
LE 05		**Long term ecology management and maintenance - Pre requisite**						
Pre-Requisite	Req 1	Written confirmation that compliance is being monitored for all relevant UK, EU and international legislation relating to the ecology has been complied with during the design and construction process		Ecologist		Pre-Requisite		
	Req 2	Where pursued, LE 04 has been achieved, including the following specific aims of this issue: 2.a Roles and responsibilities have been clearly defined, allocated and implemented to support successful delivery of project outcomes. 2.b 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.		Ecologist		Pre-Requisite		
LE 05		**Part A: Long term ecology management and maintenance -Planning, liaison, data, monitoring and review management and maintenance**						
1 credit	Req 3	Minutes/ Specifications/ documents confirming the project team liaise and collaborate with representative stakeholders, taking into consideration data collated and shared, on solutions and measures implemented to: 3.a monitor and review implementation and the effectiveness 3.b develop and review management and maintenance solutions, actions or measures.		Ecologist	1	1		
	Req 4	Written confirmation/ contract/ specification confirming that team is committed to 4.a Monitoring and reporting of on the ecological outcomes for site implemented at the design and construction stage 4.b Monitoring and reporting of outcomes and successes from the project 4.c Arrangements for the ongoing management of landscape and habitat connected to the project (on and, where relevant, off site) 4.d Maintaining the ecological value of the site and its relationship or connection to its zone of influence 4.e Maintaining the site in line with the any sustainability linked activities, e.g. ecosystems benefits (LE 02). 4.f Remedial or other		Ecologist				
	Req 5	Written confirmation/ copy of information pack indicating that 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.		Client				
LE 05		**Part B: Long term ecology management and maintenance - Landscape and ecology management plan (or similar) development**						
1 credit	Req 6	A copy of the Landscape and ecology management plan, or similar, (or letter of commitment) is developed in accordance with BS 42020:2013 covering as a minimum the first five years after project completion and includes: 6.a Actions and responsibilities, prior to handover, to give to relevant individuals 6.b The ecological value and condition of the site over the development life. 6.c Identification of opportunities for ongoing alignment with activities external to the development project and which supports the aims of BREEAM's Strategic Ecology Framework 6.d Identification and guidance s to trigger appropriate remedial actions to address previously unforeseen impacts 6.e Clearly defined and allocated roles and responsibilities		Ecologist	1	1		
	Req 7	Confirmation that the landscape and management plan or similar will be updated as appropriate to support maintenance of the ecological value of the site		Ecologist				
				Totals	**13**	**12**	**1**	**0**
			Weighted	13.0%		**12.00%**	**1.00%**	**0.00%**
Pollution								
Pol 01		**Part A: Impact of Refrigerants**						
3 credits OR	Req 1	Documentation/ Written confirmation that building does not require the use of refrigerants within its installed plant/systems		M&E				
Pre - Requisite	Req 2	Specification/ Written confirmation that all systems will comply with the requirements of BS EN 378:2008 (part 2 and 3)and where refrigeration systems containing ammonia are installed, the Institute of Refrigeration Ammonia Refrigeration Systems Code of Practice.		M&E				
1 or 2 credits	Req 3	Specification/ Written confirmation that where air-conditioning or refrigeration systems are installed the refrigerants used have a Global Warming Potential (GWP) ≤10		M&E				
	Req 4	**OR** Specification/ Manufacturer literature confirming the following technical details of the refrigeration systems specified: a. Systems type/name b. R-number c. System capacity (kW) d. Total refrigerant change (kg) e. Operational life (yr) f. Refrigerant global warming potential g. Annual leakage rate (% refrigerant charge) h. Annual purge release factor (% refrigerant charge) i. Annual service release (% refrigerant charge) j. Probability factor of catastrophic failure (%) k. Refrigerant recovery efficiency (%)		M&E	2	2		
	Req 5	A copy of the output from the Pol01 calculator confirming the following: 1 credit - the refrigerants installed achieve a Direct Effect Life Cycle CO2 equivalent emissions of ≤1000 kgCO2e/kW cooling/heating capacity 2 credits - the refrigerants installed achieve a Direct Effect Life Cycle CO2 equivalent emissions of <100kgCO2e/kW cooling/heating capacity		M&E				
Pol 01		**Part B: Impact of Refrigerants - Leak detection**						
1 credit	Req 6	Specification/ Manufactures Literature/ Design Drawings/ Written confirmation that all systems are hermetically sealed or only use environmentally benign refrigerants (i.e. systems to have a tested leakage rate of less than 3 grams per year)		M&E				
	Req 7	Specification/ Manufactures Literature/ Written confirmation that where the systems are not hermetically sealed: 7.a Systems have: 7.a.i A permanent automated refrigerant leak detection system, that is robust and tested, and capable of continuously monitoring for leaks. OR 7.a.ii An inbuilt automated diagnostic procedure for detecting leakage is enabled. 7.b 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		M&E	1	1		
Pol 02		**Local Air Quality**						
2 credits	Req 1	Specification/ Contract **AND** Manufacturer's product details confirming that all heating and hot water is supplied by non-combustion systems. For example, only powered by electricity. OR		M&E				
	Req 2	Specification/ Contract and manufacturer's product details confirming that 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. The measurements provided by manufacturers, following the labelling requirements of the European directive 2009/125/EC. No credits can be awarded for Pol 02 if any of the combustion appliances are not covered in Table 12.4 below and Table 12.5		M&E	2	2		

Credit Ref	Criteria	Action required Further details can be provided by the Assessor upon request.	Evidence Status	Responsibility	Credits Available	Basic Credits: 74.45% (Excellent)	Additional Credits: 78.33% (Excellent)	Notes
Pol 03		**Flood and Surface Water Management - Pre-requisite**						
Pre-Requisite	Req 1a	Appointment letter/ correspondence confirming that a suitably qualified drainage consultant has been appointed to carry out, and demonstrate the developments compliance.		Civils		Pre-Requisite		
	Req 1b	Evidence/ Written confirmation that the drainage consultant is suitably qualified i.e. qualification, experience, professional membership		Civils		Pre-Requisite		
Pol 03		**Part A: Flood and Surface Water Management - Flood Resilience**						
2 credits	Req 2	A site specific Flood Risk Assessment (FRA) confirming that the assessed development is situated in a flood zone having a low annual probability of flooding. In order to comply the FRA must detail the risk of flooding from the following sources: 1. Fluvial (rivers) 2. Tidal 3. Surface water: sheet run-off from adjacent land (urban or rural) 4. Ground water: most common in low-lying areas underlain by permeable rock (aquifers) 5. Sewers: combines, foul or surface water sewers 6. Reservoirs, canals and other artificial sources The content should be based on historic trends but also account for predicted changes to the climate which may impact on the flood risk to the site in the future.		Civils	2	1		
1 credit	Req 3	**OR** A site specific Flood Risk Assessment (FRA) confirming that the assessed development is situated in a flood zone having a medium or high annual probability of flooding and is not within the Functional Floodplain		Civils				
	Req 4	4a. Design drawings confirming that the ground level of the building and access to both the building and the site, are designed (or zoned) so they are at least 600mm above the design flood level of the flood zone in which the assessed development is located Or 4b. Design drawings/ Specification/ Written confirmation that the final design of the building and the wider site reflects the recommendations made by an appropriate consultant in accordance with the hierarchy approach outlines in section 5 of BS 8533:2017		Civils				
Pol 03		**Part B: Flood and Surface Water Management - Surface water run off**						
Pre-Requisite	Req 5	Written confirmation that the surface water run-off design solutions are bespoke, i.e. they take account of the specific site requirements and natural or man-made environment of and surrounding the site.		Civils		Pre-Requisite		
1 credit	Req 6	Report/ Calculations confirming that drainage measures have been specified to ensure that the peak rate of run-off from the site to the watercourses (natural or municipal) for the developed sire shows 30% improvement than it was for the pre-development site for the 1-year AND 100 year return period events		Civils	1	1		
	Req 7	Documentation confirming the relevant maintenance agreements for the ownership, long term operation and maintenance of all specified SUDS are in place.		Civils				
	Req 8	Report/ Calculation confirming that an allowance has been made for climate change in accordance with current best practice planning guidance		Civils				
1 credit	Req 9	Report confirming that flooding of the property will not occur in the event of local drainage system failure		Civils	1	1		
	Req 9b	Drainage drawings confirming the proposed drainage solution, system failure flood flow routes, potential flood ponding levels and ground floor levels.		Civils				
	Req 10	**AND EITHER** Report/ Calculations confirming that the drainage measures specified ensure that the post development run-off volume, over the developments lifetime, is no greater than it would have been prior to the assessed site's development for the 100 year 6 hour event including an allowance for climate change		Civils				
	Req 11	Report/ Calculations confirming that any additional predicted volume of run-off for the 100 year 6 hour event including an allowance for climate change is prevented from leaving the site by using infiltration or other Sustainable Drainage Systems (SuDS) techniques.		Civils				
	Req 12	**OR** Written justification why criteria 10 and 11 above cannot be achieved i.e. where infiltration or other SUDs techniques are not technically viable options		Civils				
	Req 13	Report / Calculations confirming that the post development peak rate of run-off is reduced to a limiting discharge, defined as the highest flow rate from the following options: a. The pre development 1-year peak flow rate OR b. The mean annual flow rate Qbar OR c. 2l/s/ha Note: For the 1-year peak flow rate the 1-year return period event criterion applies		Civils				
	Req 14	Documentation confirming the relevant maintenance agreements for the ownership, long term operation and maintenance of all specified SUDS are in place		Civils				
	Req 15	Report/ Calculation confirming that an allowance has been made for climate change in accordance with current best practice planning guidance		Civils				
Pol 03		**Part C: Flood and Surface Water Management - Minimising water course pollution**						
1 credit	Req 16	Report/ Calculations confirming that there is no discharge from the developed site for rainfall up to 5mm.		Civils	1	1		
	Req 17	Design drawings/ Specification confirming area at low risk of watercourse pollution and the specification of appropriate Sustainable Drainage Systems (SUDs) or source control systems		Civils				
	Req 18	Design drawings/ Specification confirming areas at high risk of contamination or spillage of substances such as petrol and oil and the specification of separators (or an equivalent system) to the surface water drainage systems.		Civils				
	Req 19	Design drawings/ Specification confirming where there building has chemical/ liquid gas storage areas, a means of containment is fitted to the site drainage system to prevent the escape of chemicals to natural watercourses.		Civils				
	Req 20	Specification/ Written confirmation that All water pollution prevention systems have been designed and installed in accordance with the recommendations of documents such as the SuDS manual and other relevant industry best practice. They must be bespoke solutions taking account of the specific site requirements and natural or man-made environment of and surrounding the site.		Civils				

Credit Ref	Criteria	Action required Further details can be provided by the Assessor upon request.	Evidence Status	Responsibility	Credits Available	Basic Credits: 74.45% (Excellent)	Additional Credits: 78.33% (Excellent)	Notes
	Req 21	Correspondence/ Written confirmation that a comprehensive and up-to-date drainage plan of the site will be produced and made readily available for the building/site occupiers.		Civils				
	Req 22	Documentation confirming the relevant maintenance agreements for the ownership, long term operation and maintenance of all specified SUDS are in place		Civils				
	Req 23	Specification/ Written confirmation that all external storage and delivery areas are designed and detailed in accordance with the current best practice planning guidance		Civils				
Pol 04		**Reduction of night time light pollution**						
1 credit	Req 1	Specification/ Written confirmation where external lighting pollution has been eliminated through effective design that removed the need for external lighting without adversely affecting the safety and security of the site and its users **OR**		M&E	1	1		
	Req 2	Design Drawings/ Specification confirming the location and types of external light fittings and controls specified		M&E				
	Req 3	Specification/ Written confirmation that the external lighting strategy has been designed in compliance with ILP Guidance notes for the reduction of obtrusive light 2011		M&E				
	Req 4	Specification/ Written confirmation that all external lighting (except for safety and security lighting) can be automatically switched off between 23:00 and 07:00		M&E				
	Req 5	Specification/ Written confirmation that safety or security lighting will be used between 23:00 and 07:00 and comply with the lowers levels of lighting recommended during these hours in ILP's Guidance notes Table 2		M&E				
	Req 6	Specification/ Written confirmation that illuminated advertisements where specified will be designed in compliance with ILP PLG 5.		M&E				
Pol 05		**Reduction of noise pollution**						
1 credit	Req 1	Design drawings/ Written confirmation that there are no noise-sensitive areas or building within 800m of the assessed development **OR**		Acoustician	1	1		
	Req 2a	Design drawings confirming the following: 1. All existing and proposed noise-sensitive area or buildings local to and within the site boundary. 2. Proposed sources of noise from the new development. 3. Distance (m) from these noise-sensitive buildings to the assessed development.		Acoustician				
	Req 2b	Acousticians Report confirming that a noise impact assessment in compliance with BS 4142:2014 has been carried out and the following noise levels have been measured/determined: a. Existing background noise levels at the nearest or most exposed noise sensitive development including existing plant on a building, where the assessed development is an extension to the building b. The rating noise level resulting from the new noise source		Acoustician				
	Req 3a	Appointment letter/ correspondence confirming that a suitably qualified acoustician has been appointed to carry out a noise impact assessment		Acoustician				
	Req 3b	Evidence/ Written confirmation that the acoustician is suitably qualified i.e. holding a recognized acoustic qualification and membership of an appropriate professional body		Acoustician				
	Req 4	Acousticians Report confirming that 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.		Acoustician				
	Req 5a	Acoustician's Report confirming where the noise sources from the proposed site/building is greater than the levels required measures have been installed to attenuate the noise at its source to a level where it will comply		Acoustician				
	Req 5b	Design drawings highlighting the specification of the acoustician's attenuation measures		Acoustician				
	Req 5c	Specification/ Written confirmation that attenuation measures as recommended by the SQA will be installed		Acoustician / Client				
				Totals	**12**	**10**	**0**	**0**
			Weighted	8.0%		**6.67%**	**0.00%**	**0.00%**
Innovation								
Man 1	**Project brief and design (Simple buildings only)**				**1**			
Man 3	**Responsible Construction Practices**				**1**			
Hea 1	**Visual Comfort**				**1**			
Hea 2	**Indoor Air Quality**				**1**			
Hea 6	**Safety and Security**				**1**			
Ene 1	**Reduction of Energy Use and Carbon Emissions (Zero carbon)**			M&E	**3**			
Ene 1	**Energy Monitoring**				**2**			
Wat 1	**Water Consumption**				**1**			
Mat 1	**Life Cycle Assessment**				**3**			
Mat 3	**Responsible Sourcing of Materials**				**1**			
Wst 1	**Construction Site Waste Management**				**1**			
Wst 2	**Use of recycled and sustainably sourced aggregates**				**1**			
Wst 5	**Adaptation to Climate Change**			M&E	**1**			
LE 2	**Identifying and understanding the risks and opportunities for the project**			Ecologist	**1**			
Pol 3	**Pol 03 Flood and surface water management (Simple buildings only).**				**1**			
				Max	**10**	**0**	**0**	**0**
					10%	**0%**	**0%**	**0%**

	Basic	**Additional**	**Additional**
Total	**74.45%**	**3.87%**	**0.00%**
		78.33%	**3.87%**
	Excellent	**Excellent**	**Unclassified**

12.2 PAN09 Energy Efficiency Checklist

SECTION	INFORMATION	SECTION REFERENCE IN DOCUMENT
SUSTAINABLE BUILDINGS	Will the proposal implement nationally described standards such as a BREEAM rating of Excellent and/or Code for Sustainable Homes Level ?	4.4, 11 and Appendix
CARBON CALCULATIONS	Embodied Carbon (kg CO2e)	6.3
	Operational Energy (kWh/m2 /y)	6.1
	Potable Water Use (litre/person/day)	6.2
ENERGY EFFICIENCY	What measures are proposed to achieve energy efficiency over and above Building Regulation Standards. (Including insulation and Draft proofing)	6.1
THERMAL BRIDGING	-	6.1
MANAGEMENT OF SOLAR GAIN	-	6.1
VENTILATION AND HEAT RECOVERY SYSTEMS	-	6.1
RENEWABLE ENERGY	What measures are proposed to generate renewable energy, including energy storage?	6.1
MATERIALS	What measures are proposed to use construction materials with low environmental impact? (see Low Carbon Build)	6.3
TRANSPORT AND TRAVEL	What measures are proposed to reduce private vehicle use or emissions?	9.2
WATER USE	What measures are proposed to reduce water use?	6.2
LANDSCAPING	What measures are proposed to enhance the landscape value of the site and carbon absorption?	6.4
WASTE	What measures are proposed to use recyclable and non-recyclable was resulting from the development?	6.3

3ADAPT

People focused. Data informed.

James Rowan

Contact details: James@3ADAPT.com

07864 653602

www.3ADAPT.com

3ADAPT Ltd is a company registered in England and Wales. Registered number: 10754360. Registered office: 3ADAPT, Third Floor, Front Office, 33 Gay Street, Bath, BA1 2NT.

© 3ADAPT Ltd 2020