



ENVIRONMENTAL STANDARDS REPORT & BREEAM PRE-ASSESSMENT

SHERBORNE STREET TRADING ESTATE

PROPERTY ADDRESS

**SHERBORNE STREET,
MANCHESTER,
M8 8LR,**

DATE

JUNE 2022

PREPARED BY

EAL Consult



EAL Consult

Best Energy Compliance
Consultancy - London



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1. EXECUTIVE SUMMARY

This Sustainability statement has been prepared to support the planning application for the erection of new built Cash and Carry Trade Units in Manchester. The strategy highlights how the proposed development will promote sustainability through both design and operation and summarises the relevant regulatory and planning policies applicable and how the relevant policy targets will be addressed and achieved.

The strategy responds to the UK Planning and regulatory framework, the National Planning Policy Framework 2021, and Manchester Core Strategy 2012-2027

In accordance with the policies above, this statement outlines an overall commitment to reducing energy consumption under occupancy through the adoption of a 'Fabric First' principle, which will seek enhanced insulation standards and improved heating and lighting efficiencies in comparison to the standard requirements of Approved Document Part L2A 2013. Further carbon emission reduction can be achieved by using renewables (Photovoltaic panels).

Energy Efficiency & Carbon Reduction:

- Passive design principles including a high level of insulation and reduced air permeability to deliver Part L2A 2013 compliant Building in absence of renewable technologies. It will achieve **1.4%** reduction in carbon emissions over Part L2 baseline.
- Photovoltaic panels have been proposed for the specific scheme and will deliver a further **38.2%** reduction in regulated carbon emissions over Part L2 baseline when utilising the proposed carbon factor changes to building Regulations Part L.

Material and waste management:

- Minimising the use of virgin materials during construction by recycling and reusing where feasible.
- Low waste benchmark levels will be targeted during construction with requirements identifying that the diversion of waste from landfill is to be achieved by the contractor.

Recommendation and Results:

This report demonstrates that the proposed development by incorporating the measures above can achieve an average carbon emission reduction of **39.6% with the use of:**

- **Photovoltaic panels.**

The following tables demonstrate the carbon emissions and savings.

Table 1. Carbon Dioxide emissions after each stage of the Energy Hierarchy

	Regulated Carbon dioxide emissions (Tonnes CO ₂ per annum)	
	Regulated	Unregulated
Building Regs Notional Development	10.3	2.06
After Energy demand Reduction	10.16	2.06
After Renewables	6.22	2.06

Table 2. Carbon Dioxide Savings from each stage of the Energy Hierarchy

	Regulated Carbon dioxide savings (Tonnes CO ₂)	% Reduction
Savings from energy efficiency measures	0.12	1.4%
Savings from Renewables	3.93	38.2%
Total savings	4.08	39.6%

2. INTRODUCTION

Site description

The development is located on Sherborne Street Trading Estate. The development includes a Cash & Carry trade units with trade counter on the ground floor and storages on the first and seconds floors and associated car parking and bin stores.

Methodology

This energy assessment outlines the energy demand from the development together with the associated CO₂ emissions, using the present Building Regulations Part L as a baseline. It demonstrates how the emissions from energy use in the development will be reduced through energy efficiency measures.

The proposed scheme is required to achieve carbon emission reduction principles in accordance with the UK Planning and regulatory framework,

The methodology employed to determine the potential CO₂ savings is in accordance with the three-step Energy Hierarchy.

- **Be Lean** - Improve the energy efficiency of the scheme;
- **Be Clean** - Supply as much of the remaining energy requirement with low carbon; technologies such as district heating if available or combined heat and power (CHP); and
- **Be Green** - Offset a proportion of the remaining carbon dioxide emissions by using renewable technologies.

The government approved Standard Assessment Procedure (SBEM) methodology software (2013) has been used to determine the CO₂ emissions and energy requirements. It compares CO₂ emissions from regulated energy use (BER) with those of an equivalent Building built to Part L2A 2013 (TER), a notional building of the same size and shape. These calculations do not include emissions from cooking or appliances.

Opportunities for incorporating features into the development that contribute to the objectives of sustainable development were explored during the design process, to ensure that where possible, the proposals achieve best practice.

3. PLANNING POLICY CONTEXT

National Planning Policy Framework 2021 – emphasised the concept of sustainable development by encouraging local authorities to adopt proactive strategies to mitigate and adapt to climate change. It recommends the move to a low carbon future by:

- Avoiding increased vulnerability to the range of impacts arising from climate change. When new development is brought forward in areas which are vulnerable, care should be taken to ensure that risks can be managed through suitable adaptation measures, including through the planning of green infrastructure; and
- Contributing to reduce greenhouse gas emissions, such as through its location, orientation and design. Any local requirements for the sustainability of buildings should reflect the Government's policy for national technical standards.
- To help increase the use and supply of renewable and low carbon energy and heat, plans should:
 - provide a positive strategy for energy from these sources, that maximises the potential for suitable development, while ensuring that adverse impacts are addressed satisfactorily (including cumulative landscape and visual impacts);
 - consider identifying suitable areas for renewable and low carbon energy sources, and supporting infrastructure, where this would help secure their development; and
 - identify opportunities for development to draw its energy supply from decentralised, renewable or low carbon energy supply systems and for colocating potential heat customers and suppliers.

Manchester, Core Strategy – 2012 to 2027.

Policy EN4 – Reducing CO2 emissions by enabling low and zero carbon development

The Council will seek to reduce fuel poverty and decouple growth in the economy, growth in CO2 emissions, and rising fossil fuel prices, through the following actions:

- All development must follow the principle of the Energy Hierarchy, being designed:
 - to reduce the need for energy through design features that provide passive heating, natural lighting and cooling
 - to reduce the need for energy through energy efficient features such as improved insulation and glazing
 - to meet residual energy requirements through the use of low or zero carbon energy generating technologies
- Wherever possible new development and retrofit projects, including energy generation plant, must be located and designed in a manner that allows advantage to be taken of opportunities for low and zero carbon energy supplies.
- Where possible new development and retrofit projects will be used as a mechanism to help improve energy efficiency and provide low and zero carbon energy supplies to existing buildings.
- Where appropriate new development and retrofit projects will be required to connect to and/or make contributions to low or zero carbon energy schemes and/or to incorporate provision to enable future connection to any existing / potential decentralised energy schemes.

- The use of building materials with low embodied carbon in new development and refurbishment schemes.

Policy EN6 – Target Framework for CO2 reductions from low or zero carbon energy supplies

Applications for residential development of 10 or more units and all other development over 1,000 sqm will be expected as a minimum to meet the target shown in Tables 12.1 or 12.2, unless this can be shown not to be viable. This should be demonstrated through an energy statement, submitted as part of the Design and Access Statement. Such a statement will be expected to set out the projected regulated energy demand and associated CO2 emissions for all phases of the development.

Developments smaller than the above threshold, but involving the erection of a building or substantial improvement to an existing building will also be expected to meet the minimum target, where viable, but will not be expected to submit an energy statement.

The target framework relates to three broad development locations and their potential for low and zero carbon, decentralised energy. The areas are defined as follows:

- Target 1 Network development areas: Locations where the proximity of new and existing buildings, the mix of uses and density of development provide the right conditions to support district heating (and cooling).
- Target 2 Electricity intense areas: Locations where the predominant building type has an all-electric fit-out such as retail units and leisure complexes.
- Target 3 Micro-generation areas: Locations where lower densities and a fragmented mix of uses tend to mean that only building scale solutions are practical.

Policy EN7 – Energy Infrastructure Opportunities

There will be a general presumption in favour of low and zero carbon decentralised energy schemes, subject to the following considerations:

- That any new generating plant capable of producing heat and cooling as well as electricity should be located in a way that facilitates future connection to a local distributed energy system.
- That any energy centre, including generating plant, standby/boiler plant and substations, shall be located and designed to a high quality so as to integrate with and contribute to the townscape.
- Biofuels should be obtained from sustainable sources and processes and in a way that minimises transport impacts, following a sequential approach in order to minimise CO2 emissions – firstly prioritising local and regional sources, followed by national, European and international.
- Consideration should be given to biofuel delivery by rail and waterways where possible. Where large-scale fuel or feedstock delivery is required by road the energy centre must be located in or adjacent to light industrial, industrial or leisure uses with any impact on local residential amenity minimised.
- The cumulative impact of energy schemes will be taken into account when considering applications, to include modelled impacts on air quality and landscape character, with reference to Policy EN16.
- Flood risk, through the Manchester-Salford-Trafford Strategic Flood Risk Assessment.

Policy EN8 – Adaptation to Climate Change

All new development will be expected to be adaptable to climate change in terms of the design, layout, siting and function of both buildings and associated external spaces. In achieving

developments which are adaptable to climate change developers should have regard to the following, although this is not an exhaustive list:

- Minimisation of flood risk by appropriate siting, drainage, and treatment of surface areas to ensure rain water permeability
- Reduction in urban heat island effect through the use of Green Infrastructure such as green roofs, green walls, increased tree cover and waterways
- The need to control overheating of buildings through passive design
- The opportunity to provide linked and diverse green space to enhance natural habitats which will assist species adaptation

4. ENERGY STRATEGY

The Energy strategy for the proposed housing is based on the Building Regulations Part L2A; it adopts a set of principles to guide design and decisions regarding energy, balanced with the need to optimise environmental and economic benefits. It seeks to incorporate energy efficiency through the approach detailed below.

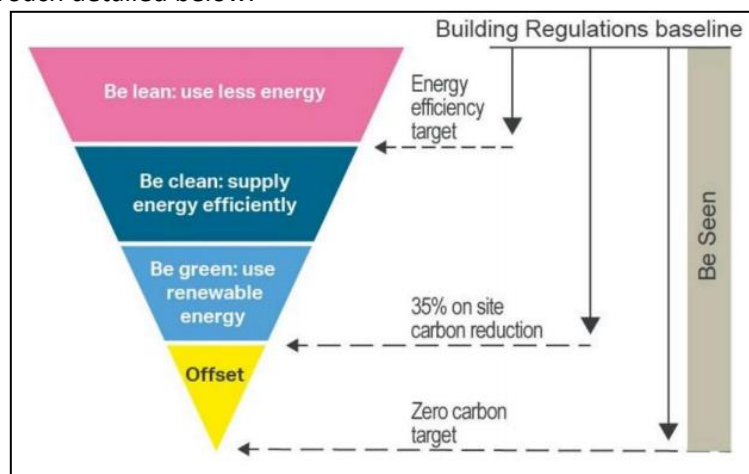


Figure 1. Energy Hierarchy

Be 'Lean' - Demand Reduction

The building fabric performance and engineering systems have been optimised in order to use less energy prior to the inclusion or consideration of Low and Zero Carbon (LZC) Technology.

Through passive design measures, efficient building fabric and engineering systems the building is estimated to achieve **1.4%** reduction in annual regulated CO₂ emissions over Part L2A benchmark, therefore demonstrating compliance with Building Regulations Through passive means alone without the utilisation of renewable technologies.

Passive Design Measures:

Fabric Performance - The fabric performance values aim to reduce unwanted heat loss and heat gains, whilst maintaining a comfortable internal environment.

Table 3. Fabric energy Efficiency Standard

Thermal element	Part L2A Minimum Standard
Wall	0.26W/m ² k
Roof	0.18 W/m ² k
Floor	0.18 W/m ² k
Glazing	1.6 W/m ² k
Doors	1.6 W/m ² k

The heat loss of different building elements is dependent upon their U –value. A building with low U values provides better levels of insulation and reduced heating demand.

The development will incorporate high levels of insulation and efficient glazing; thereby reduce demand for space heating. The table below shows the U values for the development and the associated improvements over Building Regulations.

Table 4. Energy Efficient design Specification

Element	Part L2A	Proposed
Wall	0.28 W/m ² k	0.15W/m ² k
Floor	0.18W/ m ² k	0.17W/m ² k
Roof	0.18 W/ m ² k	0.12 W/ m ² k
Glazing	1.6 W/ m ² k	1.4 W/ m ² k

Space Heating & Cooling - Space heating could be provided by underfloor heating

Efficient Lighting and Controls - Throughout the development natural lighting will be optimised. The development will also incorporate low energy light fittings throughout. All light fittings will be specified as low energy lighting and will accommodate compact fluorescent (CFLs) or fluorescent luminaires only. Internal areas that are not frequently used will be fitted with occupant sensors.

Ventilation - The use of mechanical ventilation is proposed.

Domestic hot water (DHW) system – domestic hot water is supplied via the boiler and cylinder.

Be 'Clean' – Supply Energy Efficiently

The Be Clean step of the energy hierarchy refers to the use of 'Clean energy supply'. This includes, but is not limited to, the use of Combined Heat and Power (CHP) and District Heat Networks. Policy TP1 seeks for new development to promote the use of CHP and district heating.

District Heating and Cooling

There is no existing or planned heat and energy network in the vicinity and the site does not fall into an opportunity area with decentralised energy potential.

Community heating and Combined Heat and Power (CHP system)

CHP systems are usually needed where there is a large heat demand (schemes with more than 100-150 dwellings), usually resulting from the building(s) being in continuous use, or through specific heating requirements such as a swimming pool. Community (or district) heating involves using a

central boiler plant (or other heat sources) to heat a number of buildings through a network of well-insulated underground pipes. This system is not considered appropriate for this development

In light of the small scale of the proposed development, it is apparent that the use of CHP is also technically and financially unviable in this instance.

Site-wide communal system/network and design for district network connection

In light of the small scale of the proposed development and its location; it is apparent that the use of a heatpump fed sitework network is technically and financially unviable.

Be 'Green' - Renewable Energy

Once energy demand reduction measures have been applied, methods for generating low and zero carbon energy can be assessed. The following renewable technologies can be considered for the project: Biomass, Water source heat pump, air source heat pump, Wind energy and solar photovoltaic panels.

Table 5. Renewable Technologies Feasibility Table

Technology	Pros	Cons
Biomass Heating A biomass system designed for wood pellets, which have a high-energy content, would fuel this development. 	• Less volume of storage • Less maintenance and produce considerably less ash residue	• Nox Emissions which may impact • High Costs • Not suitable for the project
Ground Source Heat Pump It circulates a mixture of water and antifreeze around a loop of pipe, called a ground loop, which is buried in the garden. Heat from the ground is absorbed into the fluid and passes through a heat exchanger into the heat pump. 	• Use all through the year	• High Costs • Not suitable for this project

Air Source Heat Pump They are an efficient and environmentally-friendly way of heating using air drawn freely from the atmosphere. They operate rather like a refrigerator in reverse, absorbing heat from the air into a working fluid which is passed into a compressor where its temperature is increased before it is transferred into the heating and hot water circuits of the building	• Can generate less CO₂ than conventional heating systems. • Cheaper • Provides heating and hot water • Less maintenance • Can be used as air-conditioning in the summer	• Needs electricity • Can be noisy
Wind Turbines Wind turbines are available in various sizes from large rotors able to supply whole communities to small roof or wall-mounted units for individual dwellings. 	• Cheaper • Less CO₂	• Local wind speeds in the area is likely to be below the level generally required for investment in large wind turbines. • Noise and signal interference. • Detrimental aesthetic impact
Solar Photovoltaic Panels (PV) Photovoltaic panels extract the energy of the sun to generate electricity. They operate most efficiently when oriented to the south and are inclined to about 35 degrees. 	• Cheaper • Less CO₂ • No input power in order to generate electricity.	• Not suitable for conservative areas

Renewable Technologies Feasibility Review Conclusion

The renewable energy sources that have been reviewed for this project are Biomass Heating, Ground Source Heat Pump, Air Source Heat Pump, Domestic Wind Turbine and Solar Photovoltaic Panels (PV).

On review of the above technologies, it has been concluded that the use of Photovoltaic Panels is to be incorporated in the design because it achieves a CO₂ percentage reduction of **38.2%** contributing to an overall reduction of **39.6%** in carbon emissions.

Table 6. Photovoltaic Panels

	System size	Pitch	Orientation	No of Panels	Area
Sherborne St	10 kWp	Horizontal	South facing	40	64m ²

5. Environmental Performance

The proposed project incorporates sustainable design and construction measures capable of mitigating and adapting to climate change to meet future needs. This section details site-specific initiatives which demonstrate how the conversion helps to meet the sustainability objectives set out in the National Planning Framework 2021.

Energy Use and Pollution

The design of the development has taken into consideration day lighting to habitable spaces to improve the wellbeing of occupants. Good levels of daylight will offer occupants a pleasant and highly valued connection to the outdoors and plenty of natural light. It will also reduce the use of artificial lighting and therefore energy use. All light fittings will be specified as low energy lighting.

No external lighting is required. The location and orientation of windows help to create a design that avoids overheating in the summer.

Pollution: Air, Noise and Light

The layout of the development can provide good internal air quality for habitable areas but not too much so as to waste heat. The use of openable windows will create horizontal airflow. By achieving a good naturally ventilated building the energy demand for air conditioning and mechanical ventilation will thereby be eliminated within the development.

The development will not increase the air pollution of the area by reducing as a start, its energy consumption, which in turn will reduce emissions that lead to air pollution.

Other measures will include:

- a. Use of eco-friendly building materials
- b. Non-toxic paints
- c. Installation of energy efficient appliances and devices
- d. Use of renewable technologies

Light pollution can best be described as artificial light that is allowed to illuminate or intrude upon areas not intended to be lit. Light in the wrong place at the wrong time can be intrusive.

Intrusive light is over bright or poorly directed lights shining onto neighbouring property which affect the neighbours' right to enjoy their property. Therefore, the proposal will incorporate lighting measures in order to avoid causing a nuisance.

Water: Water Efficiency

In domestic and non-domestic buildings, the demand for water can be reduced as much as 50% using a variety of simple and innovative strategies that are integrated into the plumbing and mechanical systems. In order to reduce water consumption the proposed development will include efficient fixtures with low flow rates. Total internal water consumption will not exceed 105 litres/person/day.

- A water efficiency strategy will be determined for the development. This will include 'A' rated appliances
- Specification of efficient water fixtures throughout the scheme (low flow taps and showers, dual flush WCs).
- The landscaped areas of the development will be irrigated solely by precipitation throughout all seasons of the year to reduce unregulated water consumption.

Pollution

All contractors would be required to sign up to the nationally recognised Considerate Constructors Scheme which requires, amongst other things that dust emissions, potential noise pollution, impacts on water quality and the potential for ground contamination are minimised during demolition and

construction. The Contractor would also be obliged to adhere to a site specific Code of Construction Practice to reduce potential nuisance effects.

Waste

A space for reuse and recycling has been included at of the ground floor unit for the tenants exclusive use.

Flood Risk

The development site is located in a Low Flood Risk Area on the Environment Agency Flood Risk Map.

Biodiversity

The proposed development will incorporate measures to support and enhance the environment through consideration of the existing site, including measures to mitigate the impact of the development and enhance site biodiversity.

6. Circular economy

Materials efficiency

Materials can have a significant impact on environmental performance, both in construction but also ongoing use. Materials used for the building will have lower environmental impacts over their lifecycle. This applies to the materials used in the external walls, roof and glazing. This extends to elements of the materials category such as the basic building materials (internal walls) and the finishing elements (fascia, skirting, and furniture).

It is expected that all timber used in the development will come from a legal Source (FSC Scheme). At least 80% of the building materials will be responsibly sourced and will use suppliers who can provide an EMS certificate or equivalent. Materials rated with an A or B in the BRE Green Guide to Specification will be preferred.

Other measures will be implemented:

- The reuse of existing materials from the demolition of existing buildings
- At least 20% of the total value of materials used should derive from recycled and reused content in the products and materials selected;
- Steel will have a high recycled content;
- Concrete will have a Ground Granulated Blast Furnace Slag (GGBS) value of 50%.

Resource efficiency

- Pre-demolition audit to be carried out and target benchmark of ≤ 11.1 tonnes of construction waste per 100m²;

Diversion of waste from landfill

- Where possible, segregation of recyclable and non-recyclable material will be employed for all waste generated throughout the construction process. Furthermore, material will be re-used on-site where feasible;
- Pre-fabrication of materials/elements such as bathroom pods, pipework and riser materials will be considered;
- Reusable packing solutions with key product manufacturers will be explored at the earliest opportunity. Solutions may include flat pallets, bulk bags, steel stillages and returnable cable drums;
- Construction waste – minimum 80% diversion from landfill rate;
- Demolition waste – minimum 90% diversion from landfill rate;
- Operational waste – Target diversion from landfill rate to be set.

7. BREEAM Pre-assessment

This section presents the BREEAM pre-assessment for the development to support the planning application.

The development will be assessed under BREEAM New Construction 2018. The pre-assessment outlined in this report demonstrates that the proposed development could achieve a BREEAM **'Excellent'** rating with a minimum score of **76.42%**. This is subject to a complete package of compliant evidence being submitted to the licensed BREEAM Assessor.

Further credits may be achieved with significant cost implications that may not be financially beneficial for this development.

The relevant design team members should assess each of the credits that have been awarded to confirm and provide comments upon their validity.

Table 7 outlines the credits targeted:

Table 7. Summary of credit targeted

Credit Allocation	Weighting	Credits Available	Credits Targeted	%Score
Management	11%	18	13	7.94%
Health and Wellbeing	8%	11	7	5.09%
Energy	14%	19	15	11.05%
Water	12%	12	10	9.58%
Materials	7%	8	6	5.25%
Waste	18%	14	9	11.25%
Pollution	7%	10	7	4.90%
Innovation	10%	10	1	1.00%
Total				72.46%

The Appendix II highlights the BREEAM credits that have been awarded for the proposed change of use, which is deemed likely to achieve a BREEAM rating of **'Excellent'**.

We understand the pre-assessment will be submitted as part of the planning application and we recommend that the client is satisfied with the assumptions made and the approach taken at this stage are reasonable.

8. CONCLUSION

The development has been designed to exceed Part L2A building regulations requirements. In line with the national and local policies, regulated CO₂ emissions from the development will be reduced by **39.2%** from the notional emissions once energy efficiency measures and lean measures are taken into account.

In order to achieve the required carbon emissions reduction, the report concludes and proposes the use of energy efficient measures outlined in the section 4 of this report.

An appraisal of the proposed development has been undertaken against key sustainability objectives identified from relevant policy guidance. The framework for the appraisal was guided by the National Plan. This process has ensured that the development responds to the sustainable development objectives that are relevant to the area. Key sustainability initiatives in ecology, waste management, water, health and wellbeing, materials, pollution and Surface water management have been incorporated in the design of the proposed Development.

However, this assessment concludes that the use Photovoltaic Panels has been considered as the most suitable and appropriate solution for the specific proposed development.

BREEAM

A preliminary score of **72.46%** can be achieved for the proposed development. This equates to a **‘Excellent’** rating and it is assumed that the mandatory minimum standards for this rating will be met.

9. APPENDIX

- I. SAP Calculations
- II. BREEAM PRE-Assessment

Project name

Shell and Core

Sherborne Street

As designed

Date: Tue Jun 21 14:02:15 2022

Administrative information

Building Details

Address: Sherborne Street Trading Estate, Sherborne
Street, MANCHESTER, M8 8LR

Certification tool

Calculation engine: SBEM

Calculation engine version: v5.6.b.0

Interface to calculation engine: Lifespan SBEM

Interface to calculation engine version: v5.6.a

BRUKL compliance check version: v5.6.b.0

Certifier details

Name: Mark Simons

Telephone number: 020 8930 5668

Address: 17 Dobree Avenue, London, NW10 2AD

Criterion 1: The calculated CO₂ emission rate for the building must not exceed the target

CO ₂ emission rate from the notional building, kgCO ₂ /m ² .annum	14.4
Target CO ₂ emission rate (TER), kgCO ₂ /m ² .annum	14.4
Building CO ₂ emission rate (BER), kgCO ₂ /m ² .annum	8.7
Are emissions from the building less than or equal to the target?	BER ≤ TER
Are as built details the same as used in the BER calculations?	Separate submission

Criterion 2: The performance of the building fabric and fixed building services should achieve reasonable overall standards of energy efficiency

Values which do not achieve the standards in the Non-Domestic Building Services Compliance Guide and Part L are displayed in red.

Building fabric

Element	U _a -Limit	U _a -Calc	U _i -Calc	Surface where the maximum value occurs*
Wall**	0.35	0.15	0.15	"GF01 RETAILS SPACE/North-West/Wall-External"
Floor	0.25	0.28	0.45	"GF01 RETAILS SPACE/Ceiling"
Roof	0.25	-	-	"No heat loss roofs"
Windows***, roof windows, and rooflights	2.2	1.4	1.4	"GF01 RETAILS SPACE/North-West/Wall-External/Glazing"
Personnel doors	2.2	-	-	"No external personnel doors"
Vehicle access & similar large doors	1.5	-	-	"No external vehicle access doors"
High usage entrance doors	3.5	-	-	"No external high usage entrance doors"
U _a -Limit = Limiting area-weighted average U-values [W/(m ² K)] U _a -Calc = Calculated area-weighted average U-values [W/(m ² K)] U _i -Calc = Calculated maximum individual element U-values [W/(m ² K)]				
* There might be more than one surface where the maximum U-value occurs. ** Automatic U-value check by the tool does not apply to curtain walls whose limiting standard is similar to that for windows. *** Display windows and similar glazing are excluded from the U-value check. N.B.: Neither roof ventilators (inc. smoke vents) nor swimming pool basins are modelled or checked against the limiting standards by the tool.				

Air Permeability	Worst acceptable standard	This building
m ³ /(h.m ²) at 50 Pa	10	10

Building services

The standard values listed below are minimum values for efficiencies and maximum values for SFPs. Refer to the Non-Domestic Building Services Compliance Guide for details.

Whole building lighting automatic monitoring & targeting with alarms for out-of-range values	NO
Whole building electric power factor achieved by power factor correction	<0.9

1- Boiler

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	0.9	-	-	-	-
Standard value	0.91*	N/A	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					NO
* Standard shown is for gas single boiler systems <=2 MW output. For single boiler systems >2 MW or multi-boiler systems, (overall) limiting efficiency is 0.86. For any individual boiler in a multi-boiler system, limiting efficiency is 0.82.					

1- HWP > Boiler

	Water heating efficiency	Storage loss factor [kWh/litre per day]
This building	Hot water provided by HVAC system	-
Standard value	N/A	N/A

Local mechanical ventilation, exhaust, and terminal units

ID	System type in Non-domestic Building Services Compliance Guide
A	Local supply or extract ventilation units serving a single area
B	Zonal supply system where the fan is remote from the zone
C	Zonal extract system where the fan is remote from the zone
D	Zonal supply and extract ventilation units serving a single room or zone with heating and heat recovery
E	Local supply and extract ventilation system serving a single area with heating and heat recovery
F	Other local ventilation units
G	Fan-assisted terminal VAV unit
H	Fan coil units
I	Zonal extract system where the fan is remote from the zone with grease filter

Zone name	SFP [W/(l/s)]										HR efficiency	
ID of system type	A	B	C	D	E	F	G	H	I		Zone	Standard
Standard value	0.3	1.1	0.5	1.9	1.6	0.5	1.1	0.5	1			
GF02 TOILETS	1.5	-	-	-	-	-	-	-	-	-	-	N/A

Shell and core configuration

Zone	Assumed shell?
GF02 TOILETS	NO
GF03 CIRCULATION	NO
FF01 STORAGE SPACE	NO
FF02 CIRCULATION	NO
SF01 STORAGE SPACE	NO
SF02 CIRCULATION	NO
GF04 CIRCULATION	NO
GF01 RETAILS SPACE	NO

General lighting and display lighting

Zone name	Luminous efficacy [lm/W]			General lighting [W]
	Luminaire	Lamp	Display lamp	
Standard value	60	60	22	
GF02 TOILETS	-	100	-	85

General lighting and display lighting		Luminous efficacy [lm/W]		
Zone name		Luminaire	Lamp	Display lamp
	Standard value	60	60	22
GF03 CIRCULATION		-	100	-
FF01 STORAGE SPACE		50	-	-
FF02 CIRCULATION		-	100	-
SF01 STORAGE SPACE		50	-	-
SF02 CIRCULATION		-	100	-
GF04 CIRCULATION		-	100	-
GF01 RETAILS SPACE		-	102	50
				3100

Criterion 3: The spaces in the building should have appropriate passive control measures to limit solar gains

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
GF01 RETAILS SPACE	NO (-65.6%)	NO

Criterion 4: The performance of the building, as built, should be consistent with the calculated BER

Separate submission

Criterion 5: The necessary provisions for enabling energy-efficient operation of the building should be in place

Separate submission

EPBD (Recast): Consideration of alternative energy systems

Were alternative energy systems considered and analysed as part of the design process?	NO
Is evidence of such assessment available as a separate submission?	NO
Are any such measures included in the proposed design?	NO

Technical Data Sheet (Actual vs. Notional Building)

Building Global Parameters

	Actual	Notional
Area [m ²]	715.4	715.4
External area [m ²]	1752.7	1752.7
Weather	MAN	MAN
Infiltration [m ³ /hm ² @ 50Pa]	10	4
Average conductance [W/K]	486.83	481.35
Average U-value [W/m ² K]	0.28	0.27
Alpha value* [%]	9.98	16.88

* Percentage of the building's average heat transfer coefficient which is due to thermal bridging

Building Use

% Area	Building Type
100	A1/A2 Retail/Financial and Professional services
	A3/A4/A5 Restaurants and Cafes/Drinking Est./Takeaways
	B1 Offices and Workshop businesses
	B2 to B7 General Industrial and Special Industrial Groups
	B8 Storage or Distribution
	C1 Hotels
	C2 Residential Institutions: Hospitals and Care Homes
	C2 Residential Institutions: Residential schools
	C2 Residential Institutions: Universities and colleges
	C2A Secure Residential Institutions
	Residential spaces
	D1 Non-residential Institutions: Community/Day Centre
	D1 Non-residential Institutions: Libraries, Museums, and Galleries
	D1 Non-residential Institutions: Education
	D1 Non-residential Institutions: Primary Health Care Building
	D1 Non-residential Institutions: Crown and County Courts
	D2 General Assembly and Leisure, Night Clubs, and Theatres
	Others: Passenger terminals
	Others: Emergency services
	Others: Miscellaneous 24hr activities
	Others: Car Parks 24 hrs
	Others: Stand alone utility block

Energy Consumption by End Use [kWh/m²]

	Actual	Notional
Heating	8.6	7.88
Cooling	0	0
Auxiliary	1.4	0.18
Lighting	22.17	24.58
Hot water	0.59	0.58
Equipment*	6.88	6.88
TOTAL **	32.75	33.23

* Energy used by equipment does not count towards the total for consumption or calculating emissions.

** Total is net of any electrical energy displaced by CHP generators, if applicable.

Energy Production by Technology [kWh/m²]

	Actual	Notional
Photovoltaic systems	10.55	0
Wind turbines	0	0
CHP generators	0	0
Solar thermal systems	0	0

Energy & CO₂ Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m ²]	214.35	195.41
Primary energy* [kWh/m ²]	83.55	84.45
Total emissions [kg/m ²]	8.7	14.4

* Primary energy is net of any electrical energy displaced by CHP generators, if applicable.

HVAC Systems Performance										
System Type	Heat dem MJ/m2	Cool dem MJ/m2	Heat con kWh/m2	Cool con kWh/m2	Aux con kWh/m2	Heat SSEFF	Cool SSEER	Heat gen SEFF	Cool gen SEER	
[ST] No Heating or Cooling										
	Actual	183	25.6	0	0	1	0	0	0	0
	Notional	161.3	30.9	0	0	0.3	0	0	----	----
[ST] Central heating using water: floor heating, [HS] LTHW boiler, [HFT] Natural Gas, [CFT] Electricity										
	Actual	84.2	143.8	29.1	0	2.4	0.8	0	0.9	0
	Notional	82.7	120.3	26.7	0	0	0.82	0	----	----

Key to terms

Heat dem [MJ/m2]	= Heating energy demand
Cool dem [MJ/m2]	= Cooling energy demand
Heat con [kWh/m2]	= Heating energy consumption
Cool con [kWh/m2]	= Cooling energy consumption
Aux con [kWh/m2]	= Auxiliary energy consumption
Heat SSEFF	= Heating system seasonal efficiency (for notional building, value depends on activity glazing class)
Cool SSEER	= Cooling system seasonal energy efficiency ratio
Heat gen SSEFF	= Heating generator seasonal efficiency
Cool gen SSEER	= Cooling generator seasonal energy efficiency ratio
ST	= System type
HS	= Heat source
HFT	= Heating fuel type
CFT	= Cooling fuel type

Key Features

The Building Control Body is advised to give particular attention to items whose specifications are better than typically expected.

Building fabric

Element	U _{i-Typ}	U _{i-Min}	Surface where the minimum value occurs*
Wall	0.23	0.15	"GF01 RETAILS SPACE/North-West/Wall-External"
Floor	0.2	0.12	"GF01 RETAILS SPACE/Floor-External"
Roof	0.15	-	"No heat loss roofs"
Windows, roof windows, and rooflights	1.5	1.4	"GF01 RETAILS SPACE/North-West/Wall-External/Glazing"
Personnel doors	1.5	-	"No external personnel doors"
Vehicle access & similar large doors	1.5	-	"No external vehicle access doors"
High usage entrance doors	1.5	-	"No external high usage entrance doors"
U _{i-Typ} = Typical individual element U-values [W/(m²K)]		U _{i-Min} = Minimum individual element U-values [W/(m²K)]	
* There might be more than one surface where the minimum U-value occurs.			

Air Permeability	Typical value	This building
m³/(h.m²) at 50 Pa	5	10

Project name

Shell and Core

Sherborne Street

As designed

Date: Tue Jun 21 14:00:12 2022

Administrative information

Building Details

Address: Sherborne Street Trading Estate, Sherborne
Street, MANCHESTER, M8 8LR

Certification tool

Calculation engine: SBEM

Calculation engine version: v5.6.b.0

Interface to calculation engine: Lifespan SBEM

Interface to calculation engine version: v5.6.a

BRUKL compliance check version: v5.6.b.0

Certifier details

Name: Mark Simons

Telephone number: 020 8930 5668

Address: 17 Dobree Avenue, London, NW10 2AD

Criterion 1: The calculated CO₂ emission rate for the building must not exceed the target

CO ₂ emission rate from the notional building, kgCO ₂ /m ² .annum	14.4
Target CO ₂ emission rate (TER), kgCO ₂ /m ² .annum	14.4
Building CO ₂ emission rate (BER), kgCO ₂ /m ² .annum	14.2
Are emissions from the building less than or equal to the target?	BER ≤ TER
Are as built details the same as used in the BER calculations?	Separate submission

Criterion 2: The performance of the building fabric and fixed building services should achieve reasonable overall standards of energy efficiency

Values which do not achieve the standards in the Non-Domestic Building Services Compliance Guide and Part L are displayed in red.

Building fabric

Element	U _a -Limit	U _a -Calc	U _i -Calc	Surface where the maximum value occurs*
Wall**	0.35	0.15	0.15	"GF01 RETAILS SPACE/North-West/Wall-External"
Floor	0.25	0.28	0.45	"GF01 RETAILS SPACE/Ceiling"
Roof	0.25	-	-	"No heat loss roofs"
Windows***, roof windows, and rooflights	2.2	1.4	1.4	"GF01 RETAILS SPACE/North-West/Wall-External/Glazing"
Personnel doors	2.2	-	-	"No external personnel doors"
Vehicle access & similar large doors	1.5	-	-	"No external vehicle access doors"
High usage entrance doors	3.5	-	-	"No external high usage entrance doors"
U _a -Limit = Limiting area-weighted average U-values [W/(m ² K)] U _a -Calc = Calculated area-weighted average U-values [W/(m ² K)] U _i -Calc = Calculated maximum individual element U-values [W/(m ² K)] * There might be more than one surface where the maximum U-value occurs. ** Automatic U-value check by the tool does not apply to curtain walls whose limiting standard is similar to that for windows. *** Display windows and similar glazing are excluded from the U-value check. N.B.: Neither roof ventilators (inc. smoke vents) nor swimming pool basins are modelled or checked against the limiting standards by the tool.				

Air Permeability	Worst acceptable standard	This building
m ³ /(h.m ²) at 50 Pa	10	10

Building services

The standard values listed below are minimum values for efficiencies and maximum values for SFPs. Refer to the Non-Domestic Building Services Compliance Guide for details.

Whole building lighting automatic monitoring & targeting with alarms for out-of-range values	NO
Whole building electric power factor achieved by power factor correction	<0.9

1- Boiler

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	0.9	-	-	-	-
Standard value	0.91*	N/A	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					NO
* Standard shown is for gas single boiler systems <=2 MW output. For single boiler systems >2 MW or multi-boiler systems, (overall) limiting efficiency is 0.86. For any individual boiler in a multi-boiler system, limiting efficiency is 0.82.					

1- HWP > Boiler

	Water heating efficiency	Storage loss factor [kWh/litre per day]
This building	Hot water provided by HVAC system	-
Standard value	N/A	N/A

Local mechanical ventilation, exhaust, and terminal units

ID	System type in Non-domestic Building Services Compliance Guide
A	Local supply or extract ventilation units serving a single area
B	Zonal supply system where the fan is remote from the zone
C	Zonal extract system where the fan is remote from the zone
D	Zonal supply and extract ventilation units serving a single room or zone with heating and heat recovery
E	Local supply and extract ventilation system serving a single area with heating and heat recovery
F	Other local ventilation units
G	Fan-assisted terminal VAV unit
H	Fan coil units
I	Zonal extract system where the fan is remote from the zone with grease filter

Zone name	SFP [W/(l/s)]										HR efficiency	
ID of system type	A	B	C	D	E	F	G	H	I		Zone	Standard
Standard value	0.3	1.1	0.5	1.9	1.6	0.5	1.1	0.5	1			
GF02 TOILETS	1.5	-	-	-	-	-	-	-	-	-	-	N/A

Shell and core configuration

Zone	Assumed shell?
GF02 TOILETS	NO
GF03 CIRCULATION	NO
FF01 STORAGE SPACE	NO
FF02 CIRCULATION	NO
SF01 STORAGE SPACE	NO
SF02 CIRCULATION	NO
GF04 CIRCULATION	NO
GF01 RETAILS SPACE	NO

General lighting and display lighting

Zone name	Luminous efficacy [lm/W]			General lighting [W]
	Luminaire	Lamp	Display lamp	
Standard value	60	60	22	
GF02 TOILETS	-	100	-	85

General lighting and display lighting		Luminous efficacy [lm/W]		
Zone name		Luminaire	Lamp	Display lamp
	Standard value	60	60	22
GF03 CIRCULATION		-	100	-
FF01 STORAGE SPACE		50	-	-
FF02 CIRCULATION		-	100	-
SF01 STORAGE SPACE		50	-	-
SF02 CIRCULATION		-	100	-
GF04 CIRCULATION		-	100	-
GF01 RETAILS SPACE		-	102	50
				3100

Criterion 3: The spaces in the building should have appropriate passive control measures to limit solar gains

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
GF01 RETAILS SPACE	NO (-65.6%)	NO

Criterion 4: The performance of the building, as built, should be consistent with the calculated BER

Separate submission

Criterion 5: The necessary provisions for enabling energy-efficient operation of the building should be in place

Separate submission

EPBD (Recast): Consideration of alternative energy systems

Were alternative energy systems considered and analysed as part of the design process?	NO
Is evidence of such assessment available as a separate submission?	NO
Are any such measures included in the proposed design?	NO

Technical Data Sheet (Actual vs. Notional Building)

Building Global Parameters

	Actual	Notional
Area [m ²]	715.4	715.4
External area [m ²]	1752.7	1752.7
Weather	MAN	MAN
Infiltration [m ³ /hm ² @ 50Pa]	10	4
Average conductance [W/K]	486.83	481.35
Average U-value [W/m ² K]	0.28	0.27
Alpha value* [%]	9.98	16.88

* Percentage of the building's average heat transfer coefficient which is due to thermal bridging

Building Use

% Area Building Type

100	A1/A2 Retail/Financial and Professional services
	A3/A4/A5 Restaurants and Cafes/Drinking Est./Takeaways
	B1 Offices and Workshop businesses
	B2 to B7 General Industrial and Special Industrial Groups
	B8 Storage or Distribution
	C1 Hotels
	C2 Residential Institutions: Hospitals and Care Homes
	C2 Residential Institutions: Residential schools
	C2 Residential Institutions: Universities and colleges
	C2A Secure Residential Institutions
	Residential spaces
	D1 Non-residential Institutions: Community/Day Centre
	D1 Non-residential Institutions: Libraries, Museums, and Galleries
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Energy Consumption by End Use [kWh/m²]

	Actual	Notional
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Auxiliary	1.4	0.18
Lighting	22.17	24.58
Hot water	0.59	0.58
Equipment*	6.88	6.88
TOTAL **	32.75	33.23

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** Total is net of any electrical energy displaced by CHP generators, if applicable.

Energy Production by Technology [kWh/m²]

	Actual	Notional
Photovoltaic systems	0	0
Wind turbines	0	0
CHP generators	0	0
Solar thermal systems	0	0

Energy & CO₂ Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m ²]	214.35	195.41
Primary energy* [kWh/m ²]	83.55	84.45
Total emissions [kg/m ²]	14.2	14.4

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HVAC Systems Performance										
System Type	Heat dem MJ/m2	Cool dem MJ/m2	Heat con kWh/m2	Cool con kWh/m2	Aux con kWh/m2	Heat SSEFF	Cool SSEER	Heat gen SEFF	Cool gen SEER	
[ST] No Heating or Cooling										
	Actual	183	25.6	0	0	1	0	0	0	0
	Notional	161.3	30.9	0	0	0.3	0	0	----	----
[ST] Central heating using water: floor heating, [HS] LTHW boiler, [HFT] Natural Gas, [CFT] Electricity										
	Actual	84.2	143.8	29.1	0	2.4	0.8	0	0.9	0
	Notional	82.7	120.3	26.7	0	0	0.82	0	----	----

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Key Features

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* There might be more than one surface where the minimum U-value occurs.			

Air Permeability	Typical value	This building
m³/(h.m²) at 50 Pa	5	10

BREEAM UK NC 2018 Tracker
Sherborne Street
BREEAM NC 2018 Pre-Assessment

		Rating	Baseline Score				Responsible Party	Stage limitation	
Targeted Credits		Unclassified <30%							
Potential Credits		Pass ≥ 30%	72.46%						
Not targeted Credits		Good ≥ 45%	Excellent						
		Very Good ≥ 55%							
		Excellent ≥ 70%							
		Outstanding ≥ 85%							
Credits Available	Baseline Credits	Credit Issue	Title	Assessment Criteria	Notes				
18	13	Management [0.61% per credit]							
4	4	Man 01	Project brief and design	1 credit: Prior to completion of RIBA stage 2, the project delivery stakeholders meet to identify roles, responsibilities and contributions. 1 credit: Prior to completion of RIBA stage 2, the design team consult with all interested parties on matters that cover the BREEAM minimum consultation content. Pre Requisite for BREEAM AP credits (Concept and Developed Design - RIBA stage 2-3) The project team, including the client, formally agree strategic performance targets early in the design process (with the support of the BREEAM AP). 1 credit: BREEAM AP (RIBA stage 2): Involve a BREEAM AP in the project at an appropriate time and level to work with and assist the team in maximising the project’s overall performance against BREEAM. 1 credit: BREEAM AP (RIBA stage 3): The first BREEAM AP credit is achieved AND the a BREEAM AP is involved in the project to monitor progress against the performance targets throughout all stages.	1st credit: A project brief has been prepared. The key stakeholders of the project should be identified and consultation meeting should be held prior to completion of stage 2. In defining the roles and responsibilities for each key phase of the project, the following must be considered: a. End user requirements b. Aims of the design and design strategy c. Particular installation and construction requirements / limitations d. Occupiers budget and technical expertise in maintaining any proposed systems e. Maintainability and adaptability of the proposals f. Requirements for the production of project and end user documentation g. Requirements for commissioning, training and aftercare support. 2nd credit: Consult 3rd party. See in BREEAM NC 2018 manual, page 39 for minimum consultation content. The project brief to demonstrate the stakeholders' contributions prior to completion of stage 2. The project brief should demonstrate that consultation feedback has been provided to all relevant parties prior to completion of stage 4.	Project Manager	RIBA stage 2 (Stakeholder and 3rd party consultation. BREEAM AP and agreed targets) RIBA stage 3 and 4 (BREEAM AP reports)		
4	1	Man 02	Life cycle cost and service life planning	2 credits: At RIBA stage 2 - An elemental life cycle cost (LCC) analysis 1 credit: At RIBA stage 4 - a component level LCC analysis. The results of the analysis and consideration of LCC have been implemented. The component level LCC includes (where present): a Envelope, e.g. cladding, windows, or roofing b Services, e.g. heat source, cooling source, or controls c Finishes, e.g. walls, floors or ceilings d External spaces, e.g. alternative hard landscaping, boundary protection. 1 credit: Report the capital cost for the building in pounds per m²	LCC studies: Elemental and component level life cycle cost (LCC) studies should be carried out in line with 'Standardised method of life cycle costing for construction procurement' PD 156865:2008. 4th credit: The capital cost of the building should include the expenses related to the initial construction of the building: - Construction, including preparatory works, materials, equipment and labour - Site management - Construction financing - Insurance and taxes during construction - Inspection and testing Costs related to land procurement, clearance, design, statutory approvals and post occupancy aftercare should not be included.	Cost Consultant	RIBA stage 2 (Elemental LCC study) RIBA stage 4 (Component level LCC)		

Credits Available	Baseline Credits		Credit Issue	Title	Assessment Criteria	Notes	Responsible Party	Stage limitation
6	6		Man 03	Responsible construction practices	Prerequisite: All timber to be 'legally harvested and traded timber' 1 credit: All parties who at any stage manage the construction site (e.g. the principal contractor, the demolition contractor) operate an EMS and implement best practice pollution prevention policies and procedures on site in accordance with PPG6. 1 credit: Appoint a BREEAM AP sustainability champion during construction. Targets are formally agreed with the client. Up to 2 credits (Mandatory credits): The principal contractor evaluates the risks (on site and off site), plans and implements actions to minimise the identified risks, covering the following categories (vehicle movement, pollution management, tidiness, health & wellbeing, security, training awareness and feedback & monitoring and reporting). 1 credit: Monitor, record and report energy and water consumption during construction. 1 credit: Monitor, record and report transport (construction materials & waste) during the construction phase.	1st credit: The EMS must be third party certified, to ISO 14001: 2015(10), EMAS (EU Eco-Management and Audit Scheme) or equivalent standard. Refer also to GN 33 - Responsible construction management.	Project Manager/ Contractor	N/A
4	2		Man 04	Commissioning and handover	1 credit (Mandatory credit): Commissioning and testing schedule and responsibilities 1 credit: Specialist commissioning manager appointed during design stage to undertake design reviews, provide commissioning management and performance testing input 1 credit: Testing and inspecting building fabric 1 credit (Criterion 11-Mandatory requirement): Prior to handover, develop <u>two building user guides</u> for technical and non technical users. A draft copy is developed and discussed with users first (where the building occupants are known) to ensure the guide is most appropriate and useful to potential users. Prepare two training schedules timed appropriately around handover and proposed occupation plans for non technical and technical building occupiers.	2nd credit: To achieve the second credit the first credit must also be achieved. 3rd credit: BREEAM also requires that any defects identified in the thermographic survey or the air tightness testing reports to be rectified prior to building handover and close out. Any remedial work <u>must</u> meet the required performance characteristics for the building/element.	Project Manager / Commissioning manager / Contractor	Specialist commissioning manager to be appointed by end of RIBA stage 4.
N/A	N/A	N/A	Man 05	Aftercare	Credits N/A to Shell and Core assessments		-	
Weighting		11.0%						

Credits Available	Baseline Credits	Credit Issue	Title	Assessment Criteria	Notes	Responsible Party	Stage limitation
11	7	Health and Wellbeing [0.73% per credit]					
4	1	Hea 01	Visual comfort	1 credit: Appropriate glare control is installed (N/A For shell and core or shell only) 2 credits: Day lighting (Achieve specified average Daylight Factor (DF) requirement - building type dependent) Note: Daylight factor thresholds dependent on building types. 1 credit: 95% of floor area in 95% of each relevant spaces is within 8m of external wall. Window opening is 20% of the surrounding wall area, or where the room depth is greater than 8m, window opening is as per table 1 of BS 8206:part 2. 1 credit: - Internal lighting provides lux levels in line with SLL Code for lighting 2012 and CIBSE Guide 7 (N/A to shell only / shell and core) - External lighting design complies with BS5489-1:2013+ BS EN 12464-2:2014 - Internal lighting is appropriately zoned to allow for occupant control (N/A to shell only / shell and core)	Glare control strategy credit is not applicable to Shell & Core assessments. DF: 2 credits available for office buildings. The requirement is for: - <u>all occupied areas</u> to achieve a DF≥2% (80% min. area to comply) AND either {UR ≥ 0.30 or (min. point DF≥ 0.3 * 0.02) or [(At least 80% of the room has a view of sky from desk top height (0.7m)) AND [the room depth criterion is satisfied (d/w+D/HW < 2/(1-RB))]} Internal lighting levels, zoning and control is not applicable to shell and core assessments.	Electrical engineer	N/A
1	1	Hea 02	Indoor air quality	Pre requisite to achieve credits within this issue: - Indoor air quality plan is produced 1 credit: Building design ensures minimum concentration and recirculation of pollutants in the building via fresh air provision in accordance with relevant standard for ventilation. 2 credits (N/A for S&C assessments): Three out of the five product types meet the emission limits, testing requirements and any additional requirements listed in Table 5.11 OR up to 2 credits: All of the product types listed meet the emission limits, testing requirements and any additional requirements listed in Table 5.11 1 credit (N/A for S&C assessments): VOC emission levels (post construction) and formaldehyde concentration level do not exceed certain limits (testing & measurement according to ISO 1600 & ISO 16017	For the Indoor Air Quality Plan refer also to GN 06 For ventilation credit: Applicable to Shell and Core : Provide fresh air into the building in accordance with the criteria of the relevant standard for ventilation (BS ISO 17772-1:2017) N/A for S&C assessments: (b) ventilation pathways are designed to minimise the ingress and build-up of air pollutants inside the building (c) HVAC filtration according to BS EN 16798-3:2017 (d) specify CO₂ or air quality sensors in spaces with large/variable occupancy	MEP	N/A
2	2	Hea 04	Thermal comfort	1 credit: Thermal modelling as per CIBSE AM11 1 credit: Thermal comfort criteria for the projected climate change environment 1 credit (N/A for S&C assessments): Thermal comfort zoning and control strategy informed by the thermal modelling analysis		Specialist consultant (TBC)	N/A

Credits Available	Baseline Credits		Credit Issue	Title	Assessment Criteria	Notes	Responsible Party	Stage limitation
1	1		Hea 05	Acoustic performance	1 credit: The building meets the appropriate acoustic performance standards and testing requirements defined in the relevant tables OR A suitably qualified acoustician (SQA) is appointed to define a bespoke set of performance requirements for all function areas in the building for the following principles: 1.a Sound insulation (N/A for S&C assessments) 1.b Indoor ambient noise level 1.c Room acoustics (N/A for S&C assessments)	The acoustician should confirm indoor ambient levels will comply with the design ranges given in BS 8233:2014 for general room functions and section 7.5 of BS 8233:2014 for any acoustically sensitive rooms. A programme of pre-completion acoustic testing is carried out by a compliant test body.	Acoustician (TBC)	N/A
1	1		Hea 06	Security	1 credit: A Security Needs Assessment (SNA) to be produced by a suitably qualified security specialist (SQSS) at RIBA stage 2. The SQSS will develop a set of recommendations which should be implemented into the building design.	The SNA minimum content requirements are: 1. A visual audit of the site and surroundings identifying environmental cues and features pertinent to security of the proposed development. 2. Formal consultation with relevant stakeholders, including the local ALO, CPDA and CTSA (as applicable), in order to obtain a summary of crime and disorder issues in the immediate vicinity of the proposed development. 3. Identify risks specific to the proposed, likely or potential use of the buildings. 4. Identify risks specific to the proposed, likely or potential user groups of the buildings. 5. Identify any detrimental effects the development may have on the existing community.	Security Consultant / Architect	RIBA stage 2 (SNA report)
2	1		Hea 07	Safe and healthy surroundings	1 credit: - Dedicated and safe cycle paths are provided from the site entrance to any cycle storage and connect to offsite cycle paths where applicable. - Dedicated and safe footpaths are provided on and around the site providing suitable links - Pedestrian drop-off areas are designed off, or adjoining to, the access road and should provide direct access to other footpaths. - Delivery areas are not accessed through general parking areas and do not cross external amenity and cycling routes 1 credit where outside amenity space is provided.	2nd credit: Outside spaces should be of appropriate size based on the predicted number of building users during coffee or lunch breaks to gather, socialise, relax and connect with nature. The outside space must: - be outdoor landscaped area, e.g. Garden, balcony, terrace - be open to the sky - have appropriate seating areas - be non-smoking - be accessible by all building users - avoid areas that have disturbances from noise	-	-
Weighting		8.0%						

Credits Available	Baseline Credits	Credit Issue	Title	Assessment Criteria	Notes	Responsible Party	Stage limitation
19	15	Energy [0.67% per credit]					
13	10	Ene 01	Reduction of energy use and carbon emissions	Up to 9 credits (Mandatory credits: 4 for Excellent, 6 for Outstanding rating): Calculate an Energy Performance Ratio for New Constructions (EPR_{NC}). 4 credits: - Relevant members of the design team hold a preliminary design workshop focusing on operational energy performance. - Undertake additional energy modelling during the design and post-construction stage to generate predicted operational energy consumption - Report predicted energy consumption targets by end use, design assumptions and input data (with justifications). - Carry out a risk assessment to highlight any significant design, technical, and process risks that should be monitored and managed throughout the construction and commissioning process.	BREEAM pre-assessment tool Inputs (from EPC): - Building floor area (m²) - Notional building heating and cooling energy demand (MJ/m²yr) - Actual building heating and cooling energy demand (MJ/m²yr) - Notional building primary energy consumption (kWh/m²yr) - Actual building primary energy consumption (kWh/m²yr) - Target emission rate (TER) (kgCO₂/m²yr) - Building emission rate (BER) (kgCO₂/m²yr) For the operational energy performance credits refer to GN 32. For the calculation of the energy performance credits please refer to GN 39.	Energy consultant	
2	2	Ene 02	Energy monitoring	1 credit (Mandatory credit): Energy metering systems for 90% of the estimated annual energy consumption of each fuel 1 credit: Energy sub-meters with pulsed output for future tenants	Metering strategy guidance: CIBSE TM39 Building energy metering Where applicable the following energy consuming systems should be sub-metered: Space heating, DHW, Humidification, Cooling, Ventilation (i.e. fans), Pumps, Lighting, Small power, Renewable, Low carbon systems, Controls, other major energy consuming systems/plant (e.g. cold storage).	MEP Engineer	N/A
1	1	Ene 03	External lighting	1 credit: External lighting meets the following: a. Average initial luminous efficacy of not less than 70 luminaire lumens per circuit Watt b. Automatic control to prevent operation during daylight hours c. Presence detection in areas of intermittent pedestrian traffic.		MEP	N/A

Credits Available	Baseline Credits		Credit Issue	Title	Assessment Criteria	Notes	Responsible Party	Stage limitation
3	2		Ene 04	Low carbon design	1 credit: Hea 04 criterion1 achieved + passive design solutions analysis at RIBA stage 2 1 credit: Above + free cooling strategies 1 credit: LZCT feasibility study (by RIBA stage 2)	As a minimum, the passive design analysis should cover: Site location Site weather Microclimate Building layout Building orientation Building form Building fabric Thermal mass or other fabric thermal storage Building occupancy type Daylighting strategy Ventilation strategy Adaptation to climate change The free cooling analysis should demonstrate consideration of the following technologies: Night time cooling (which could include the use of a high exposed thermal mass) Ground coupled air cooling Displacement ventilation (not linked to any active cooling system) Ground water cooling Surface water cooling Evaporative cooling, direct or indirect Desiccant dehumidification and evaporative cooling, using waste heat Absorption cooling, using waste heat. For low and zero carbon feasibility study BREEAM 2018 recognises energy storage as applicable technology. Minimum content is required.	Sustainability	RIBA stage 2 (Passive and LZC feasibility studies)
N/A	N/A		Ene 05	Energy efficient cold storage	Not applicable to this project			
N/A	N/A		Ene 06	Energy efficient transportation systems	Not applicable to this project			
N/A	N/A		Ene 07	Energy efficient laboratory systems	Not applicable to this project		-	
N/A	N/A		Ene 08	Energy efficient equipment	N/A to shell and core assessments		-	
Weighting		14.0%						

Credits Available	Baseline Credits	Credit Issue	Title	Assessment Criteria	Notes	Responsible Party	Stage limitation
12	10	Transport [0.96% per credit]					
2	2	Tra 01	Transport assessment and travel plan	2 Credits: Before end of RIBA stage 2 undertake a site-specific transport assessment. Based on the site-specific transport assessment develop a travel plan based on a site-specific travel assessment or statement. The travel plan includes a package of measures to encourage the use of sustainable modes of transport and movement of people and goods during the building's operation and use. The travel plan will be implemented post construction and be supported by the building's management in operation.	The site specific travel assessment/statement should cover the following (as a minimum): a. Where relevant, existing travel patterns and opinions of existing building or site users towards cycling and walking so that constraints and opportunities can be identified. b. Travel patterns and transport impact of future building users. c. Current local environment for walkers and cyclists (accounting for visitors who may be accompanied by young children). d. Disabled access (accounting for varying levels of disability and visual impairment). e. Public transport links serving the site. f. Current facilities for cyclists. A travel plan is still required even if the end user/occupier is not known. The developer must confirm that they will hand over a copy of the travel plan to the building's future tenants/occupier, so that it may inform their own travel plan/strategy.	Transport consultant	RIBA stage 2 Transport Assessment
10	8	Tra 02	Sustainable transport measures	Up to 10 credits available: Identify sustainable transport measures and award credits according to the Accessible Index (AI) of the project and the total number of points achieved for the options implemented.	Prerequisite - Achieve the Tra 01 Transport assessment and travel plan credits. Feasible measures for this site can be: 1. AI calculated ≥ 8 (1 point) 2. Demonstrate increase in AI through increased frequency or new/diverted bus routes (negotiations with local bus companies required). (2-3 points) 3. Public transport information system in publicly accessible area. (1 point) 4. Electric recharging stations of a minimum of 3 kW for at least 10% of the total car parking (1 point) 5. Car sharing group, raise awareness of the group, priority spaces for car shares for at least 5% of the total car parking capacity of the development, priority parking in close proximity of main entrance for car sharing group participants. (1 point) 6. Consult Local Authority (LA) on the state of local cycling network and public pedestrian routes and improve the one most applicable to the development. Agree and implement a proposition which is additional to local plans and has significant impact. (2 points) 7. Compliant cycle storage spaces (1 point) 8. Option 7 achieved AND provide at least two compliant cyclist's facilities (showers, changing facilities, lockers, drying spaces). (1 point) 9. At least three existing accessible amenities are present within 500m (cash machine, food outlet, public outdoor space, recreation or leisure facility for fitness/sports, post office, community facility, pharmacy, child care facility) (1 point) 10. Ensure one or more new accessible amenities (2-3 points) 11. Implement one site-specific improvement, not covered in the above options, in line with recommendations of the travel plan.	Architect/ Transport consultant	N/A
Weighting		11.5%					

Credits Available	Baseline Credits		Credit Issue	Title	Assessment Criteria	Notes	Responsible Party	Stage limitation
8	6		Water [0.78% per credit]					
5	3		Wat 01	Water consumption	Mandatory: 1 credit for excellent, 2 credits for outstanding 1 credit: 12.5% Improvement over baseline case 2 credits: 25% Improvement over baseline case 3 credits: 40% Improvement over baseline case 4 credits: 50% Improvement over baseline case 5 credits: 55% Improvement over baseline case	Fill in Wat 01 calculator to confirm no. of credits. Indicative maximum flow rates proposed: - WC: 3.5 litres (effective flush volume) - Hand basin taps: 3 litres/min - Showers: 5 litres/min - Urinals: 0.75 litres/bowl/hour - Kitchen taps (kitchenette): 3.75 litres/min - Kitchen taps (pre-rinse nozzles only): 6.30 litres/min - Domestic sized dishwashers: 10 litres/cycle - Waste disposal unit: 0 litres/minute - Commercial sized dishwashers: 4 litres/rack *In shell and core assessments only the fixtures specified by the developer/landlord account for calculations for Wat 01 points	Architect	N/A
1	1		Wat 02	Water monitoring	1 credit (Criterion 1-Mandatory requirement): Specifying a water meter, with pulsed output, on the mains water supply to each building (including borehole or other source). Water-consuming plant or building areas, (with 10% or more of the total water demand) fitted with sub meters or water monitoring equipment. Each meter to have pulsed/other protocol communication output to enable connection to a utility monitoring/BMS system.	Only water-consuming plant/building areas identifiable by the developer should be included in the assessment of this issue.	NDY - PH engineer	N/A
2	2		Wat 03	Water leak detection	1 credit: A compliant leak detection system is specified or installed on the building's water supply. 1 credit: Flow control devices are fitted to each WC area/facility according to demand.	The leak detection system must be: - A permanent automated water leak detection system that alerts the building occupants to the leak OR an inbuilt automated diagnostic procedure for detecting leaks is installed. - Activated when the flow of water passing through the water meter/data logger is at a flow rate above a pre-set maximum for a pre-set period of time. - Able to identify different flow and therefore leakage rates, e.g. continuous, high and/or low level, over set time periods. - Programmable to suit the owner/occupiers' water consumption criteria. - Where applicable, designed to avoid false alarms caused by normal operation of large water-consuming plant such as chillers.	PH engineer	N/A
Weighting		7.0%						

Credits Available	Baseline Credits	Credit Issue	Title	Assessment Criteria	Notes	Responsible Party	Stage limitation
14	9	Materials [1.25% per credit]					
7	4	Mat 01	Environmental impacts from construction products - Building life cycle assessment (LCA)	Up to 6 credits (Superstructure) During the Concept Design (RIBA stage 2): 1a. Carry out a building LCA of the superstructure design using either the BREEAM Simplified Building LCA tool or an IMPACT Compliant LCA tool according to the 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). Comparison with the BREEAM benchmark during Technical Design (offices, industrial and retail buildings only) 2a. During Technical Design, demonstrate the environmental performance of the building 2b. 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. Option appraisal during Concept Design (all building types) 3 For offices, industrial and retail building types, achieve criterion 1 (except where Notes 1.0, 1.1 and 1.2 above apply). 4.a Carry out building LCA options appraisal of 2 to 4 significantly different superstructure design options 4.b Use a building LCA tool that is recognised by BREEAM (as suitable for assessing superstructure during Concept Design). 4.c For each design option, fulfil the same functional requirements specified by the client and all statutory requirements (to ensure functional equivalency). 1 credit: During Concept Design identify opportunities for reducing environmental impacts of <u>Substructure and hard landscaping</u>. - 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).	LCA needs to commence as soon as possible during design stage 2 and results to be submitted to BRE before planning application.	Sustainability consultant	RIBA stage 2 (Interim LCA results to be submitted to BRE)
1	1	Mat 02	Environmental impacts from construction products - Environmental Product Declarations (EPD)	1 credit: Specify construction products with EPD that achieve a total EPD points score of at least 20	0.5 points: EPD applicable to more than one product in the same product category, and more than one manufacturer. 0.75 points: EPD applicable to more than one product in the same product category, and a single manufacturer. 1.75 points: EPD applicable to a single product*, and a single manufacturer (the product may be manufactured in more than one location) *Or variations of a single product that only differ in terms of colour or pattern.	Architect	N/A

Credits Available	Baseline Credits		Credit Issue	Title	Assessment Criteria	Notes	Responsible Party	Stage limitation
4	2		Mat 03	Mat 03 Responsible sourcing of construction products	Pre-requisite (Mandatory requirement): Confirmation that all timber used on the project is sourced in accordance with the UK Government's Timber Procurement Policy. 1 credit: A sustainable procurement plan implemented by concept design must be used by the design team to guide specification towards sustainable construction products. Up to 3 credits: Based on the achieved Responsible Sourcing of Materials (RSM) points: 1 credit: superstructure >10% of RSM points 2 credits: superstructure as above, internal finishes and substructure& hard landscaping >20% of RSM points 3 credits: superstructure as above, internal finishes and substructure& hard landscaping >30% of RSM points	Architect/Contractor to confirm no. of credits targeted. Suggestion: Architect to coordinate with contractor, check BRE's acceptable RS schemes <http://www.breeam.org/filelibrary/Guidance%20Notes/80652---GN18-V2-0-Final.pdf> and fill in Mat 03 calculator	Architect	RIBA stage 2 (Sustainable Procurement Plan)
1	1		Mat 05	Designing for durability and resilience	1 credit: Protect vulnerable parts of the building from damage and exposed parts of the building from material degradation A. Durability and protection measures: a. Protection from the effects of high pedestrian traffic in main entrances, public areas and thoroughfares (corridors, lifts, stairs, doors etc.). b. Protection against any internal vehicular/trolley movement within 1m of the internal building fabric in storage, delivery, corridor and kitchen areas. c. Protection against, or prevention from, any potential vehicular collision within 1m of the external building façade for all car parking areas and within 2m for all delivery areas. B. Key exposed building elements limit long and short term degradation due to environmental factors: a. Comply with an appropriate quality or durability standard or design guide / Use BS 7543:2015(172 as the default appropriate standard. OR b. Detailed assessment of the element's resilience when exposed to the applicable material degradation and environmental factors. Include convenient access to the roof and façade for cost-effective cleaning, replacement and repair in the building's design. Design the roof and façade to prevent water damage, ingress and detrimental ponding.	Durability or quality standards and design guides - Table 9.14 of BREEAM NC 2018 manual provides list of relevant industry durability or quality standards per type of material Convenient access Access to the roof and façade is safe and convenient for routine maintenance, cleaning and repair. A façade access strategy designed in line with CIRIA guide C686 would be considered compliant. If access to the majority of the façade requires contracting on a one-off basis an external firm with specialist equipment, or specialist access professionals it would not generally be considered to be convenient. Key exposed building element Those adding up to at least 80% by area of each of the following categories: 1. External walls and cladding 2. Roof or balconies 3. Glazing: windows, skylights 4. Hard landscaping	Architect	N/A
1	1		Mat 06	Material efficiency assessment scope	1 credit: Identify and implement measures at each RIBA stage to optimise the use of materials in building design, procurement, construction, maintenance and end of life. Report the targets and actual material efficiencies achieved.	Examples of material efficiency opportunities 1. Increasing the utilisation factor of structural members 2. Designing to standard material dimensions to reduce off-cuts and waste on site 3. Removing redundant materials from the design 4. Using materials that can be recycled or reused at the end of their service life 5. Making use of recycled or reclaimed materials 6. Designing for deconstruction and material reuse 7. Using pre-fabricated elements where appropriate to reduce material waste 8. Consider using an 'exposed thermal mass' design strategy to reduce finishes 9. Avoiding over-specification of predicted loads 10. Using lightweight structural design strategies 11. Making use of bespoke structural elements where this will reduce overall material use 12. 'Rationalisation' of structural elements 13. Optimising the foundation design for embodied environmental impact.	Architect	Actions should be carried out at all RIBA stages (starting during RIBA stage 1)
Weighting		17.5%						

Credits Available	Baseline Credits	Credit Issue	Title	Assessment Criteria	Notes	Responsible Party	Stage limitation
10	7	Waste [0.64% per credit]					
5	4	Wst 01	Construction waste management	1 credit: Complete a pre-demolition audit by RIBA stage 2 of any existing buildings, structures or hard surfaces being considered for demolition. This must be used to determine whether refurbishment or reuse is feasible. Up to 3 credits: Resource Management Plan (RMP) developed Amount of non-hazardous on-site/off-site construction waste (m³/100m² or tonnes/100m²) generated: 1 credit: 13.3 m³/100m² / 11.1 tonnes/100m² 2 credits: 7.5 m³/100m² / 6.5 tonnes/100m² 3 credits: 3.4 m³/100m² / 3.2 tonnes/100m² 1 credit: Diversion of resources from landfill Demolition = 80% by volume / 90% by tonnage Non-demolition = 70% by volume / 80% by tonnage One credit under Wst01 is Mandatory for outstanding		Project Manager/ Contractor	RIBA stage 2 Pre-demolition audit
1	0	Wst 02	Use of recycled and sustainably sourced aggregate	Prerequisite: If demolition occurs on site, to encourage the reuse of site-won material on site, complete a pre-demolition audit of any existing buildings, structures or hard surfaces One credit - Project Sustainable Aggregate Points: Achieve between 3.5 - 6 points	Project Sustainable Aggregate Points: 1. Identify all aggregate uses and types on the project 2. Determine the quantity in tonnes for each identified use and aggregate type. 3. Identify the region in which the aggregate source is located. 4. Calculate the distance in kilometres travelled by all aggregates by transport type. 5. Enter the information into the BREEAM Wst 02 calculator to calculate the Project Sustainable Aggregate points.	Structural engineer	N/A
1	1	Wst 03	Operational waste	1 credit (Mandatory credit) Dedicated, clearly labelled, accessible and of appropriate capacity space(s) is/are provided for the segregation and storage of operational recyclable waste volumes. Static waste compactor(s) or baler(s), composting, if applicable.	Waste management facilities: A minimum of 2m² for buildings < 5000m². An additional 2m² per 1000m² of net floor area where catering is provided (with an additional minimum of 10m² for buildings ≥ 5000m²) Internal storage areas: Where the facilities are situated internally, vehicular gate heights/widths and manoeuvring and loading space must be sized to ensure ease of access for vehicles collecting recyclable materials. General Waste: The area for storage of recyclable materials must be provided in addition to areas and facilities provided for dealing with general waste and other waste management facilities, e.g. compactors, balers and composters.	Architect	N/A
N/A	N/A	Wst 04	Speculative floor and ceiling finishes	N/A	N/A		

Credits Available	Baseline Credits		Credit Issue	Title	Assessment Criteria	Notes	Responsible Party	Stage limitation
1	0		Wst 05	Adaptation to climate change	1 credit: Climate change adaptation strategy appraisal for structural and fabric resiliency at RIBA Stage 2. The assessment covers the installation of building services and renewable systems, as well as structural and fabric resilience aspects and includes: 1.a.i Hazard identification 1.a.ii Hazard assessment 1.a.iii Risk estimation 1.a.iv Risk evaluation 1.a.v Risk management. Develop recommendations or solutions based on the climate change adaptation strategy appraisal, before or during Concept Design, that aim to mitigate the identified impact. Provide an update during Technical Design demonstrating how the recommendations or solutions proposed at Concept Design have been implemented where practical and cost effective. Omissions have been justified in writing by the assessor.		Structure Engineer	RIBA stage 2 (Climate change adaptation Study) RIBA stage 4 (Climate change implementation study)
2	2		Wst 06	Design for disassembly and adaptability	1 credit 1. Conduct a study to explore the ease of disassembly and the functional adaptation potential of different design scenarios by the end of Concept Design (Stage 2). 2. Develop recommendations or solutions based on the study (criterion 1 above), during or prior to Concept Design, that aim to enable and facilitate disassembly and functional adaptation. 2nd Credit 3. Achieve first credit 4. Provide an update, during Technical Design (stage 4), on: a. How the recommendations or solutions proposed by Concept Design have been implemented where practical and cost effective. Omissions have been justified in writing to the assessor. b. Changes to the recommendations and solutions during the development of the Technical Design. 5. Produce a building adaptability and disassembly guide to communicate the characteristics allowing functional adaptability and disassembly to prospective tenants.	Functional adaptation strategy study must consider the following as a minimum: – 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. Functional adaptation implementation should cover: – 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. Ease of disassembly should consider the following as a minimum: – Accessibility (see Functional adaptation strategy study). – Durability: use materials which require less frequent maintenance, repair or replacement, considering them within the context of the life span of the building. – Exposed and reversible connections: making the connections more visible provides opportunities to optimise material and product reuse. Welded connections prohibit disassembly and it is preferable to use screws and bolts to allow for disassembly and reuse. – Layer independence: designing building systems and components in layers so that removal, adjustment or replacement of some elements is feasible, especially when different components have different life spans and maintenance needs. – Avoidance of unnecessary toxic treatments and finishes. Some finishes can contaminate the substrate in a way that they are no longer reusable or recyclable. This should be avoided unless finishes serve a specific purpose. – Standardisation can accommodate reuse and upgrading. It involves aspects such as dimensions, components, connections and modularity.	Architect	RIBA stage 2 (Functional adaptation study) RIBA stage 4 (Functional adaptation implementation study)
Weighting		7.0%						

Credits Available	Baseline Credits	Credit Issue	Title	Assessment Criteria	Notes	Responsible Party	Stage limitation
13	9	Land Use & Ecology [1.15% per credit]					
2	1	LE 01	Site selection	1 credit: At least 75% footprint is on previously developed land 1 credit: A contaminated land specialist's site investigation, risk assessment and appraisal has deemed land within the site to be affected by contamination.	2nd credit: in order to be able to target the 2nd credit, the site investigation, risk assessment and appraisal should have identified: a. The degree of contamination b. The contaminant sources/types c. The options for remediating sources of contamination which present an unacceptable risk. The lease or principal contractor confirms that remediation of the site will be carried out in accordance with the remediation strategy and its implementation plan as recommended by the contaminated land professional.	Architect	N/A
2	2	LE 02	Identifying and understanding the risks and opportunities for the project	Prerequisite - Assessment route selection - An assessment route for the project has been determined using BREEAM Guidance Note GN34 BREEAM Ecological Risk Evaluation Checklist. - The client or contractor confirms compliance is monitored against all relevant UK and EU or international legislation relating to the ecology of the site. Route 1 (project team member route) 1 credit for survey, evaluation and determining ecological outcomes for the site Route 2 (Ecologist) 1 credit for survey and evaluation of ecological value 1 credit for determining ecological outcomes for the site	Route 1 requires completion of the ecological risk evolution checklist. (Refer to GN 34) Route 2 - A suitably qualified ecologist (SQE) should be appointed at a project stage that ensures early involvement in site configuration and, where necessary, can influence strategic planning decisions. - Prior to the completion of the preparation and brief, an appropriate level of survey and evaluation should be carried out to determine the ecological baseline of the site, taking account of the zone of influence to establish: - a Current and potential ecological value and condition of the site, and related areas within the zone of influence. - b Direct and indirect risks to current ecological value - c Capacity and feasibility for enhancement of the ecological value of the site and, where relevant, areas within the zone of influence. - Data should be collated and shared with project team to inform the site preparation, design or construction works.	Ecologist (TBC)	RIBA stage 2 (Site survey and evaluation of ecological value)
3	2	LE 03	Managing negative impacts on ecology	Prerequisite LE 02 has been achieved. AND The client or contractor confirms that compliance is monitored against all relevant UK, and EU or International legislation relating to the ecology of the site. 1 credit – Planning, liaison, implementation and data - Roles and responsibilities have been clearly defined, allocated and implemented to support successful delivery of project outcomes at an early enough stage to influence the concept design or design brief. - Site preparation and construction works have been planned for and are implemented at an early project stage to optimise benefits and outputs. - The project team liaising and collaborating with representative stakeholders, taking into consideration data collated and shared, have implemented solutions, and measures have been selected Up to 2 credits Route 1 - 1 credit - negative impacts have been managed Route 2 - 1 credit - ecological loss has been limited as far as possible OR 2 credits where there is no ecological loss	Note: It is highly recommended that a Suitably Qualified Ecologist (SQE) is appointed to perform the relevant calculations and confirmations and earn maximum credits Please also refer to GN 40.	Ecologist (TBC) / Contractor	RIBA stage 2 (Site survey and evaluation of ecological value)

Credits Available	Baseline Credits		Credit Issue	Title	Assessment Criteria	Notes	Responsible Party	Stage limitation
4	2		LE 04	Change and enhancement of ecological value	Prerequisite Negative impacts from site preparation and construction works have been managed according to the mitigation hierarchy, in line with the SQE's recommendations AND The client or contractor confirms that compliance is monitored against all relevant UK, and EU or International legislation relating to the ecology of the site. Route 1 - 1 credit - the project team lease with local expertise to adopt locally relevant ecological solutions Route 2 - 1 credit - Measures have been implemented that enhance ecological value, which are based on input from the <u>project team and SQE</u> in collaboration with representative stakeholders and data collated as part of the 'Determining ecological outcomes' in LE 02. Measures are implemented in the following order: a On site, and where this is not feasible, b Off site within the Zone of Influence. Data collated are analysed and where potentially valuable, provided to the local environmental records centres nearest to, or relevant for, the site. Route 2 - Up to 3 credits can be awarded based on the calculation of the change in ecological value occurring as a result of the project	Note: A Suitably Qualified Ecologist (SQE) is required to be appointed to perform the relevant key stakeholder co-ordination, calculations and confirmations and earn maximum credits Refer also to GN36.	Ecologist (TBC)	RIBA stage 2 (Site survey and evaluation of ecological value)
2	2		LE 05	Long term ecology management and maintenance	Prerequisite 1 The client or contractor has confirmed that compliance is being monitored against all relevant UK, EU and international standards relating to the ecology of the site. 2 Where pursued, LE 04 has been achieved, including the following specific aims of this issue: a. Roles and responsibilities have been clearly defined, allocated and implemented to support successful delivery of project. 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. 1 credit : Planning, liaison, data, monitoring and review management and maintenance of effectiveness of ecological solutions. Measures have been implemented to manage and maintain ecology throughout the project and take into account LE 02/LE 03 and LE04 studies/outcomes. A section on Ecology and Biodiversity has been included as part of the tenant or building owner information supplied, to inform the owner or occupant of local ecological features, value and biodiversity on or near the site. 1 credit: Landscape management plan in line with BS42020:2013 covering at least the first five years after project completion as a minimum. The management plan to be updated to support ecological value of the site.	Note: A Suitably Qualified Ecologist (SQE) is required to be appointed to perform the relevant key stakeholder co-ordination, calculations and confirmations and earn maximum credits Minimum content of the Landscape Management Plan: - Actions and responsibilities of relevant individuals prior to handover - The ecological value and condition of the site at handover and how this is expected to develop and change over time - Identification of opportunities for ongoing alignment with activities beyond the development project, which support the aims of BREEAM's Strategic Ecology Framework - Identification and guidance to trigger appropriate remedial actions to address previously unforeseen impacts - Clearly defined and allocated roles and responsibilities for delivering the plan	Ecologist (TBC) / Contractor	N/A
Weighting		15.0%						

Credits Available	Baseline Credits	Credit Issue	Title	Assessment Criteria	Notes	Responsible Party	Stage limitation
12	8	Pollution [0.75% per credit]					
3	1	Pol 01	Impact of refrigerants	3 credits: No refrigerant use Pre-requisite: All systems comply with the requirements of BS EN 378:2016 and where refrigeration systems containing ammonia are installed, the Institute of Refrigeration Ammonia Refrigeration Systems Code of Practice. 2 credits: Where the systems using refrigerants have Direct Effect Life Cycle CO₂ equivalent emissions (DELCO₂e) of ≤100 kgCO₂e /kW cooling/heating capacity. To calculate the DELCO₂e please refer to the Relevant definitions in the Additional information section and the Methodology section. OR Where air-conditioning or refrigeration systems are installed the refrigerants used have a Global Warming Potential (GWP) ≤ 10. 1 credit: Where the systems using refrigerants have Direct Effect Life Cycle CO₂ equivalent emissions (DELCO₂e) of ≤ 1000 kgCO₂e/kW cooling/heating capacity. 1 credit: Where systems using refrigerants have a permanent automated refrigerant leak detection system installed; OR where an in-built automated diagnostic procedure for detecting leakage is installed.		MEP	N/A
2	2	Pol 02	Local air quality	Up to 2 credits - All heating and hot water is supplied by non-combustion systems. - 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 in the BREEAM manual. The measurements must be provided by manufacturers, following the labelling requirements of the European directive 2009/125/EC. - Emissions from all installed combustion plant that provide space heating and domestic hot water do not exceed the levels set in Table 1.21 and Table 1.22.	No credits can awarded for Pol 02 if any of the combustion appliances are not covered in Table 12.4 and Table 12.5 of the manual	Mechanical Engineer	N/A

Credits Available	Baseline Credits		Credit Issue	Title	Assessment Criteria	Notes	Responsible Party	Stage limitation
5	3		Pol 03	Flood and surface water management	2 credits: Where a site-specific flood risk assessment (FRA) confirms the development is situated in a flood zone that is defined as having a low annual probability of flooding. OR 1 credit: Where a site-specific FRA confirms the development is situated in a flood zone that is defined as having a medium or high annual probability of flooding and is not in a functional floodplain. Pre-requisite: Surface water run-off design solutions must be bespoke, i.e. they must take account of the specific site requirements and natural or man-made environment of and surrounding the site. 1 credit: Peak rate of run-off to show a 30% improvement for the developed site than it was for the pre-development site and should comply with the 1 in 100 yr. flood event 1 credit: Where flooding of property will not occur in the event of local drainage system failure AND EITHER: Drainage design measures are specified to ensure that the post development run-off volume, over the development lifetime, is no greater than it would have been prior to the assessed site's development for the 100-year 6-hour event, including an allowance for climate change OR: Justification from the Appropriate Consultant indicating why the above criteria cannot be achieved, i.e. where infiltration or other SuDS techniques are not technically viable options. 1 credit: Minimising watercourse pollution - There is no discharge from the developed site for rainfall up to 5mm (confirmed by the Appropriate Consultant).	If in medium or high annual probability of flooding, to increase the resilience and resistance of the development to flooding, one of the following must be achieved: 4.a The ground level of the building and access to both the building and the site, are designed (or zoned) so they are at least 600 mm above the design flood level of the site's flood zone. 4.b The final design of the building and the wider site reflects the recommendations made by an appropriate consultant in accordance with the hierarchy approach outlined in section 5 of BS 8533:2017 (218). Also refer to GN 38.	Structural engineer	N/A
1	1		Pol 04	Reduction of night time light pollution	1 credit: External lighting design in line with ILP Guidance notes for the reduction of obtrusive light, 2011. Daylight cut-off for general external lighting. All external lighting (except for safety and security lighting) can be automatically switched off between 23:00 and 07:00.	If safety or security lighting is provided and will be used between 23:00 and 07:00, this part of the lighting system complies with the lower levels of lighting recommended during these hours in Table 2 of the ILP's Guidance notes. Illuminated advertisements, where specified, must be designed in compliance with ILP PLG 05 The Brightness of Illuminated Advertisements.	MEP	N/A
1	1		Pol 05	Reduction of noise pollution	1 credit: Where there are, or will be, no noise-sensitive areas or buildings within 800m radius of the assessed site. OR where the building does have noise-sensitive areas or buildings within 800m radius of the site, a noise impact assessment is carried out in compliance with BS 4142:2014 by a suitably qualified acoustician, along with any remediation.	The noise impact assessment must be carried out by a suitably qualified acoustic consultant holding a recognised acoustic qualification and membership of an appropriate professional body (see Relevant definitions in the Additional information section). The noise level from the proposed site/building, as measured in the locality of the nearest or most exposed noise sensitive development, is a difference no greater than +5dB during day and night compared to the background noise level. Where the noise source(s) from the proposed site/building is greater than the levels described above, measures have been installed to attenuate the noise at its source to a level where it will comply with the above limits.	Acoustician(TBC)	N/A
Weighting	9.0%	9.0%						

Credits Available	Baseline Credits	Credit Issue	Title	Assessment Criteria	Notes	Responsible Party	Stage limitation
10	1	Innovation [1% per credit]					
1	1	Inn 01 - Man 03	Responsible construction practices - Exemplary	1 Credit where all items in table 4.1 issue Man 03 are achieved		Project Manager / Contractor	N/A
1	0	Inn 02 - Hea 01	Visual Comfort - Exemplary	To achieve an exemplary performance credit for daylighting: - Daylighting criteria have been met using either of the following options: a. Relevant building areas meet exemplary daylight factors. b. Relevant building areas meet exemplary average and minimum point daylight illuminance criteria		-	N/A
N/A	N/A	Inn 03 - Hea 01	Visual comfort - Exemplary	N/A to Shell and Core assessments		-	
N/A	N/A	Inn 04 - Hea 02	Indoor Air Quality - Exemplary	N/A to Shell and Core assessments		-	
1	0	Inn 04 - Hea 06	Security of Site and Building	A compliant risk based security rating scheme has been used. The performance against the scheme has been confirmed by independent assessment and verification.	The following are currently recognised as a compliant risk based security rating schemes: – SABRE SABRE is owned by BRE Global Ltd (part of the BRE Group)	-	N/A
5	0	Inn 05 - Ene 01	Reduction of energy use and carbon emissions - Exemplary	Up to 5 exemplary level credits: up to 2 where the building is beyond zero net regulated carbon 3 credits where the building is carbon negative		-	N/A
1	0	Inn 06 - Wat 01	Water Consumption - Exemplary	1 credit: 65% improvement over baseline case.		-	N/A
3	0	Inn 07 - Mat 01	Environmental impacts from construction products - Building life cycle assessment (LCA) - Exemplary	Achieve Mat 01 credits PLUS: 1 credit: During Stage 2 carry out building LCA options appraisal of at least 3 significantly different core building services design options. 1 credit – LCA and LCC alignment (all building types) - Achieve Elemental LCC plan and Component Level LCC options appraisal credits - Include design options appraised in Mat 01 credits during Concept Design in Assessment scope - Include the design options appraised for criterion 5 during Concept Design in the 'Component level LCC option appraisal'. - Integrate the aligned LCA and LCC options appraisal activity within the wider design decision-making process. Record this in an options appraisal summary document including the relevant cost information from the 'elemental LCC plan' and 'Component level LCC option appraisal'. 1 credit – Third party verification (all building types) - A suitably qualified third party carries out the building LCAs or produces a report verifying the building LCAs accurately represent the designs under consideration during Concept Design and Technical Design - For each LCA option, itemise the findings of the verification checks made by the suitably qualified third party in a report.		-	N/A

Credits Available	Baseline Credits		Credit Issue	Title	Assessment Criteria	Notes	Responsible Party	Stage limitation
1	0		Inn 08 - Mat 03	Responsible Sourcing of construction products - Exemplary	Building services >50% of RSM points		-	N/A
1	0		Inn 09 - Wst 01	Construction Waste Management - Exemplary	1 credit: Amount of non-hazardous on-site/off-site construction waste (m ³ /100m ² or tonnes/100m ²) generated = 1.6 /1.9 Divert from landfill (volume or tonnage) Demolition = 85%/95% Non-demolition = 95%/95% Key waste groups identified for diversion at pre-construction stage RMP		-	N/A
1	0		Inn 10 - Wst 02	Recycled Aggregates - Exemplary	Achieve exemplary level recycled aggregate points >6		-	N/A
1	0		Inn 11 - Wst 05	Adaptation to climate change	1 credit: Wt05 1 credit, plus: - Hea 04 criterion 6 - 6 credits under Ene 01 - passive design analysis credit under Ene 04 - 3 credits under Wat 01 + Mat 05 criteria 2-4 - 1 credit under Flood risk - 2 credits under Surface water run-off within Pol 03	-	-	N/A
1	0		Inn 12	Approved Innovation credits	To support innovation within the construction industry through the recognition of sustainability related benefits which are not rewarded by standard BREEAM issues.	-	-	N/A
Weighting	10.0%	10.0%						