

Sustainability and Energy Statement

incorporating a BREEAM Scoping Review

Brunel Retail Park, Reading

Prepared for MCTGF Trustee 1 Limited and MCTGF Trustee 2 Limited as joint trustees of the
Mayfair Capital TGF Jersey Property Unit Trust

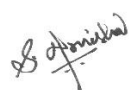
June 2023



envision

The logo for 'envision' features the word in a lowercase, sans-serif font. Below the text is a graphic element consisting of two wavy lines: a green one on top and a blue one on the bottom, both curving from left to right.

Revision	Date
Rev A	19 th June 2023
REV B	20 th June 2023

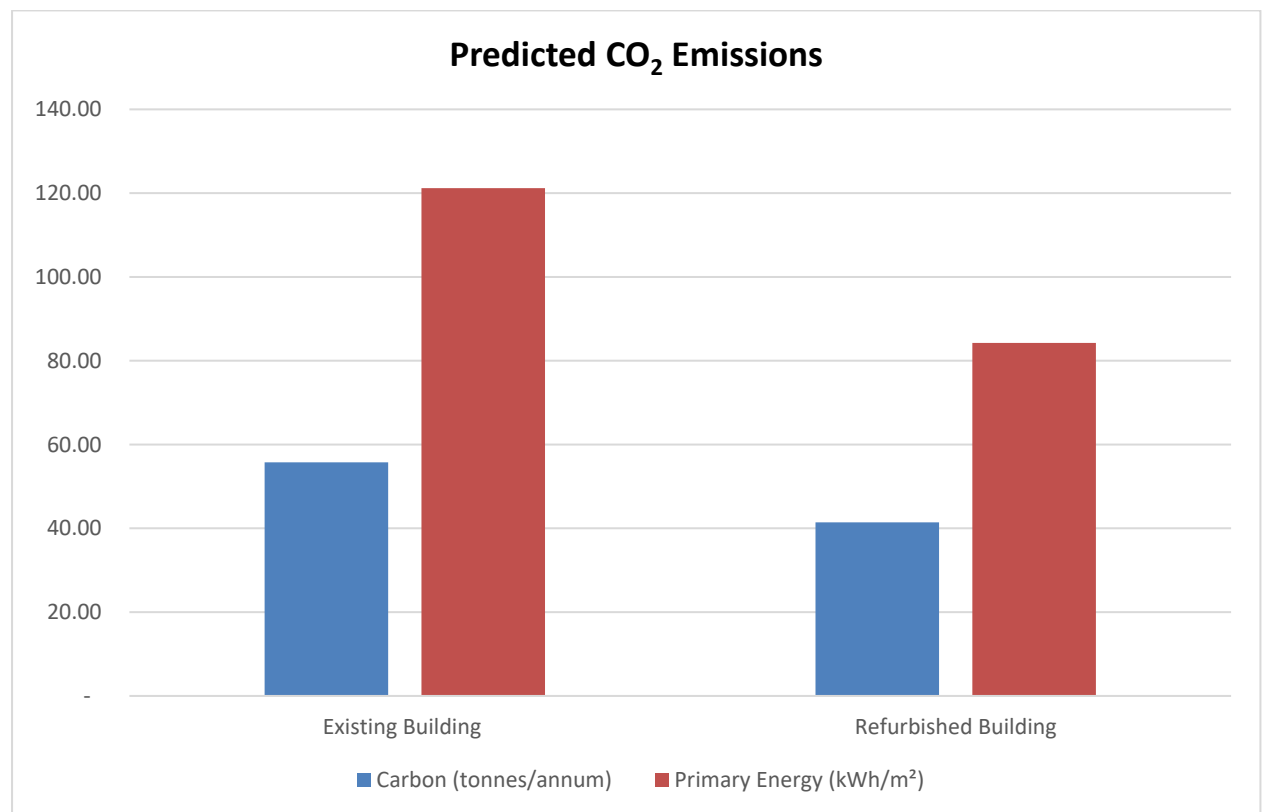
Author	Signature
Monisha Selvaraju BArch MSc	
Authorised	Signature
Simon Rainsford BSc MSc	

CONTENTS

EXECUTIVE SUMMARY	1
1. INTRODUCTION	3
2. SUSTAINABILITY POLICY CONTEXT	6
3. SUSTAINABILITY STATEMENT	10
4. ENERGY STATEMENT	18
Applying the Energy Hierarchy: Use Less Energy	22
Applying the Energy Hierarchy: Supply Energy Efficiently	25
Applying the Energy Hierarchy: Use Renewable Energy	27
Compliance with BREEAM Excellent.....	29
5. CONCLUSION	31
APPENDIX I – BREEAM SCOPING REVIEW AND ALIGNMENT	33
APPENDIX II – BRUKLS FOR DEVELOPMENT	48

EXECUTIVE SUMMARY

1. This Sustainability and Energy Statement, incorporating a BREEAM Scoping Review has been prepared by Envision on behalf of Mayfair Capital (the applicant), and is submitted to support a full planning application seeking the change of use of the main terrace, from Class E to Class B8 to accommodate a potential self-storage operator at the Brunel Retail Park in Reading.
2. The primary purpose of this document to explain how the Applicant has sought to address Reading Borough Council's sustainability policies relevant to an application of this nature. Envision has undertaken a review of the relevant policies and worked with the design team to determine and agree the relevance and approach that should be taken to fulfil each policy.
3. Policy CC2 relates to BREEAM standards for new development. It requires that all major non-residential developments or conversions are required to meet the most up-to-date BREEAM 'Excellent' standards, where possible. The proposed development is being taken forward by the Applicant as a speculative project with no operator yet named for the self-storage. The scope of the Applicant's work to facilitate the change of use involves very minor alterations to the external areas. The envelope and building structure are to be retained in full. The level of works proposed by the applicant is below the threshold which would typically trigger a BREEAM assessment. The tenant will be responsible for the installation of new services, and all fit out items, which could not be practically included in the assessment undertaken by the applicant. As set out by this statement, the application of BREEAM is not considered appropriate, however this statement puts forward proposals which will be monitored by the applicant in lieu of formal BREEAM. This statement includes a BREEAM Scoping Review in Appendix 1 which demonstrates which elements of BREEAM the scheme would therefore align with. This compliance based approach is consistent with the application of policy for similar schemes elsewhere in Reading.
4. An energy assessment has been completed based on the change of use proposals. The assessment considers the energy performance of the building before and after change of use based on illustrative fit out specifications for a self-storage operator. A conservative approach has been taken to the assessment, assuming that the fit out will align with current worst case Building Regulations standards only. This assessment demonstrates how savings in annual carbon dioxide emissions of circa 43% could be expected through the proposals. This is in line with BREEAM Excellent standards for energy efficiency.
5. The scheme is considered to fully align with the relevant policy requirements maintained by RBC and will support RBCs sustainability objectives.



1. INTRODUCTION

- 1.1 Envision has been appointed by Mayfair Capital (The Applicant) to prepare a Sustainability and Energy Statement, incorporating a BREEAM Scoping Review to support a planning application seeking full consent for the change of use of the main retail terrace from Class E to Class B8 to accommodate a potential storage operator.

Scope

- 1.2 This statement provides information on the sustainable design and construction commitments of the project and its structures as follows:
- Section 2 provides a description of the main sustainability & energy policies relevant to the application;
 - Section 3 provides a sustainability statement, structured against RBC's sustainable design and construction checklist (2019);
 - Section 4 is the energy statement which compares the energy performance before and after the change of use;
 - Section 5 provides a concluding summary;
 - The BREEAM Scoping Review and Alignment Review is provided as Appendix I.

Location & Existing Situation

- 2.1 The Brunel Retail Park is located to the south of Reading Town Centre, with access obtained from the A33 via Rose Kiln Lane. The park comprises a terrace of retail warehouse units in an L formation, with a total floor area of 121,939 sq. ft. The general arrangements of the existing site are shown in figure 2.1.

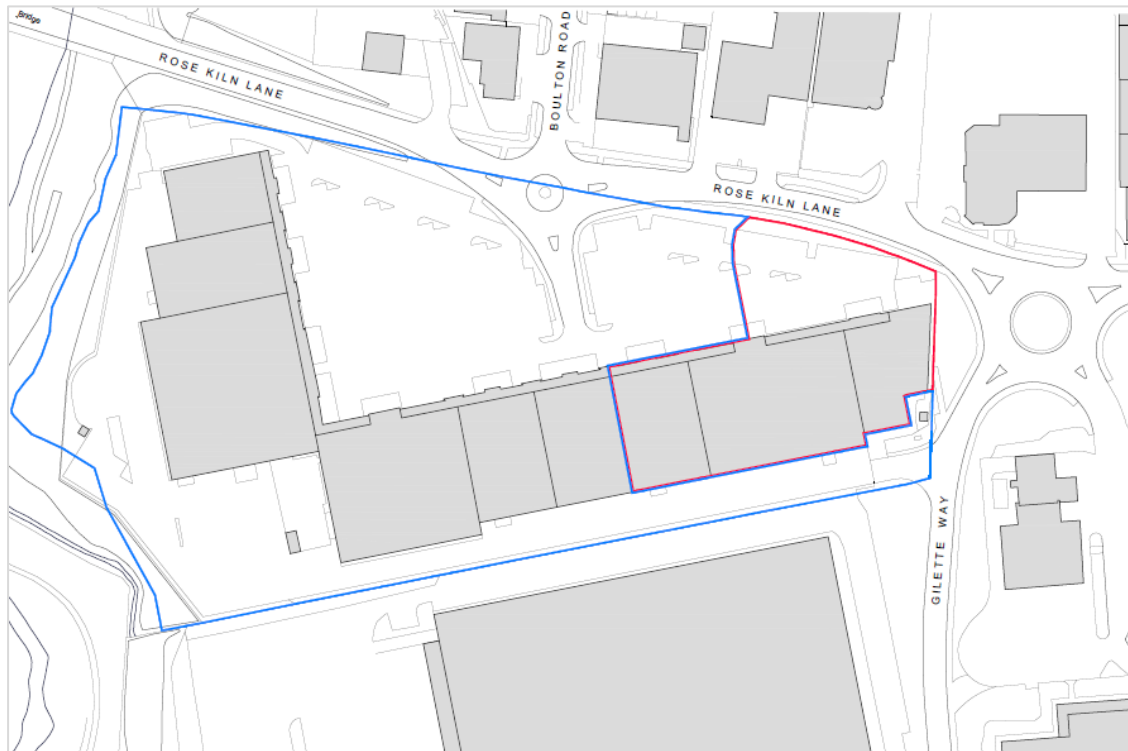


Figure 2.1 – Existing Site Arrangements

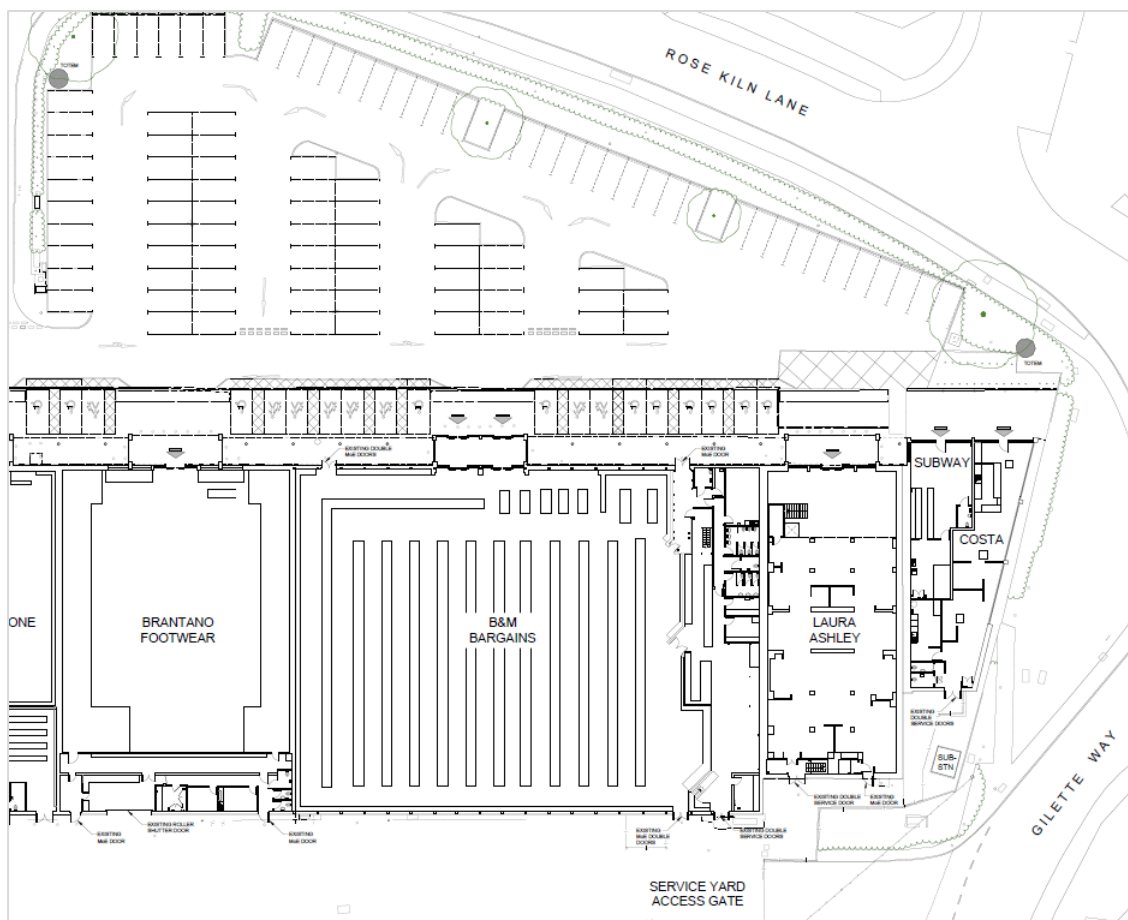


Figure 2.2 – Existing Development

The Proposed Development

- 2.2 The Applicant proposes to change the use of the terrace to facilitate a self-storage operator on the site. The proposals will be taken forward with virtually no external changes to the external envelope and would retain the internal partitions, albeit make penetrations through these for circulation. Externally there would be amendments to facilitate a storage yard.

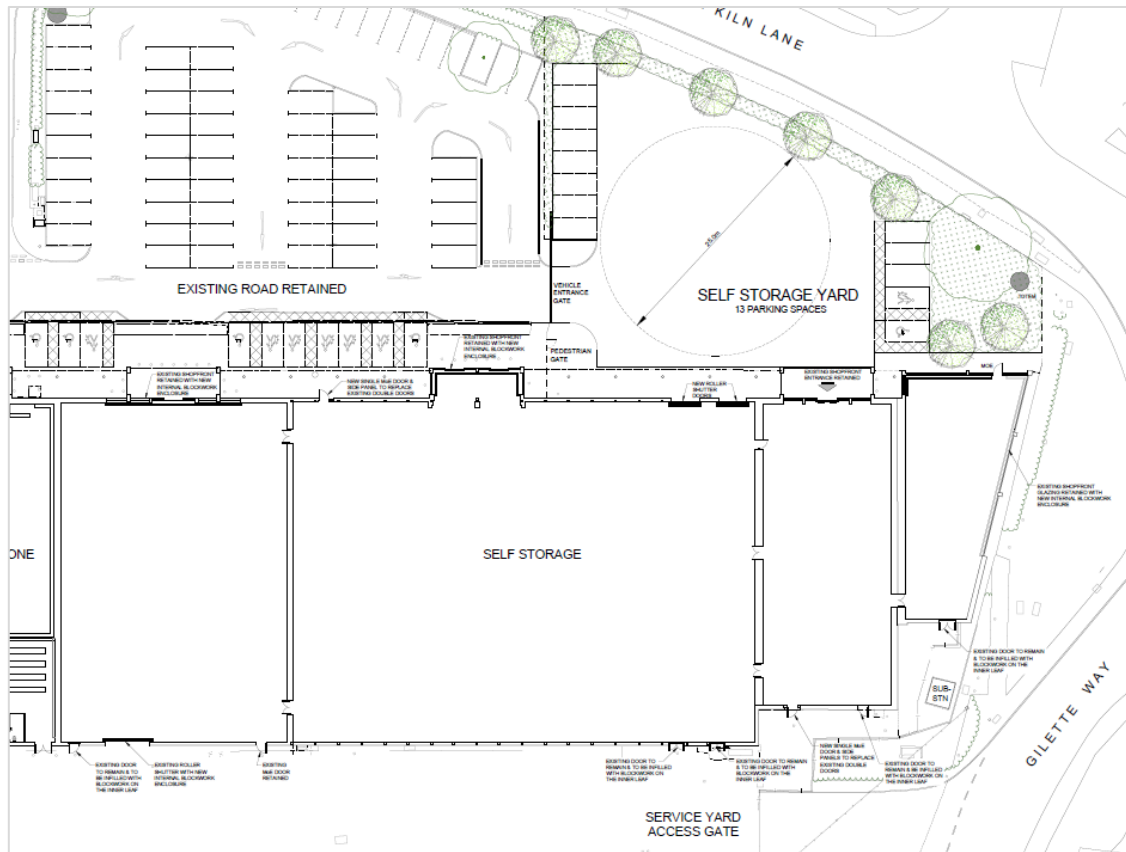


Figure 2.3 – Proposed Development

2. SUSTAINABILITY POLICY CONTEXT

- 2.1 A key mechanism for delivering the principles of low-carbon development lies within the UK planning system, which is implemented through national guidance along with regional and local planning policies. A review of all the relevant policy documents was undertaken in order to gain an understanding of the guiding policies for sustainable design.

National Planning Policy Framework

- 2.2 The revised National Planning Policy Framework (NPPF) was released on 20th July 2021. It sets out the framework for all planning policy in England and how these policies are expected to be applied. At a very high level, the objective of sustainable development can be summarised as meeting the needs of the present without compromising the ability of future generations to meet their own needs. At a similarly high level, members of the United Nations – including the United Kingdom – have agreed to pursue the 17 Global Goals for Sustainable Development in the period to 2030. These address social progress, economic well-being and environmental protection.
- 2.3 Achieving sustainable development means that the planning system has three overarching objectives, which are interdependent and need to be pursued in mutually supportive ways (so that opportunities can be taken to secure net gains across each of the different objectives:
- an economic objective – to help build a strong, responsive and competitive economy, by ensuring that sufficient land of the right types is available in the right places and at the right time to support growth, innovation and improved productivity; and by identifying and coordinating the provision of infrastructure;
 - a social objective – to support strong, vibrant and healthy communities, by ensuring that a sufficient number and range of homes can be provided to meet the needs of present and future generations; and by fostering a well-designed and safe built environment, with accessible services and open spaces that reflect current and future needs and support communities' health, social and cultural well-being; and
 - an environmental objective – to contribute to protecting and enhancing our natural, built and historic environment; including making effective use of land, helping to improve biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy.
- 2.4 Planning plays a key role in helping shape places to radical reductions in greenhouse gas emissions, minimising vulnerability and providing resilience to the impacts of climate change, and supporting the delivery of renewable and low carbon energy and associated infrastructure. This is central to the economic, social and environmental dimensions of sustainable development. The NPPF does not include detailed measures on sustainable design codes and standards to apply, although expects that when setting any local requirement for a building's sustainability, local planning authorities should do so in a way consistent with the national technical standards.

- 2.5 The NPPF has recently been subject to a further consultation – the Levelling-up and Regeneration Bill: Reforms to National Planning Policy (published 22nd December 2022). The consultation proposes further policy objectives, including to achieve Better Environmental Outcomes: Planning can make an important contribution to conserving and enhancing the natural environment, and the vitally important task of mitigating and adapting to climate change.

Reading Borough Council Planning Policy

- 2.6 The most relevant policies which need to be considered when assessing the scheme's compliance to sustainability policy are those provided within local development documents. Reading Borough Council (RBC) is currently working to two primary documents relating to sustainability:

1. Reading Borough Local Plan (Adopted November 2019);
2. Sustainable Design & Construction SPD (Adopted December 2019).

- 2.7 The policies and guidance pertinent to the sustainability of the development from the aforementioned policy documents are as follows:

Policy CC2: Sustainable Construction and Design

- 2.8 This policy states that proposals for new development, including the refurbishment of existing building stock, will be acceptable where the design of buildings and site layouts use energy, water, minerals, materials and other natural resources appropriately, efficiently and with care and take account of the effects of climate change.

- 2.9 As part of this:

- All major non-residential developments or conversions to residential are required to meet the most up to date BREEAM 'Excellent' standards, where possible;
- All non-residential development or conversions to residential should incorporate water conservation measures so that predicted per capita consumption does not exceed the appropriate levels set out in the applicable BREEAM standard. Non-residential development should include recycling greywater and rainwater harvesting where systems are energy and cost effective.

- 2.10 The Sustainable Design & Construction SPD provides further clarification on the attainment of BREEAM. Table 3.1 'Requirement level of sustainability standard' states:

Non-residential refurbishment (including refurbishment for non-C3 residential)	Minor (less than 1,000 sq. m of floorspace)	BREEAM 'Very Good'
	Major (1,000 sq. m of floorspace or more)	BREEAM 'Excellent'

- 2.11 The BREEAM standards that are technically applicable to non-domestic refurbishment works are the BREEAM UK Non-domestic Refurbishment and Fit Out (2014). According to the SPD, the development should target BREEAM Excellent based on the floorspace proposed.

Policy CC3: Adaptation to Climate Change

- 2.12 This policy requires proposals for new development to incorporate measures to adapt to climate change, including;
- Proposals involving both new and existing buildings shall demonstrate how they have been designed to maximise resistance and resilience to climate change for example by including measures such as solar shading, heating and ventilation of the building and appropriately coloured materials in areas exposed to direct sunlight, green and brown roofs, etc.
 - Use of trees and other planting, where appropriate as part of a landscape scheme, to provide shading of amenity areas, buildings and streets and to help to connect habitat, designed with native plants that are carefully selected, managed and adaptable to meet the predicted changed climatic conditions; and
 - All development shall minimise the impact of surface water runoff from the development in the design of the drainage system, and where possible incorporate mitigation and resilience measures for any increases in river flooding levels as a result of climate change.
- 2.13 The proposed development is able to respond to a number of climate adaptation principles, however many identified in CC3 are geared towards the location, design and optimisation of new buildings. By their nature, existing buildings are less able to respond to layout and siting principles, however this statement provides a review of climate change adaptation principles proposed by the application in the next section.

Policy CC4: Decentralised Energy

- 2.14 Policy CC4 encourages decentralised energy. It requires:
- Developments of the sizes set out below shall demonstrate how consideration has been given to securing energy for the development from a decentralised energy source, including CHP.
 - Any development of more than 20 dwellings and/ or non-residential development of over 1,000 sq. m shall consider the inclusion of a CHP plant, or other form of decentralised energy provision, within the site, unless it can be demonstrated that the scheme is not suitable, feasible or viable for this form of energy provision.
 - Where there is existing decentralised energy provision present within the vicinity of an application site, further developments of over 10 dwellings or non-residential development of 1,000 sq. m will be expected to link into the existing decentralised energy network or demonstrate why this is not feasible.

- 2.15 The Brunel Retail Park site is leased to tenants that include their own equipment. There is no centralised equipment on site, nor is the site located within 1 of the 4-heat network 'clusters' shown in the SPD. The proposals will therefore not propose compatibility with a district energy network. This is further examined in Section 4.

Policy CC5: Waste Minimisation & Storage

- 2.16 Development should demonstrate measures to minimise the generation of waste in the construction, use and life of buildings and promote more sustainable approaches to waste management, including the reuse and recycling of construction waste and the promotion of layouts and designs that provide adequate, well-designed space to facilitate waste storage, reuse, recycling and composting.

Sustainable Design Checklist (Sustainable Design & Construction SPD)

- 2.17 For major applications, a Sustainability Statement based on a sustainability checklist should be submitted at the submission stage. The sustainable design and construction checklist is based on the BREEAM standards but are not a complete repetition of these requirements. They are intended to help provide pointers as to the type of considerations that the development should be taking into account in order to achieve relevant standards of the BREEAM and thereby comply with policies CC2-CC5 and EN18.¹

¹ The sustainability checklist forms the structure of the sustainability statement.

3. SUSTAINABILITY STATEMENT

3.1 This section provides an account of the sustainability benefits of the proposed development, and how relevant policy will be addressed in the development proposals. The section is structured against the Sustainability Checklist as detailed in Appendix 1 of the Reading Borough Council (RBC) Sustainable Design & Construction SPD, thereby demonstrating compliance with policies CC2-CC5 and EN18 of the RBC Local Plan.

Non-Residential Sustainability Checklist

Table 4.1 – Sustainability Checklist (Non-Residential)

Management	
<i>Aim: To recognise and encourage environmentally and socially considerate development.</i>	
Criteria	Design & Construction Commitments
Will guidance for the non-technical building user be provided so they can understand and operate the building efficiently and understand how the design reduced the overall environmental impact of the building and raise environmental awareness?	The proposed development is being taken forward on a speculative basis. The future building occupier is expected to put in place measures to ensure the building operates efficiently. It is expected that the lease of the unit would be taken forward by a storage operator who would be expected to have policies and procedures in place to secure this.
What consideration has been given to resource use, energy consumption and pollution in terms of the construction site impacts?	The principal contractor will be required to deliver high standards of sustainable construction, which will be achieved through the following: • Registering the site against the Considerate Constructors Scheme; • Managing the construction site to reduce environmental effects, this will include adopting best practice measures to protect water and air quality, monitoring water and energy use from construction activities.
Will site investigation and appropriate remedial action be undertaken?	The site has been subject to a Phase 1 environmental review. There is no requirement for remedial actions, saving for ground capping and gas protection measures.

Will the community and stakeholders be involved in the design process encouraging flexibly designed buildings which cater for shared use with the local community?	This is to reflect the changing nature of commerce. The development is being taken forward with inputs from commercial leasing agents to understand the requirements of these sites so that they are flexible and attractive for future occupiers. The buildings will be designed to be flexible and could be taken by a range of operators. In general no community consultation has been deemed necessary at the site.
How has the building been designed to reduce the opportunity for and the fear of crime?	The proposed development is being taken forward with input from a professional design team with experience in designing safe and secure environments. The building will include perimeter fencing and external lighting to maintain security at night. The site will be enabled for CCTV. Previous planning applications for the site included warehousing, which was taken forward with input from a security specialist.
What consideration has been given to the maintenance of the building?	The building will be brought forward speculatively. Through inputs with commercial agents, the development will be designed to be institutionally acceptable and able to be leased to a range of future occupiers. Maintenance will be the obligation of the tenant, however design considerations will inform the future maintenance strategy to ensure that the building is safe and easy to run.
Health & Wellbeing	
<i>Aim:</i> To ensure a good quality amenity level is afforded to occupants of buildings	
Criteria	Design & Construction Commitments
How has the development been designed to ensure users have sufficient daylight, an external view, adequate and appropriate lighting, ventilation, air quality and drinking water?	The development makes use of an existing building with virtually no changes to the existing building. The level of daylight provision is considered acceptable for a storage operator. Proposals for ventilation, indoor air quality and drinking water would be up to the future tenant, albeit that the scheme will be flexible to enable these features to come forward.

Energy & CO₂ Reduction

Aim: To conserve energy, in particular carbon dioxide emissions and maximise the use of energy efficient techniques.

Criteria	Design & Construction Commitments
How has the building been designed to minimise CO₂ emissions associated with their operational energy consumption?	The building will be designed to be energy efficient in line with the requirements for BREEAM. Under a 4-part BREEAM RFO assessment, the scheme would need to meet 6 credits to achieve an Excellent rating, however there is technically no minimum standards for Ene 01 for a scheme which would not constitute any of the 4 parts. An energy assessment has been undertaken which considers how the proposals will be designed to be energy efficient through the change of use, installation of modern and efficiency building services and the introduction of PV on its roof.
How has the development been designed to optimise the use of the energy from the sun, natural daylighting and controlled natural ventilation?	The layout and fenestration of the building to facilitate the self-storage unit would not substantially alter from the existing building. There is limited scope or need to change the external envelope. Given the end use as a storage operation, which is principally unoccupied and largely unheated space, this is considered acceptable.
How has the development been designed to optimise natural daylighting, energy efficient lighting, external lighting and natural ventilation?	The layout and fenestration of the building to facilitate the self-storage unit would not substantially alter from the existing building. New external lighting will need to be provided to facilitate the external service yard. This will be energy efficient.
How will the design of the building make efficient use of energy? (e.g. use of thermally massive materials, levels of insulation, energy efficient white goods and use of green/ brown roofs etc.).	The building is being taken forward speculatively, with the fit out being the responsibility of the future tenant.
Have renewable energy sources or decentralised energy been considered for this development and if so, how would they be incorporated within the development?	The unit will be fitted out by a future tenant. The applicant has integrated PV panels as part of the proposed development to ensure that opportunities for sustainability enhancements within its control have been maximised.

Transport

Aim: To reduce the need to travel through appropriately located development.

Criteria	Design & Construction Commitments
How has the design and layout incorporated measures to reduce the need to travel, especially by car, and promote alternative and sustainable modes of transport such as walking, cycling and the use of public transport?	The planning application is submitted with a transport statement and Travel Plan which explains the approach taken to promote sustainable forms of transport. The scheme incorporates travel planning measures, including cycle storage on the park and proposals for visitors and staff.
How have deliveries and the manoeuvring of delivery vehicles been considered?	Swept path analysis has been undertaken for vehicular access points. The scheme proposes separate yard and servicing arrangements for the unit to mitigate impacts on the existing retail park. Within the service yard there is good provision for turning and manoeuvring space.

Water

Aim: To improve efficiency in the use of water, conserve water resources and minimise vulnerability to flooding.

Criteria	Design & Construction Commitments
How will the development incorporate the use of water saving devices to achieve a maximum consumption of 5.5 cubic m per year per person for office developments? (or the most appropriate benchmark for other types of development).	The scheme is being brought forward on a speculative basis, with water consuming fittings being installed by the future tenant. Water consumption is therefore outside the scope of the planning application, albeit that the consumption could be expected to decrease with the introduction of a Class B8 use. The future tenant will be expected to implement a scheme of water efficiency measures. This will include low flow taps and WCs.
Will the development and access to and from it such as roads and paths be located away from areas of potential flooding?	The site is located in Flood Zone 1. The local authority flood maps do not show the site or its access to be located in a higher risk zone.
How will the development incorporate harvesting and re-use of rainwater?	The water consumption for the self-storage operation is considered to be low and therefore the application of rainwater reuse in the form of harvesting is not considered to be practical or appropriate.

Does this development meet the requirements of EN18?	EN18 directs development away from areas that are liable to flood. In areas of lower risk, development may move forward if it passes the exception test in the NPPF. It also requires major developments to incorporate Sustainable Drainage Systems (SuDS). The scheme demonstrates alignment with this policy. The site is within Flood Zone 1. A Flood Risk Assessment and drainage strategy is submitted in support of the application.
Materials <i>Aim: To retain local character and promote the use of materials with a low environmental impact.</i>	
Criteria	Design & Construction Commitments
How will the selected materials help retain local character, ensure long life and ensure a low environmental impact?	The proposals will retain the existing building and therefore there should not be an impact on local character. The Applicant will ensure the following standards are met in the development: • Developing a sustainable procurement plan for the development, with the objective to reduce transport miles wherever possible. • All timber and timber products are to be sourced from accredited Forest Stewardship Council (FSC) or Programme for the Endorsement of Forestry Certification (PEFC) scheme; • No construction materials are to be used which will release toxins into the internal environment, including those that deplete stratospheric ozone. • Materials and construction details will be assessed with regard to a durability and robustness study. Internal protection measures would be the responsibility of a future operator.
What consideration has been given to reusing materials in-situ, responsibly sourcing materials and re-using existing structures?	The proposals fully meet this. The development reuses materials in situ.

Waste	
<i>Aim: To minimise the production of waste and maximise re-use and recycling.</i>	
Criteria	Design & Construction Commitments
Has an audit of the materials present on the site been conducted with an assessment of the extent to which materials could be re-used?	The proposals reuse the existing building with very limited modifications required to the external works. The structure and building fabric will remain in use. There is limited benefit in conducting a formal pre refurbishment audit given the extent of works.
How will the development make the maximum use of construction, demolition waste and recycled materials?	As above. The building will be retained thus maximising use of construction and demolition materials that would otherwise arise. A site waste management strategy will be prepared for the construction phase of the development, which identifies measures to minimise the very limited amount of construction waste expected to arise to facilitate the change of use.
How will provision be made for the storage and recycling of waste for all users of the site?	Commercial waste storage space would take account of the requirement for BREEAM, including for provision of suitable space for separate general and recyclable waste streams internally as part of the operation of the storage space. In general the level of waste associated with the operation is expected to be minimal and limited to the administrative functions of the building.
Land Use & Ecology	
<i>Aim: To retain, protect and enhance wildlife habitats and natural features.</i>	
Criteria	Design & Construction Commitments
How have the wildlife habitats and natural features on and adjacent to the site been considered and how will they be retained, protected and enhanced?	A tree survey has been undertaken by Encon Associates with the objective of retaining trees where possible.

What consideration has been given to not using previously undeveloped land?	The site is located within an urban area and on previously developed land.
What consideration has been given to the removal of contamination from the land?	The site has been subject to a phase 1 risk preliminary risk assessment to consider ground conditions and the requirements for remediation. The western part of the site lies above a former landfill site. Given the site has previously been developed, and reflecting the nature of the proposed uses, there is not expected to be a need for remediation.
Pollution <i>Aim: To minimise damage to the environment through air, ground/surface water, land, noise or light pollution.</i>	
Criteria	Design & Construction Commitments
What measures have been incorporated to ensure that noise and light pollution will be minimised through the development?	The development is not of the scale that would require an Environmental Impact Assessment (EIA), however the measures as outlined in this section, and subsequently implemented, will ensure that any potential impacts can be appropriately controlled in order to demonstrate compliance with Local Plan Policy EN16: Pollution & Water Resources. The proposed development requires alteration to existing external car parking arrangements to facilitate manoeuvring. In general, the scheme can be taken forward with limited alteration to external lighting. Any new lighting will be designed in compliance with Table 1 and accompanying notes of ILE Guidance Note for reduction of obtrusive light. All non-safety/security lighting will be automatically switched off between 2300hrs and 0700hrs.
What consideration has been given to reducing refrigerants and minimising nitrogen oxide emissions?	All refrigerants are outside of the Applicants control and will be installed by the future tenant in line with F-gas regulations. It is not envisaged there would-be any combustion associated with the space heating and hot water strategy.

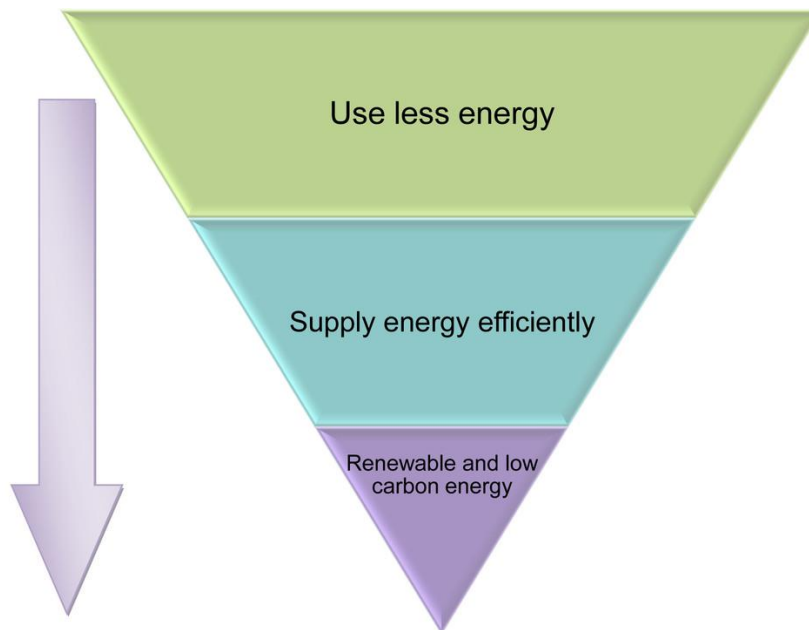
What measures have been incorporated to reduce the release of pollution into the atmosphere?

Based on market advice the scheme is designed to operate without gas and therefore gas connections are to be removed from the existing building as part of the works. Therefore, there will therefore be no release of atmospheric pollution from any heating or hot water.

4. ENERGY STATEMENT

- 4.1 Unlike residential schemes in Reading that need to meet zero carbon in accordance with Policy H5, the principle policy for non-domestic buildings lies within Policy CC2. This policy requires development to align with BREEAM Excellent, including from an energy perspective.
- 4.2 In this section Envision have prepared an Energy Statement detailing how the development should be designed, built and operated to minimise carbon dioxide emissions to the fullest extent possible by the application of the Energy Hierarchy as set out below;
1. Step 1 – Reducing Energy Requirements;
 2. Step 2 – Supplying the energy that is required more efficiently;
 3. Step 3 – Meeting remaining energy requirements through renewable and low carbon energy.

Fig 5.1 - 'Energy Hierarchy'



Methodology

- 4.3 Envision have followed guidance provided by Reading Borough Council and that set out by the Building Research Establishment for the calculation of energy under BREEAM RFO 2014. The methodology followed for the calculation of energy savings is as follows:
4. Calculate a '**Existing Building Baseline**' by preparing a Simplified Building Energy Model (SBEM) of the existing leisure facility with inputs derived as follows:
 - (a) Fabric performance values set to 1995 Building Regulations minimum parameters, in place at the original time of construction; whereas for the Costa & subway retail block which were a later addition to the existing in 2013 were set to 2010 Building Regulations minimum parameters.

- (b) Building services efficiencies set to Part L 2013 minimum values, which assumes building services were replaced at some point over the last 10 years.
5. Calculate the **'Actual Building'** emissions by following the Energy Hierarchy and modelling the building with new thermal elements and upgraded thermal elements performance input to match the proposed strategy put forward (by this Energy Statement). As occupiers are unknown at this point an assumed building services strategy has been put forward with efficiencies set to the minimum allowed under Part L 2021 so to not over estimate CO₂ reductions;
 6. Demonstrate that the calculated CO₂ emissions from the actual building have been reduced as far as feasibly possible at each stage of the hierarchy.

Calculation Methodology

- 4.4 In accordance with NCM guidance, the appropriate methodology for calculating the energy performance of the building is through a Simplified Building Energy Model (SBEM). The SBEM was produced using DesignBuilder software version 7.1.4.005, which is a DCLG approved software and methodology for undertaking SBEM.

Establishing the Target Emissions (Existing Building Baseline)

- 4.5 The total emissions savings calculated in this report are expressed against an Existing Building Target Emission Rate (TER) and Target Primary Energy Rate (TPER). This is the baseline against which the measures implemented must show an improvement.
- 4.6 The inputs for the existing building are as follows:

Table 4.1 – Existing Building Inputs

Element	Unit	Existing Building Existing Inputs	Comment
Existing Clad Wall	W/m ² K	0.45	Set to DesignBuilder <i>Inference</i> value for 1995 English Building Regulations. Costa and Subway block set to to DesignBuilder <i>Inference</i> value for 2010 English Building Regulations.
Existing Clad Wall(Costa & Subway)	W/m ² K	0.35	
Roof	W/m ² K	0.45	
Roof (Costa & Subway)	W/m ² K	0.25	
Floor	W/m ² K	0.45	
Floor(Costa & Subway)	W/m ² K	0.25	
Glazing	W/m ² K	2.8	
Vision Element	g-value	0.72	
Air Permeability	(m ³ /h.m ² @ 50 Pa)	15	
Glazing(Costa & Subway)	W/m ² K	2.8	
Vision Element(Costa & Subway)	g-value	0.72	
Air Permeability(Costa & Subway)	(m ³ /h.m ² @ 50 Pa)	10	
Thermal Bridging	(m ³ /h.m ² @ 50 Pa)	15	
HVAC System	W/m ² K	Default	

Hot Water	Type	Air Source Heat Pump with ASHP with COP of 2.5, EER of 2.6	Default
		BOH – Direct electric	
Lighting	%	Gas-fired water heater with 75% efficiency and DesignBuilder autosized standing loss	As per Table 33 of Non Domestic Building Services Compliance Guide (2013 edition)
Ventilation SFP	Lm/watt	60	As per Table 11 of Non Domestic Building Services Compliance Guide (2013 edition)
Heat recovery	W/l/s	2.2	As per Table 42 of Non Domestic Building Services Compliance Guide (2013 edition)
	Per Cent	65	As per Table 35 of Non Domestic Building Services Compliance Guide (2013 edition)
			As per Table 38 of Non Domestic Building Services Compliance Guide (2013 edition)

- 4.7 Using the inputs as detailed above the following existing building baseline has been calculated as seen below:

Table 4.2 – Existing Building Baseline

Unit	Total Floor Area (m ²)	BER	Total Target CO ₂ (tn.CO ₂ .yr)	BPER	Total Target Primary Energy (kWh.yr)
Existing	4795	11.63	55.77	121.18	581,058.10
		Total =	55.77		581,058.10

- 4.8 The figure of **55.77 tn.CO₂.year** is the target emission rate and **121.18 kWh/m²** is the target primary energy rate that must be reached and improved upon to work towards BREEAM Excellent standards for energy efficiency. This will be achieved through the change of use, alongside the energy-reduction and carbon-saving measures as outlined in the ensuing sections.

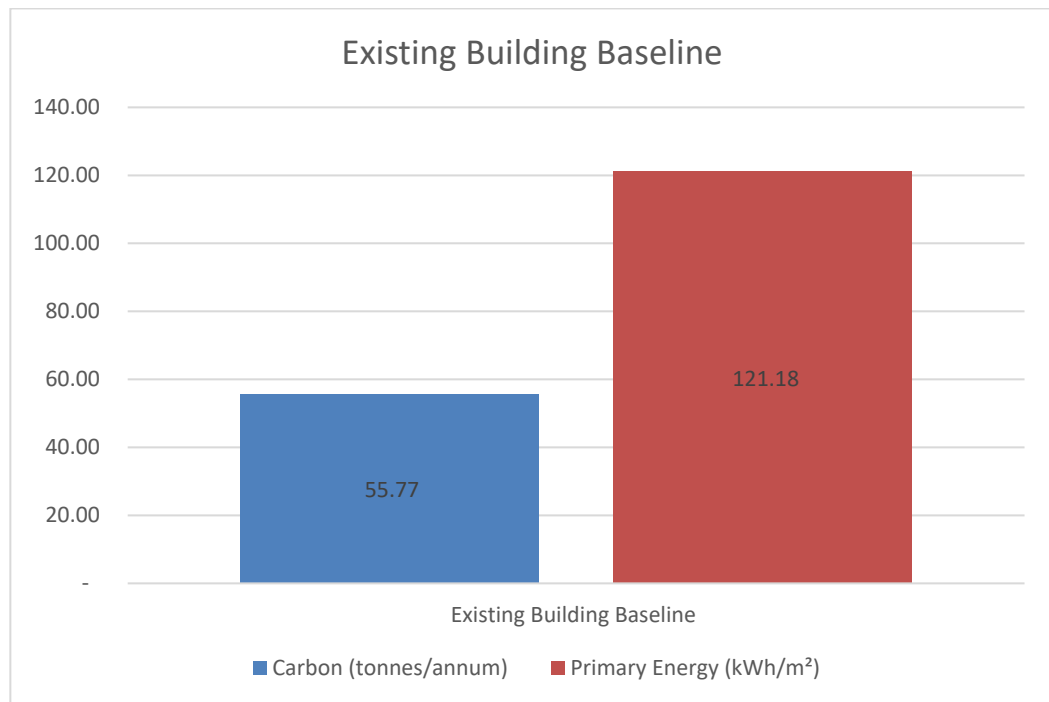


Fig 4.2– Target CO₂ emissions for Development

Applying the Energy Hierarchy: Use Less Energy

- 4.9 Best practice low carbon design mandates a 'fabric first' approach to reducing the carbon footprint of the built environment. This is achieved through buildings using less energy by optimising the design of the building and orientation, improving u-values, airtightness and maximising lighting efficiency amongst others. This is the first step to consider in reducing a building's carbon emissions before the efficient delivery of power, heat or renewables are considered by a design-team.

Fabric Efficiency

- 4.10 The application proposes the change of use to the existing building with no upgrades planned of the existing building fabric, which will be inspected through a thermographic survey to ensure that there are no thermal bridges.

Assumed Lighting (Part L 2021 Aligned)

- 4.11 This energy demand will be limited by the replacement of all lighting with more efficient lighting, photocell daylight control and use of LED lighting throughout. The following lighting design requirements are therefore stipulated:

Table 4.4 –Lighting Standards

Lighting zone	Luminaire Lumens / Circuit Watt	Light Output Ratio	Photocell Dimming (Parasitic Power – W/m ²)	Occupancy Sensing – On/Off (Parasitic Power – w/m ²)
Office	95	1	No	No
Storage	95	1	No	No
BOH areas	95	1	No	Yes (0.2 W/m ²)

Assumed Ventilation Strategy (Part L 2021 Aligned)

- 4.12 The ventilation strategy has been detailed to improve the energy efficiency needed to lower carbon emissions. The following strategy is proposed:

Table 4.5 – Summary of Ventilation Strategy

Ventilation Zone	System	Specific Fan Power	Heat Recovery (Efficiency)
Office	Supply/Extract System	2	Yes – 75%
Storage	Fan remote from zone	05	n/a
BOH areas	Fan remote from zone with grease filter	1.5	n/a

Assumed Space Heating & Cooling (Part L 2021 Aligned)

- 4.13 All storage areas which represent the majority of floorspace proposed are assumed to be unheated, save for frost protection. The office areas will be served by a split air source heat pump with the following parameters:
- A conventional VRF air source heat pump system is assumed.
 - Cooling plant will have a minimum Energy Efficiency Ratio (EER) of 5 and SEER of 5;
 - The ASHP will have a minimum COP of 2.5 for heating;
 - HVAC system controls installed will be operating efficiently and to include automatic monitoring and targeting with alarms for out-of-range values as well as local time and temperature control.

Assumed Hot Water Strategy (Part L 2021 Aligned)

- 4.14 All areas are assumed (as a minimum) to be served by high efficiency gas-fired water heaters, with an efficiency of 91%.

CO₂ Reductions achieved through Energy Efficiency Measures

- 4.15 The following tables and graphs represent the improvements for the development over the existing building baseline emissions

Table 4.6 –CO₂ Reductions over Existing Baseline

Unit	Total Floor Area (m ²)	BER	Total CO ₂ (tn.CO ₂ .yr)	BPER	Total Building Primary Energy (kWh.yr)
Proposed	4795	8.64	41.43	84.25	403,978.75
		Total =	41.43		
		Difference over Baseline	14.34		
		% Difference	25.71%		
					30.48%

- 4.16 As detailed above, the change of use, alongside measures anticipated to use less energy would result in the development achieving a **25.71%** reduction in CO₂ emissions & **30.48%** in Primary energy use when compared to the existing building baseline.

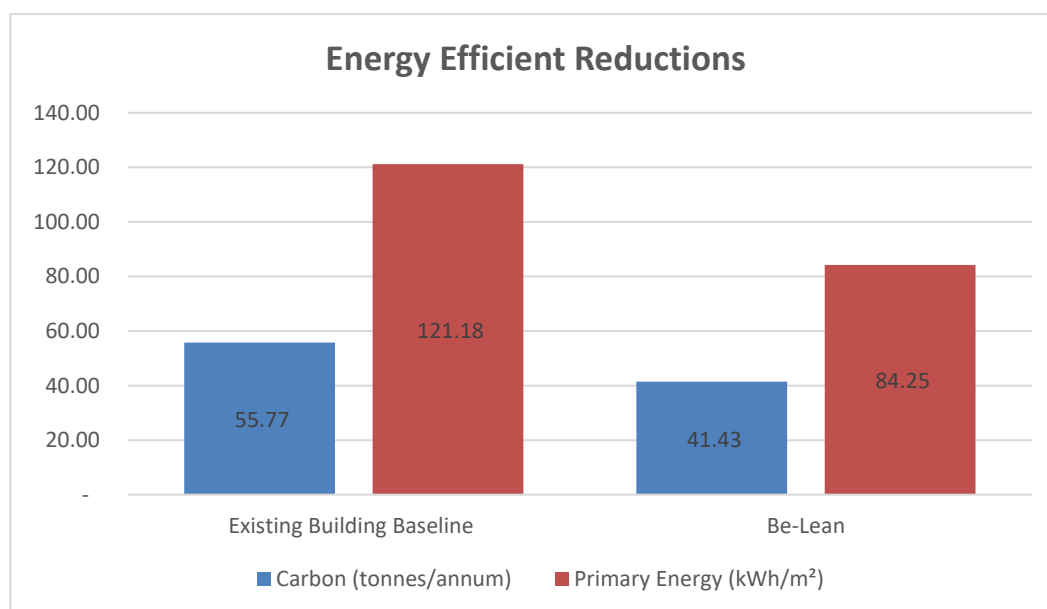


Figure 4.3 Graph of the CO₂ reduction over Baseline achieved through using less energy

Applying the Energy Hierarchy: Supply Energy Efficiently

- 4.17 Policy CC4 Of the Reading Borough Council Local Plan requires any development of more than 20 dwellings and/ or non-residential development of over 1,000 sq m to consider the inclusion of decentralised energy provision, within the site, unless it can be demonstrated that the scheme is not suitable, feasible or viable for this form of energy provision.
- 4.18 In addition, if there is existing decentralised energy provision present within the vicinity of an application site, further developments of 10 dwellings or more or non-residential development of 1,000 sq m or more will be expected to link into the existing decentralised energy network or demonstrate why this is not feasible.

Connection to existing heating or cooling networks

- 4.19 A desktop study undertaken on the area surrounding the Brunel Retail Park site shows there are no existing or planned heat networks within vicinity of the site. The council has instructed Element Energy to undertake a detailed technical and economic assessment of decentralised energy opportunities in Reading. This study identified four heat network clusters, located around central Reading. As the proposed development site is outside of these cluster areas, it is envisaged that there is limited potential for connection.



Figure 4.4 – Decentralised Energy High Priority Areas (Taken from RBC SPD 2019) in relation to the site

Site wide CHP network

- 4.20 RBC policy still promotes the use of site wide CHP networks for major development. The scale of the project and the end use as a storage operator, which generally has very limited heating or hot water demands is considered to not warrant a CHP network. Furthermore, the wider Brunel Retail Park, which will continue to have retail operators is not compatible with a site wide network. Each of the tenant have their own equipment to service their units independently and there is limited scope to introduce a site wide network for the park.

Future Connection to District Heating

- 4.21 Policy CC4 also requires consideration for how a development should provide connection at boundary to connect into future networks. Due to the low heat demand and anticipated building services strategy, the design will not include any connection to boundary to provide linkage to a decentralised energy network. Given that no DH networks are available within the vicinity of the site, it is suggested that a capped connection at boundary or other similar infrastructure is unnecessary. Indeed, this is not a requirement for development which sits outside a high priority area.
- 4.22 In addition, it is noted that by pursuing an all-electric scheme, the development is future-proofed for falling CO₂ emissions as the National Grid continues to decarbonize. Therefore a future connection to a DH network would not necessarily result in the scheme having lower CO₂ emissions than an all-electric scheme.

Applying the Energy Hierarchy: Use Renewable Energy

- 4.23 During the design-development period for this scheme, multiple low carbon/renewable systems were examined for both their feasibility and ability to lower carbon emissions insofar as possible.
- 4.24 Given the speculative nature of the development the exact specification of the equipment is uncertain, therefore the developer has committed to install renewable technologies as part of this planning application. The renewable systems deemed to be the most viable for the development are Photovoltaic panels (PV) providing renewable energy generation.

Photovoltaic Array

- 4.25 The low carbon/renewable energy proposed for the development is a Photovoltaic (PV) array. The proposed PV array will be mounted at the roof level of the unit, facing south-east. The building design will provide service riser accommodation to allow the roof mounted inverter to be wired back to a distribution board and G59 intake meter arrangement.
- 4.26 The roof enables reinforcement to ensure that it is suited for the weight of PV. The carbon offset from the installation will contribute towards an overall developments CO₂ reduction. Included in the table below is a break-down of the PV requirements:

Table 4.7 – PV Array Details

Unit	PV Area	PV Peak Power (kWp) per unit	PV Energy Generation (kWh.annum) per unit
Proposed PV Allocation	153m ²	28.9 kWp	138,575.5 kWh ²

- 4.27 An architectural roof layout drawing showing the location of the PV has been submitted alongside the application.

² This is the electrical generation requirement to be passed through to PV supplier.

CO₂ Reductions after the application of renewable energy

- 4.28 The following tables and graphs represent the final stage improvements for the development over the existing building baseline emissions:

Table 4.8 –Be-Green CO₂ Reductions over Existing Baseline

Unit	Total Floor Area (m ²)	BER	Total CO ₂ (tn.CO ₂ .yr)	BPER	Total Building Primary Energy (kWh.yr)
Proposed	4795	6.63	31.79	63.17	302,900.5
		Total =	31.79		302,900.5
		Be-Green Savings	9.63		101,078.60
		% Difference	17.28%		25.02%
		Difference over Baseline	23.98		278,157.95
		% Difference	42.99%		47.87%

- 4.29 As detailed above, the savings associated with the PV array would result in the development achieving an overall **42.99%** reduction in CO₂ emissions & **47.87%** reduction in Primary energy when compared to the existing building baseline.

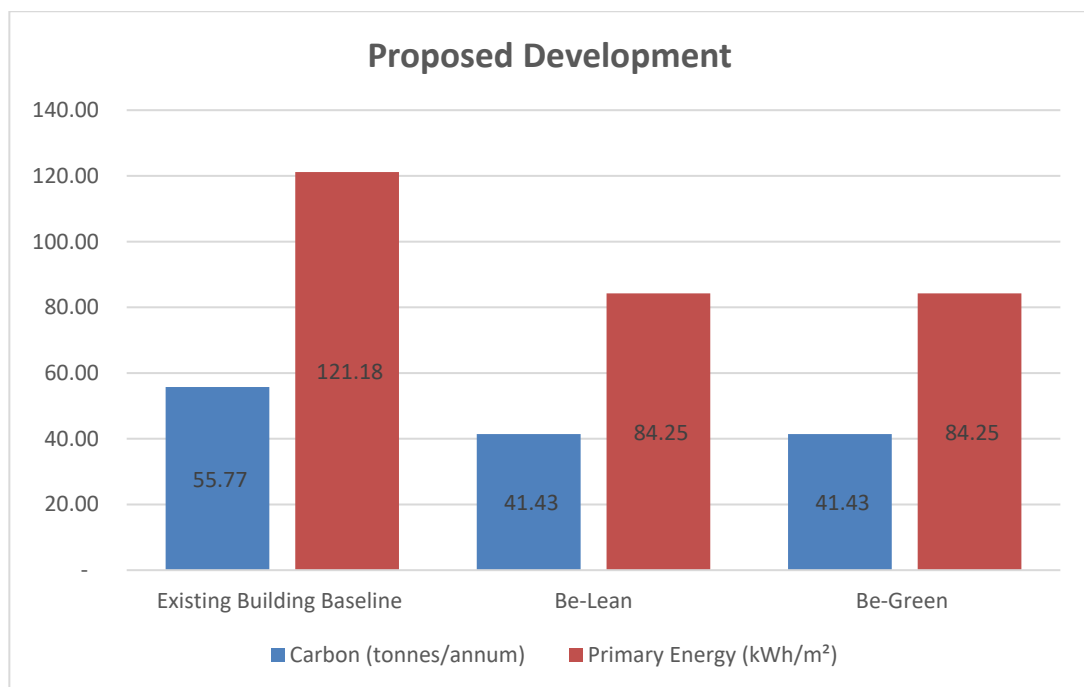


Figure 4.5 Graph of Be-Green CO₂ reduction over Baseline

Compliance with BREEAM Excellent

- 4.30 BREEAM RFO includes up to 15 credits for Ene 01 depending on the calculation approach followed. In order to reach BREEAM Excellent equivalent, 36% of the points need to be achieved.

BREEAM Credits	EPR _{NDR}	Rating	Minimum requirements
1	≥ 0.06	Pass Good Very Good	None
2	≥ 0.12		
3	≥ 0.18		
4	≥ 0.24		
5	≥ 0.30		
6	≥ 0.36	Excellent	Requires a minimum of 6 credits to be achieved (equivalent to an EPR _{NDR} of ≥ 0.36).
7	≥ 0.42		
8	≥ 0.48		
9	≥ 0.54		
10	≥ 0.60	Outstanding	Requires a minimum of 10 credits to be achieved (equivalent to an EPR _{NDR} of ≥ 0.60).
11	≥ 0.66		
12	≥ 0.72		
13	≥ 0.78		
14	≥ 0.84		
15	≥ 0.90		

Figure 4.6 Extract from BREEAM RFO 2014

- 4.31 A Part 1 BREEAM assessment cannot consider any equipment installed by a future tenant, and only considers the improvements to the thermal performance following refurbishment. Under such instances only 3 of the 15 credits are included in the assessment and there are technically no requirements for BREEAM Excellent.
- 4.32 When considering the whole building energy approach, the energy strategy put forward by the applicant will deliver 12 credits, in excess of the minimum BREEAM Excellent standards for energy efficiency. The outputs are shown below.

Credits	12.0	
Actual (existing) building energy demand (DemEx)	250.58	MJ/m2
Reference building energy demand (DemRef)	425.39	MJ/m2
Actual (proposed) building energy demand (DemProp)	243.68	MJ/m2
Actual (existing) building primary energy consumption (PEEx)	202.42	kWh/m2
Reference building primary energy consumption (PERef)	353.29	kWh/m2
Actual (proposed) building primary energy consumption (PEProp)	105.82	kWh/m2
Actual (existing) building CO2 emissions (BEREx)	11.63	KgCO2/m2
Reference building CO2 emissions (SER)	21.9	KgCO2/m2
Actual (proposed) building CO2 emissions (BERProp)	6.66	kgCO2/m2
Reference building primary energy consumption (PERef)	353.29	kWh/m2
Actual (proposed) building primary energy consumption (PEProp)	105.82	kWh/m2
Actual (existing) building CO2 emissions (BEREx)	11.63	KgCO2/m2
Reference building CO2 emissions (SER)	21.9	KgCO2/m2
Actual (proposed) building CO2 emissions (BERProp)	6.66	kgCO2/m2
Building energy demand individual parameter EPR (Energy performance Ratio)	0.3	
Primary energy consumption individual parameter EPR (Energy performance Ratio)	1.0	
Building CO2 emissions individual parameter EPR (Energy performance Ratio)	1.0	
EPRNDR (Energy Performance Ratio Non Domestic Refurbishment)	0.76	

Figure 4.7 Outputs of the Whole Building Energy Model Approach

5. CONCLUSION

- 5.1 This Sustainability and Energy Statement, incorporating a BREEAM Scoping Review has been prepared by Envision on behalf of Mayfair Capital (the applicant), and is submitted to support a full planning application seeking the change of use of the main terrace, from Class E to Class B8 to accommodate a potential self-storage operator at the Brunel Retail Park in Reading.
- 5.2 A key policy test in Reading is for major developments, including buildings subject to refurbishment, to meet with BREEAM Excellent. A BREEAM scoping review provided in Appendix 1 of this statement demonstrates that from a technical standpoint, none of the 4 parts of a BREEAM RFO 2014 assessment would be appropriate to the scheme. The only part of BREEAM which is within the applicant's control is Part 1, which relates to fabric and structure. The proposals entirely reuse the building and structure with only very limited changes as shown on scheme plans which wouldn't warrant assessment against the BREEAM method.
- 5.3 The reuse of the existing building would typically have a lower life cycle impact than demolition and new build from the perspective of embodied carbon, waste minimisation and resource depletion. This principle to fully reuse the building supports Policy CS1, which is to use energy, minerals, materials and other natural resources appropriately. Furthermore, the operational efficiency of the building is also expected to improve by attracting a new tenant with a low energy use operation, who will be required to install efficient building services which will at least be in line with Volume 2 of Building Regulations 2022 (thus conserving energy) and equivalent standards for water conservation. This will clearly lead to efficiencies from the current building.
- 5.4 The departure from BREEAM is considered justifiable and in line with the council's position elsewhere. Indicator 3 of the Council's annual monitoring report³ relates to major new non-residential developments permitted to meet with BREEAM Excellent standards. Of the permission granted, 50% met this standard. The council's monitoring report recognises in paragraph 5.8, that although policy CC2 does apply to all development including refurbishments, changes of use and conversions, each case would need to be considered on its merits and the level of alteration to the fabric of the building taken into account. Furthermore Indicator 1 considers the sustainability requirements attached to major applications. Of the 23 major planning applications that were permitted during the monitoring year, 16 had conditions relating to sustainability. Those that did not included an application for a change of use. On this basis it is considered reasonable that no formal BREEAM conditions are imposed on the scheme, but that the requirements to monitor and report against the commitments made by this statement be imposed in lieu of this.
- 5.5 To further promote sustainable design and construction of the development and to ensure compliance with Reading Borough Council (RBC) Policy CC2, the following monitoring measures are proposed, which are set out in full in Appendix 1:

³ ANNUAL MONITORING REPORT 2020-2021 December 2021

- Requiring the contractor to adopt environmental management principles.
- Employment of a sustainability champion through the further design and build phases.
- Procure what timber is required legally and sustainably, in accordance with a sustainable procurement plan.
- Register the site with the considerate constructor's scheme.
- Undertake a thermographic survey to assess insulation continuity and repair any significant defects in the existing fabric before handing over to the future operator.
- Conduct a durability review and explore options to protect the building from physical damage.
- Conducting a pre refurbishment audit to consider what materials can be removed and recycled, with the objective to promote resource efficiency.
- Replace any external lighting with energy efficient lamps which comply with BREEAM Ene 03.
- Install a 28.9 KWP PV array.
- Implement ecological enhancements.

5.6 The development is therefore considered to comply with the sustainability & energy requirements outlined in the Reading Borough Council Local Plan (adopted November 2019) and the Reading Borough Council Sustainable Design & Construction SPD (Adopted December 2019).

APPENDIX I – BREEAM SCOPING REVIEW AND ALIGNMENT

1. BREEAM assessments provide a sustainability rating for non-domestic buildings by considering a range of criteria. This includes principles of Management, Health & Well Being, Energy, Transport, Water, Materials, Waste, Land Use & Ecology and Pollution. Innovation credits are also available, representing new or exemplary performance in a specific sustainability issue.



Figure 1.1 – Scope of BREEAM

2. Policy CC2: Sustainable Construction and Design (Local Plan, November 2019) states that proposals for new development, including the refurbishment of existing building stock, will be acceptable where the design of buildings and site layouts use energy, water, minerals, materials and other natural resources appropriately, efficiently and with care and take account of the effects of climate change.
3. As part of this:
 - All major non-residential developments or conversions to residential are required to meet the most up to date BREEAM 'Excellent' standards, where possible;
 - All non-residential development or conversions to residential should incorporate water conservation measures so that predicted per capita consumption does not exceed the appropriate levels set out in the applicable BREEAM standard. Non-residential development should include recycling greywater and rainwater harvesting where systems are energy and cost effective.
4. The Sustainable Design & Construction SPD provides further clarification on the attainment of BREEAM. Table 3.1 'Requirement level of sustainability standard' states:

Non-residential refurbishment (including refurbishment for non-C3 residential)	Minor (less than 1,000 sq. m of floorspace)	BREEAM 'Very Good'
	Major (1,000 sq. m of floorspace or more)	BREEAM 'Excellent'

5. The BREEAM standards that are technically applicable to non-domestic refurbishment works are the BREEAM UK Non-domestic Refurbishment and Fit Out (2014). According to the SPD, the development should target BREEAM Excellent based on the floorspace proposed.
6. Set out below in table 1 is a review against the BREEAM Refurbishment and Fit-out (2014) assessment scope. The assessment method provides a modular set of criteria that can be applied depending upon the scope of works for a particular project. There are four parts to a BREEAM refurbishment assessment as shown in the table below. The relevance to the developers works are considered against each.

Table A.1 – Assessment of the application of BREEAM Refurbishment 2014

Section	Comment	Relevance to the Application
Part 1 – Fabric & Structure	This part applies where major alterations to the building façade, roof or windows are being undertaken and where the area to be renovated is greater than 50% of the surface of the individual element or 25% of the total building envelope.	The proposals involve the full retention and reuse of the building envelope and structure. The only modifications proposed will be the installation of new means of escape doors and roller shutters and modest glazing replacement to the eastern facade. Existing glazing on the north façade will be retained and covered with decorative graphics. Part 1 is not applicable.
Part 2 – Core Services	BREEAM considers 'core services' as services that supply multiple areas and will generally be centralised plant. Part 2 is relevant for the assessment of fully fitted buildings, where at least two M&E systems are to be installed or upgraded.	Core services will be a responsibility of the future tenant, and therefore do not fall within the scope of the works undertaken by the Applicant. Subsequently these cannot be included in a BREEAM assessment. Part 2 is not applicable.
Part 3 – Local Services	Part 3 applies to fully fitted assessments, where at least two fixed building services are to be installed or upgraded within the assessed building.	As above, local services will be the responsibility of the future tenant and cannot form part of the assessment. Part 3 is not applicable.
Part 4 – Interiors Design	Part 4 applies where the refurbishment or fit-out works involve changes to the decoration of the refurbishment or fit-out area. This is only applicable to fully fitted buildings.	Interior design will be the responsibility of the future tenant and cannot form part of the BREEAM assessment for the shell works. Part 4 is not applicable.

7. As can be seen in Table A.1, from a technical standpoint none of the 4 parts of BREEAM non-domestic refurbishment scheme is applicable to application. The Applicant will make minimal interventions in the existing building, including closing up certain existing shop openings and glazing and introducing decorative graphics. New roller shutter doors and means of escape doors will be added. None of the works would meet the thresholds of a Part 1 BREEAM Assessment. The tenant would complete the final fit out and the installation of all MEP equipment and internal finishes. This will be undertaken by a separate design team and fit out contractor appointed by the tenant, who is not yet identified. Given this, it is important to ensure any BREEAM assessment is able to be satisfied by the Applicant's scope of works alone. Therefore, the only practical option would be to apply BREEAM against a shell only assessment. The approach is consistent with the approach agreed with RBC on the House of Fraser Oracle (application ref 191841/FUL) and the Broad Street Shopping Mall (190099/FUL) which followed similar principles, whereby the BREEAM assessment was to focus on the Applicant's works alone.
8. With regard to the target of Excellent, the predictive assessment considers the availability of credits based on the scope of the Applicants work to facilitate the change of use. The alignment exercise, made against Part 1 only of BREEAM RFO, demonstrates which measures are possible and appropriate and will be taken forward as part of a compliance monitoring process in lieu of formal BREEAM assessment.

Credit Title	Available Credits	Targeted Credits	Unachievable / Impractical Credits	BREEAM Requirements	Project Specific Comments	Form Part of the Sustainability Monitoring
Man 01 – Stakeholder Consultation	1	1		A clear sustainability brief developed prior to concept design. Identify and define roles, responsibilities and contribution of project team for key phases of the project delivery.	The project team have been working to develop the scheme to accommodate a future tenant. This includes a sustainability brief to adequately address local policy and to ensure flexibility for a self storage operator.	N
Man 01 – Stakeholder Consultation (Third Party)	1		1	Design team to consult 3 rd party stakeholders prior to completion of detailed design – feedback to all relevant parties given and received.	The requirement to undertake formal public consultation is of limited value for the application. The Applicant has been in consultation with other tenants of the retail park and agents, as well as prospective tenants of the self storage, however this does not meet the formal requirements of BREEAM.	N
Man 01 – Sustainability Champion	1	1		Appointment of sustainability champion to the project.	Envision is a BREEAM AP organisation and has provided early advice, as set out in this statement.	Y
Man 01 – Sustainability (Champion Monitoring Progress)	1	1		Sustainability Champion to monitor and report progress against agreed BREEAM performance targets.	Envision is a BREEAM AP organisation and sustainability champion and can oversee commitments through further design.	Y
Man 02 – Elemental Life Cycle Cost	2		2	An outline, entire asset elemental life cycle cost plan has to be carried out at RIBA stage 2 in line with 'Standardised method of life cycle costing for construction procurement.	As the scope of Applicant's works is very limited, the benefit of undertaking this on the minimal shell works is reduced.	N

Credit Title	Available Credits	Targeted Credits	Unachievable / Impractical Credits	BREEAM Requirements	Project Specific Comments	Form Part of the Sustainability Monitoring
Man 02 - Component Level Life cycle Cost	1		1	A component level LCC plan has been developed by the end of Process Stage 4.	As the scope of shell works is very limited, the benefit of undertaking this on the minimal shell works is reduced. In addition, most components relevant to the assessment are associated with the fit out, outside of the Applicant's control.	N
Man 02.2 – Capital Cost Reporting	1	1		Report the capital cost for the fit-out works in pounds per meter square (£/m ²) via the BREEAM Assessment Scoring and Reporting tool.	Capital cost reporting assumed feasible to achieve, however given no formal BREEAM assessment is proposed this would not be pursued.	N
Man 03 – (Prerequisite) Legally Harvest and Traded Timber		Y		All timber and timber-based products used on the project is 'Legally harvested and traded timber	Very limited timber will be used in the change of use, however any that is required, including any temporary timber will follow these requirements.	Y
Man 03 – Environmental Management	1	1		Principal contractor operates ISO 14001 EMS.	This is standard and will be incorporated into the future contractors work requirements.	Y
Man 03 – Construction Stage Sustainability Champion	1	1		A Sustainability Champion is appointed to monitor the project to ensure ongoing compliance with the relevant sustainability performance/process criteria, and therefore BREEAM target, during the Construction, Handover and Close Out stages.	This is standard and will be incorporated into the future contractors work requirements.	Y

Credit Title	Available Credits	Targeted Credits	Unachievable / Impractical Credits	BREEAM Requirements	Project Specific Comments	Form Part of the Sustainability Monitoring
Man 03 – Considerate Contractors Scheme	2	2		Principal contractor achieves score >35 under the Considerate Contractors Scheme (CCS)	This will be incorporated into the future contractors work requirements.	Y
Man 03 – Monitoring of Refurbishment or Fit-Out Site Impacts (Energy and Water)	1	1		Construction contractors monitor energy and water consumption on site.	This is standard and will be incorporated into the future contractors work requirements.	Y
Man 03 – Monitoring of Refurbishment or Fit-Out Site Impacts (Transport of Construction Materials and Waste)	1	1		Contractor to monitor fuel consumption of transport of materials and waste to/from site.	To be included in Principal Contractor requirements.	Y
Man 04 – Commissioning Building Fabric	1		1	Commission building fabric, including a thermographic survey	There is no new fabric proposed and therefore the scope of this credit which looks at the insulation and thermal conductivity of the insulation and new construction is not practical or possible to demonstrate against the BREEAM criteria. It is possible to review the existing fabric	Y

Credit Title	Available Credits	Targeted Credits	Unachievable / Impractical Credits	BREEAM Requirements	Project Specific Comments	Form Part of the Sustainability Monitoring
					through the use of thermographic assessment and replace any significant defects.	
Hea 01 – Daylighting	3		3	Up to three credits are available depending on the percentage of relevant building areas that comply with the following: The relevant building areas meet good practice daylight factor OR the relevant building areas meet good practice average and minimum point daylight illuminance criteria 1 credit – 17.5% of sales area achieves point daylight factor of 2% or more and all other occupied areas achieve average daylight factor of 2% or more 2 credits – 25% of sales area achieves above 3 credits – 35% of sales achieves above	Credit not expected to be achievable based on the existing building footprint and depth. The majority of floorspace will not require daylight however and the credit is not considered to be applicable.	N
Hea 01 – View out	2		2	For relevant building areas, 95% of floor area within 8m of external wall with window, and window size >20% of surrounding wall area.	The internal layouts presented at planning are illustrative, however do not show office areas to benefit from natural daylight or a view out. In general, these credits are not appropriate for this type of building type.	N
Hea 01 – Internal and external lighting levels,	1	1		All fluorescent and compact fluorescent lights fitted with high frequency ballasts. Internal lighting designed to provide lux levels in accordance with SLL Code for Lighting, CIBSE Lighting Guide 7 and other relevant industry	Any lighting proposed by the Applicant would comply with these standards. In general, the scope would be limited to repositioning external lighting to facilitate the new storage occupier.	Y

Credit Title	Available Credits	Targeted Credits	Unachievable / Impractical Credits	BREEAM Requirements	Project Specific Comments	Form Part of the Sustainability Monitoring
zoning and control				standards; and zoned to allow occupant control. Separate zoning required in retail space for display and counter areas (PIR controls must include manual over-ride). External lighting designed in accordance with BS5489 and BS EN 12464-2:2-14		
Hea 02 – Indoor air quality (IAQ) plan	1	1		Site specific (IAQ) plan produced and implemented, the plan must be produced and implemented. The objective is to minimise indoor air quality during the design, construction and occupation of the building	IAQ plan assumed achievable, must be produced at earliest opportunity before construction. Requires an IAQP to be produced.	Y
Hea 02 – Ventilation	1		1	Designed to minimise the indoor concentration and recirculation of pollutant in the building. Provide fresh air into the building in accordance with the criteria of the relevant standard for ventilation	The level of compliance remains unknown, however it is envisaged that the tenant intakes and exhausts likely to be too close to achieve credit. Assumed not feasible.	N
Hea 04 – Thermal modelling	1	1		Thermal modelling in accordance with CIBSE AM11 Inc. full dynamic thermal analysis, winter temp ranges in accordance with CIBSE Guide A, and building designed to limit risk of overheating.	The thermal comfort analysis is more practical for buildings subject to fully fitted assessments or for buildings designed to be naturally ventilated with no cooling. Whilst there is limited benefit to this exercise, the study is technically feasible and can be undertaken. The tenant would be expected to	Y

Credit Title	Available Credits	Targeted Credits	Unachievable / Impractical Credits	BREEAM Requirements	Project Specific Comments	Form Part of the Sustainability Monitoring
					size HVAC correctly to ensure comfortable temperatures.	
Hea 04 – Thermal Modelling – Future Climate	1	1		Above thermal comfort analysis informs temperature control strategy, and strategy provides compliant zoning and controls	As above.	Y
Hea 05 – Acoustic performance	2		2	Meet relevant acoustic performance standards for sound insulation, indoor ambient noise levels and reverberation	Whilst acoustics do form part of a Part 1 assessment with 2 credits available, there is limited scope to pursue these with no alteration to the shell.	N
Hea 06 – Security of site and building	1		1	Security Needs Assessment (SNA) undertaken during RIBA Stage 2 and design embodies recommendations.	A formal third-party security needs assessment is not expected to be beneficial for the development, however the proposals have been subject to consultation with the retail parks own managing agents. The proposals are therefore considered to align with the requirements in general. The site has also been subject to previous security needs assessments.	N
Ene 01 – Elemental Energy Assessment	3	1		A calculation of the energy score using the BREEAM Refurbishment and Fit-out energy model must be carried out based on the BREEAM method.	1 credit is awarded based on the proposals. It is envisaged that the energy targets as set out in Section 4 of this statement are monitored.	Y

Credit Title	Available Credits	Targeted Credits	Unachievable / Impractical Credits	BREEAM Requirements	Project Specific Comments	Form Part of the Sustainability Monitoring
Ene 04 – Passive Design Analysis	1		1	First, the first credit within issue Hea 04 Thermal comfort has been achieved. Then analysis of the existing building fabric, form, site location and outline scheme design is carried out to identify potential passive design solutions and retrofit measures that reduce demands for energy consuming building services. The building uses passive design measures to reduce the total heating, cooling, mechanical ventilation and lighting loads and energy consumption in line with the findings of the passive design analysis.	First credit not achieved, albeit that the removal of the rooflights with the introduction of highly efficient LED lighting (by the future tenant) would be expected to reduce heating and cooling loads in the building.	N
Ene 04 – Free Cooling	1		1	The passive design analysis carried out under criterion 2 includes an analysis of free cooling and identifies opportunities for the implementation of free cooling solutions.	There is limited benefit here based on the reuse of the existing building.	N
Tra 02 – Proximity to Amenities	1	1		Where the development is within 500 meters of appropriate amenities.	The site is within 500 meters of a cash point and food outlet.	N
Tra 03 – Cyclist Facilities	2	1		Compliant cycle spaces are included for the first credit and adequate: Showers Changing facilities Lockers Drying spaces.	Cyclist facilities will be provided in the form of cycle parking.	Y

Credit Title	Available Credits	Targeted Credits	Unachievable / Impractical Credits	BREEAM Requirements	Project Specific Comments	Form Part of the Sustainability Monitoring
Tra 05 – Travel Plan	1	1		A travel plan has been developed as part of the feasibility and design stages.	A travel plan has been prepared by the Applicant.	Y
Mat 01 – Life Cycle Impacts	2	2		Robust environmental performance information has been collected for newly specified materials or where materials are retained in situ.	It is assumed that all new materials used internally can be supported with robust environmental performance data.	Y
Mat 03 – (Prerequisite) Legally harvested and traded timber	-	Y		Minimum requirement for all timber products to be legally sourced.	To be included in Principal Contractor requirements	Y
Mat 03 – Enabling sustainable procurement	1	1		Produce a sustainable procurement plan by the design team to guide specification towards sustainable construction products in place before Concept Design. Following the process set out in BS ISO 20400:2017.	To be included in Principal Contractor requirements.	Y
Mat 03 – Measuring responsible sourcing	3	2		Achieve 36% of the points available in the Mat 03 calculation.	Very limited new materials will be required to facilitate the change of use. This mainly includes external areas, however new personnel doors and roller shutters will be added to the existing elevations. These can be sourced from suppliers with environmental management systems, however in general the scope to achieve the highest scoring under this credit is limited.	Y

Credit Title	Available Credits	Targeted Credits	Unachievable / Impractical Credits	BREEAM Requirements	Project Specific Comments	Form Part of the Sustainability Monitoring
Mat 05 – Designing for durability and resilience	1	1		The building incorporates suitable durability and protection measures or designed features/solutions to prevent damage to vulnerable parts of the internal elements. This must include, but is not necessarily limited to: 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.	This will be addressed through design development as far as practical within the scope of the Applicants control.	Y
Mat 06 – Material Efficiency	1		1	Opportunities have been identified, and appropriate measures investigated and implemented within the scope of refurbishment or fit-out works, to optimise the use of materials through building design, procurement, refurbishment, maintenance and end of life.	The scope of the materials used is generally very limited. A Materials efficiency study is not expected to add value in this case. Consideration should be given to reusing elements for the building, for example the escalators	N
Wst 01 – Pre Refurbishment Audit	NA	0		Ensure that a pre-refurbishment audit of all existing buildings, hard surfaces within the scope of the refurbishment or fit-out zone is completed. The audit should be carried out at the Concept Design Stage (equivalent to RIBA stage 2) prior to strip-out or demolition works in order to use the audit results to guide the design, consideration of materials that can be reused, and to set targets	Undertake a pre refurbishment audit of aspects which will be removed by change of use.	Y

Credit Title	Available Credits	Targeted Credits	Unachievable / Impractical Credits	BREEAM Requirements	Project Specific Comments	Form Part of the Sustainability Monitoring
				for waste management and ensure all contractors are engaged in the process of maximising high grade reuse and recycling opportunities.		
Wst 01 – Reuse and Direct Recycling	2	2		Where waste material types are either directly re-used on-site or off-site or are sent back to the manufacturer for closed loop recycling	Generally the scheme fully supports this by reusing the substantial parts of the building.	N
Wst 01 – Resource Efficiency	3	2		Prepare a compliant Resource Management Plan (RMP) and a construction waste resource efficiency benchmark of 4.5m ³ (or 1.2 tonnes) of construction waste generated per 100m ² GIFA.	The level of waste being removed would not typically require a SWMP to be undertaken, however these targets are possible and should be monitored.	Y
Wst 01 – Diversion from Landfill	1	1		Prepare a compliant Resource Management Plan (RMP) and divert at least 85% by volume or 90% of waste from landfill.	Target should be achievable.	Y
Wst 03 – Operational waste	1	1		A dedicated central space for storage of recyclable waste, clearly labelled and accessible to building occupants/ facilities operators.	Assumed achievable. Very limited waste will arise from the development. The operator would put in place waste management arrangements commensurate with the storage use.	Y
Wst 05 – Functional Adaptability	1		1			N
Wst 06 – Design for disassembly	1		1	Carry out and implement a functional adaptation appraisal at concept design.	Not considered relevant for the project.	N

Credit Title	Available Credits	Targeted Credits	Unachievable / Impractical Credits	BREEAM Requirements	Project Specific Comments	Form Part of the Sustainability Monitoring
and functional adaptability						
LE 02 – Protection of Ecological Features	1	1		All existing features of ecological value within and surrounding the refurbishment or fit-out zone and site boundary area are adequately protected from damage during clearance, site preparation and refurbishment. In all cases, the principal contractor is required to construct ecological protection recommended by the Suitably Qualified Ecologist (SQE), prior to any preliminary site refurbishment or fit-out or preparation works (e.g. erection of temporary site facilities).	This should be possible and will require input from the ecologist.	Y
LE 04 – Enhancing Site Ecology	1	2		A suitably qualified ecologist (SQE) has been appointed by the client or their project representative by the end of the Preparation and Brief stage (RIBA Stage 1 or equivalent) to advise on enhancing the ecology of the site at an early stage.	An ecologist has previously reviewed the site as part of previous applications and advised on ecological sensitivity. The Encon landscape scheme addresses ecological gain.	Y
LE 05 – Long Term Impact	2	2		Where a Suitably Qualified Ecologist (SQE) is appointed prior to commencement of activities on-site and they confirm that all relevant UK and EU legislation relating to the protection and	This is possible and can be incorporated into the future contractor's work.	Y

Credit Title	Available Credits	Targeted Credits	Unachievable / Impractical Credits	BREEAM Requirements	Project Specific Comments	Form Part of the Sustainability Monitoring
				enhancement of ecology has been complied with during the refurbishment or fit-out process. Where a landscape and habitat management plan, appropriate to the site, is produced covering at least the first five years after project completion.		
Pol 03 – Flood Risk Management	2	2		A site-specific FRA is undertaken confirming the development's flood zone.	Low Flood Risk as confirmed by EA flood maps; however, a formal, simplistic assessment will be required in due course to award credits.	N
Pol 03 – Surface Water Run off	2	1		There is no increase in the impermeable surfaces as a result of the refurbishment works;	There is no increase however it is not possible to provide further attenuation.	Y
Pol 03 - Minimising water course pollution	1		1	There is no discharge from the developed site (includes new and existing hard landscaping and buildings) for rainfall up to 5mm (confirmed by the Appropriate Consultant). Where suitable pollution prevention measures are put in place (or already exist) for the different sources of pollution present on the assessed site, in accordance with compliance note.	Storage of the first 5mm is not possible for this scheme.	N

APPENDIX II – BRUKLS FOR DEVELOPMENT

Project name

Brunel Retail park - Existing App1**As designed****Date:** Tue Jun 13 10:51:54 2023

Administrative information

Building Details

Address: Reading, RG2 0HS

Certifier details

Name: Ciaran Dorrity

Telephone number: 02074860680

Address: 8-9 Stephen Mews, London, W1T 1AF

Certification tool

Calculation engine: SBEM

Calculation engine version: v6.1.e.0

Interface to calculation engine: DesignBuilder SBEM

Interface to calculation engine version: v7.1.4

BRUKL compliance module version: v6.1.e.0

Foundation area [m²]: 2256.9The CO₂ emission and primary energy rates of the building must not exceed the targets

The building does not comply with England Building Regulations Part L 2021

Target CO ₂ emission rate (TER), kgCO ₂ /m ² .annum	4.07
Building CO ₂ emission rate (BER), kgCO ₂ /m ² .annum	11.63
Target primary energy rate (TPER), kWh _{PE} /m ² .annum	42.02
Building primary energy rate (BPER), kWh _{PE} /m ² .annum	121.18
Do the building's emission and primary energy rates exceed the targets?	BER > TER BPER > TPER

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

Fabric element	U _a -Limit	U _a -Calc	U _i -Calc	First surface with maximum value
Walls*	0.26	0.46	0.51	FIRST FLOOR - TOILET_P_5
Floors	0.18	0.44	0.45	FIRST FLOOR - STAIRS_F_3
Pitched roofs	0.16	-	-	No heat loss pitched roofs
Flat roofs	0.18	0.44	0.45	FIRST FLOOR - TOILET_R_8
Windows** and roof windows	1.6	2.66	2.66	GROUND FLOOR - BOH circulation_G_5
Rooflights***	2.2	-	-	No external rooflights
Personnel doors^	1.6	-	-	No external personnel doors
Vehicle access & similar large doors	1.3	1.5	1.5	GROUND FLOOR - CIRCULATION TOILET_D_8
High usage entrance doors	3	-	-	No external high usage entrance doors

U_a-Limit = Limiting area-weighted average U-values [W/(m²K)]U_i-Calc = Calculated maximum individual element U-values [W/(m²K)]U_a-Calc = Calculated area-weighted average U-values [W/(m²K)]

* 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. *** Values for rooflights refer to the horizontal position.

^ For fire doors, limiting U-value is 1.8 W/m²K

NB: Neither roof ventilators (inc. smoke vents) nor swimming pool basins are modelled or checked against the limiting standards by the tool.

Air permeability	Limiting standard	This building
m ³ /(h.m ²) at 50 Pa	8	14.62

Building services

For details on the standard values listed below, system-specific guidance, and additional regulatory requirements, refer to the Approved Documents.

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- BOH - Part L 2013

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	1	-	-	-	-
Standard value	N/A	N/A	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					NO

2- Split System(Part L 2013)

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	2.5	2.6	-	-	-
Standard value	2.5*	5	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 all types >12 kW output, except absorption and gas engine heat pumps.

1- DHW-exisiting

	Water heating efficiency	Storage loss factor [kWh/litre per day]
This building	0.73	-
Standard value	0.91	N/A

Zone-level mechanical ventilation, exhaust, and terminal units

ID	System type in the Approved Documents
A	Local supply or extract ventilation units
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 balanced supply and extract ventilation system
E	Local balanced supply and extract ventilation units
F	Other local ventilation units
G	Fan assisted terminal variable air volume units
H	Fan coil units
I	Kitchen extract with the fan remote from the zone and a grease filter

NB: Limiting SFP may be increased by the amounts specified in the Approved Documents if the installation includes particular components.

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	2.3	2	0.5	0.5	0.4	1			
GROUND FLOOR - KITCHEN	-	-	-	-	-	-	-	-	1.5	-	-	N/A
FIRST FLOOR - TOILET	-	-	0.5	-	-	-	-	-	-	-	-	N/A
GROUND FLOOR - PANTRY/BOH	-	-	-	-	-	-	-	-	1.5	-	-	N/A
GROUND FLOOR - CIRCULATION TOILET	-	-	0.5	-	-	-	-	-	-	-	-	N/A
GROUND FLOOR - TOILET 11	-	-	0.5	-	-	-	-	-	-	-	-	N/A
GROUND FLOOR - TOILET 10	-	-	0.5	-	-	-	-	-	-	-	-	N/A
GROUND FLOOR - TOILET 9	-	-	0.5	-	-	-	-	-	-	-	-	N/A
GROUND FLOOR - TOILET 8	-	-	0.5	-	-	-	-	-	-	-	-	N/A

Zone name	SFP [W/(l/s)]										HR efficiency	
ID of system type	A	B	C	D	E	F	G	H	I			
Standard value	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1	Zone	Standard	
GROUND FLOOR - TOILET 6	-	-	0.5	-	-	-	-	-	-	-	N/A	
GROUND FLOOR - TOILET 4	-	-	0.5	-	-	-	-	-	-	-	N/A	
GROUND FLOOR - TOILET 2	-	-	0.5	-	-	-	-	-	-	-	N/A	
GROUND FLOOR - TOILET 1	-	-	0.5	-	-	-	-	-	-	-	N/A	
GROUND FLOOR - TOILET 7	-	-	0.5	-	-	-	-	-	-	-	N/A	
GROUND FLOOR - TOILET	-	-	0.5	-	-	-	-	-	-	-	N/A	
FIRST FLOOR - LAURA ASHLEY RETAIL FF	-	-	-	-	2.2	-	-	-	-	0.65	N/A	
FIRST FLOOR - PANTRY BREAKOUT AREA	-	-	-	-	2.2	-	-	-	-	0.65	N/A	
FIRST FLOOR - OFFICE SPACE FF	-	-	-	-	2.2	-	-	-	-	0.65	N/A	
FIRST FLOOR - B&M RETAIL SPACE-FF	-	-	-	-	2.2	-	-	-	-	0.65	N/A	
GROUND FLOOR - STAFF AREA	-	-	-	-	2.2	-	-	-	-	0.65	N/A	
GROUND FLOOR - OFFICE 4	-	-	-	-	2.2	-	-	-	-	0.65	N/A	
GROUND FLOOR - STAFF	-	-	-	-	2.2	-	-	-	-	0.65	N/A	
GROUND FLOOR - REATIL SHOE ZONE	-	-	-	-	2.2	-	-	-	-	0.65	N/A	
GROUND FLOOR - BRANTANO FOOTWEAR MAIN DB-	-	-	-	-	2.2	-	-	-	-	0.65	N/A	
GROUND FLOOR - SHOEZONE MAIN GF DB	-	-	-	-	2.2	-	-	-	-	0.65	N/A	
GROUND FLOOR - OFFICE B&M	-	-	-	-	2.2	-	-	-	-	0.65	N/A	
GROUND FLOOR - OFFICE 3	-	-	-	-	2.2	-	-	-	-	0.65	N/A	
GROUND FLOOR - OFFICE 2	-	-	-	-	2.2	-	-	-	-	0.65	N/A	
GROUND FLOOR - OFFICE 1	-	-	-	-	2.2	-	-	-	-	0.65	N/A	
GROUND FLOOR - B&M STORE REATIL GF db	-	-	-	-	2.2	-	-	-	-	0.65	N/A	
GROUND FLOOR - PANTRY	-	-	-	-	2.2	-	-	-	-	0.65	N/A	
GROUND FLOOR - OFFICE/STAFF AREAS- 1	-	-	-	-	2.2	-	-	-	-	0.65	N/A	
GROUND FLOOR - LAURA ASHLEY GF RETAIL 2	-	-	-	-	2.2	-	-	-	-	0.65	N/A	
GROUND FLOOR - LAURA ASHLEY GF RETAIL 3	-	-	-	-	2.2	-	-	-	-	0.65	N/A	
GROUND FLOOR - STAFF AREA EXT RETAIL	-	-	-	-	2.2	-	-	-	-	0.65	N/A	
GROUND FLOOR - COSTA 1	-	-	-	-	2.2	-	-	-	-	0.65	N/A	
GROUND FLOOR - SUBWAY	-	-	-	-	2.2	-	-	-	-	0.65	N/A	
GROUND FLOOR - LAURA ASHLEY MAIN REATIL DB	-	-	-	-	2.2	-	-	-	-	0.65	N/A	

General lighting and display lighting		General luminaire	Display light source	
Zone name		Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m²]
Standard value		95	80	0.3
FIRST FLOOR - STORE 1		60	-	-
FIRST FLOOR - STORE		60	-	-
FIRST FLOOR - LIFT		60	-	-
GROUND FLOOR - STORE		60	-	-
GROUND FLOOR - STORE 3		60	-	-
GROUND FLOOR - lift		60	-	-
GROUND FLOOR - LIFT 1		60	-	-
GROUND FLOOR - SEASONAL STORE		60	-	-
GROUND FLOOR - ELEC		60	-	-
GROUND FLOOR - KITCHEN		60	-	-

General lighting and display lighting		General luminaire		Display light source	
Zone name		Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m²]	
	Standard value	95	80	0.3	
FIRST FLOOR - TOILET		60	-	-	
FIRST FLOOR - STAIRS		60	-	-	
FIRST FLOOR - CORRIDOR		60	-	-	
FIRST FLOOR - STAIR		60	-	-	
FIRST FLOOR - STAIRS BM		60	-	-	
GROUND FLOOR - PANTRY/BOH		60	60	2.5	
GROUND FLOOR - CIRCULATION TOILET		60	-	-	
GROUND FLOOR - TOILET 11		60	-	-	
GROUND FLOOR - TOILET 10		60	-	-	
GROUND FLOOR - TOILET 9		60	-	-	
GROUND FLOOR - TOILET 8		60	-	-	
GROUND FLOOR - CORRIDOR		60	-	-	
GROUND FLOOR - circulation 1		60	-	-	
GROUND FLOOR - TOILET 6		60	-	-	
GROUND FLOOR - STAIRS		60	-	-	
GROUND FLOOR - TOILET 4		60	-	-	
GROUND FLOOR - TOILET 2		60	-	-	
GROUND FLOOR - TOILET 1		60	-	-	
GROUND FLOOR - CIRCULATION		60	-	-	
GROUND FLOOR - TOILET 7		60	-	-	
GROUND FLOOR - BOH CIRCULATION 1		60	-	-	
GROUND FLOOR - TOILET		60	-	-	
GROUND FLOOR - BOH circulation		60	-	-	
FIRST FLOOR - LAURA ASHLEY RETAIL FF		60	60	2.5	
FIRST FLOOR - PANTRY BREAKOUT AREA		60	60	2.5	
FIRST FLOOR - OFFICE SPACE FF		60	-	-	
FIRST FLOOR - B&M RETAIL SPACE FF		60	60	2.5	
GROUND FLOOR - STAFF AREA		60	60	2.5	
GROUND FLOOR - OFFICE 4		60	-	-	
GROUND FLOOR - STAFF		60	-	-	
GROUND FLOOR - REATIL SHOE ZONE		60	60	2.5	
GROUND FLOOR - BRANTANO FOOTWEAR MAIN DB		60	60	2.5	
GROUND FLOOR - SHOEZONE MAIN GF DB		60	60	2.5	
GROUND FLOOR - OFFICE B&M		60	-	-	
GROUND FLOOR - OFFICE 3		60	-	-	
GROUND FLOOR - OFFICE 2		60	-	-	
GROUND FLOOR - OFFICE 1		60	-	-	
GROUND FLOOR - B&M STORE REATIL GF db		60	60	2.5	
GROUND FLOOR - PANTRY		60	60	2.5	
GROUND FLOOR - OFFICE/STAFF AREAS 1		60	-	-	
GROUND FLOOR - LAURA ASHLEY GF RETAIL		60	60	2.5	
GROUND FLOOR - LAURA ASHLEY GF RETAIL		60	60	2.5	
GROUND FLOOR - STAFF AREA EXT RETAIL		60	60	2.5	

General lighting and display lighting		General luminaire	Display light source	
Zone name		Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m²]
	Standard value	95	80	0.3
GROUND FLOOR - COSTA 1		60	60	2.5
GROUND FLOOR - SUBWAY		60	60	2.5
GROUND FLOOR - LAURA ASHLEY MAIN RETAIL		60	60	2.5

The spaces in the building should have appropriate passive control measures to limit solar gains in summer

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
GROUND FLOOR - PANTRY/BOH	N/A	N/A
FIRST FLOOR - LAURA ASHLEY RETAIL FF	N/A	N/A
FIRST FLOOR - PANTRY BREAKOUT AREA	N/A	N/A
FIRST FLOOR - OFFICE SPACE FF	N/A	N/A
FIRST FLOOR - B&M RETAIL SPACE FF	N/A	N/A
GROUND FLOOR - STAFF AREA	N/A	N/A
GROUND FLOOR - OFFICE 4	N/A	N/A
GROUND FLOOR - STAFF	N/A	N/A
GROUND FLOOR - RETAIL SHOE ZONE	N/A	N/A
GROUND FLOOR - BRANTANO FOOTWEAR MAIN DB	NO (-58.6%)	NO
GROUND FLOOR - SHOEZONE MAIN GF DB	NO (-72.5%)	NO
GROUND FLOOR - OFFICE B&M	N/A	N/A
GROUND FLOOR - OFFICE 3	N/A	N/A
GROUND FLOOR - OFFICE 2	N/A	N/A
GROUND FLOOR - OFFICE 1	N/A	N/A
GROUND FLOOR - B&M STORE RETAIL GF db	NO (-73.1%)	NO
GROUND FLOOR - PANTRY	N/A	N/A
GROUND FLOOR - OFFICE/STAFF AREAS 1	N/A	N/A
GROUND FLOOR - LAURA ASHLEY GF RETAIL 2	N/A	N/A
GROUND FLOOR - LAURA ASHLEY GF RETAIL 3	N/A	N/A
GROUND FLOOR - STAFF AREA EXT RETAIL	N/A	N/A
GROUND FLOOR - COSTA 1	YES (+334%)	NO
GROUND FLOOR - SUBWAY	YES (+136.5%)	NO
GROUND FLOOR - LAURA ASHLEY MAIN RETAIL	NO (-24.5%)	NO

Regulation 25A: Consideration of high efficiency 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
Floor area [m ²]	4746.1	4746.1
External area [m ²]	11066.3	11066.3
Weather	SWI	SWI
Infiltration [m ³ /hm ² @ 50Pa]	15	3
Average conductance [W/K]	5518.97	2705.1
Average U-value [W/m ² K]	0.5	0.24
Alpha value* [%]	4.12	12.65

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

Building Use

% Area Building Type

100	Retail/Financial and Professional Services
	Restaurants and Cafes/Drinking Establishments/Takeaways
	Offices and Workshop Businesses
	General Industrial and Special Industrial Groups
	Storage or Distribution
	Hotels
	Residential Institutions: Hospitals and Care Homes
	Residential Institutions: Residential Schools
	Residential Institutions: Universities and Colleges
	Secure Residential Institutions
	Residential Spaces
	Non-residential Institutions: Community/Day Centre
	Non-residential Institutions: Libraries, Museums, and Galleries
	Non-residential Institutions: Education
	Non-residential Institutions: Primary Health Care Building
	Non-residential Institutions: Crown and County Courts
	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	25.6	6.14
Cooling	10.36	4.29
Auxiliary	9.39	3.49
Lighting	31.59	14.61
Hot water	3.54	3.06
Equipment*	21.6	21.6
TOTAL**	80.47	31.59

* 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	0	2.93
Wind turbines	0	0
CHP generators	0	0
Solar thermal systems	0	0
<i>Displaced electricity</i>	<i>0</i>	<i>2.93</i>

Energy & CO₂ Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m ²]	250.58	129.29
Primary energy [kWh _{PE} /m ²]	121.18	42.02
Total emissions [kg/m ²]	11.63	4.07

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	146.1	117.9	0	0	2.9	0	0	0	0
Notional	62.8	126.9	0	0	1.2	0	0	----	----
[ST] Other local room heater - unfanned, [HS] Direct or storage electric heater, [HFT] Electricity, [CFT] Natural Gas									
Actual	334.4	31.3	116.1	0	2.9	0.8	0	1	0
Notional	141.8	53.4	29.4	0	3	1.34	0	----	----
[ST] Split or multi-split system, [HS] ASHP, [HFT] Electricity, [CFT] Electricity									
Actual	161.2	78.6	19.2	11.8	10.3	2.33	1.85	2.5	2.6
Notional	42.5	77.7	4.5	4.9	3.5	2.64	4.4	----	----

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

Project name

Brunel Retail park - Proposed - Be Lean**As designed**

Date: Tue Jun 13 13:58:29 2023

Administrative information

Building Details

Address:

Certifier details

Name: Ciaran Dorrity

Telephone number: 02074860680

Address: 8-9 Stephen Mews, London, W1T 1AF

Certification tool

Calculation engine: SBEM

Calculation engine version: v6.1.e.0

Interface to calculation engine: DesignBuilder SBEM

Interface to calculation engine version: v7.1.4

BRUKL compliance module version: v6.1.e.0

Foundation area [m²]: 2308.36The CO₂ emission and primary energy rates of the building must not exceed the targets

The building does not comply with England Building Regulations Part L 2021

Target CO ₂ emission rate (TER), kgCO ₂ /m ² .annum	3.89
Building CO ₂ emission rate (BER), kgCO ₂ /m ² .annum	8.64
Target primary energy rate (TPER), kWh _{PE} /m ² .annum	38.3
Building primary energy rate (BPER), kWh _{PE} /m ² .annum	84.25
Do the building's emission and primary energy rates exceed the targets?	BER > TER BPER > TPER

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

Fabric element	U _a -Limit	U _a -Calc	U _i -Calc	First surface with maximum value
Walls*	0.26	0.46	0.51	FIRST FLOOR - TOILET_P_5
Floors	0.18	0.44	0.45	GROUND FLOOR - TOILET_1_S_3
Pitched roofs	0.16	-	-	No heat loss pitched roofs
Flat roofs	0.18	0.44	0.45	FIRST FLOOR - TOILET_R_8
Windows** and roof windows	1.6	2.26	2.82	GROUND FLOOR - STORAGE AREA_4_G_5
Rooflights***	2.2	-	-	No external rooflights
Personnel doors^	1.6	-	-	No external personnel doors
Vehicle access & similar large doors	1.3	1.52	1.6	GROUND FLOOR - TOILET_1_D_8
High usage entrance doors	3	-	-	No external high usage entrance doors

U_a-Limit = Limiting area-weighted average U-values [W/(m²K)]U_i-Calc = Calculated maximum individual element U-values [W/(m²K)]U_a-Calc = Calculated area-weighted average U-values [W/(m²K)]

* 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. *** Values for rooflights refer to the horizontal position.

^ For fire doors, limiting U-value is 1.8 W/m²K

NB: Neither roof ventilators (inc. smoke vents) nor swimming pool basins are modelled or checked against the limiting standards by the tool.

Air permeability	Limiting standard	This building
m ³ /(h.m ²) at 50 Pa	8	14.61

Building services

For details on the standard values listed below, system-specific guidance, and additional regulatory requirements, refer to the Approved Documents.

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- BOH - PROPOSED

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	1	-	-	-	-
Standard value	N/A	N/A	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					NO

2- Split System(PROPOSED)

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	2.5	5	-	-	-
Standard value	2.5*	5	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 all types >12 kW output, except absorption and gas engine heat pumps.

1- DHW-PROPOSED

	Water heating efficiency	Storage loss factor [kWh/litre per day]
This building	0.91	-
Standard value	0.91	N/A

Zone-level mechanical ventilation, exhaust, and terminal units

ID	System type in the Approved Documents
A	Local supply or extract ventilation units
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 balanced supply and extract ventilation system
E	Local balanced supply and extract ventilation units
F	Other local ventilation units
G	Fan assisted terminal variable air volume units
H	Fan coil units
I	Kitchen extract with the fan remote from the zone and a grease filter

NB: Limiting SFP may be increased by the amounts specified in the Approved Documents if the installation includes particular components.

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	2.3	2	0.5	0.5	0.4	1		
GROUND FLOOR - COMMUNAL KITCHEN		-	-	-	-	-	-	-	-	1.5	-	N/A
FIRST FLOOR - TOILET		-	-	0.5	-	-	-	-	-	-	-	N/A
FIRST FLOOR - TOILET 1		-	-	0.5	-	-	-	-	-	-	-	N/A
GROUND FLOOR - TOILET 1		-	-	0.5	-	-	-	-	-	-	-	N/A
GROUND FLOOR - TOILET		-	-	0.5	-	-	-	-	-	-	-	N/A
GROUND FLOOR - TOILET		-	-	0.5	-	-	-	-	-	-	-	N/A
GROUND FLOOR - WC		-	-	0.5	-	-	-	-	-	-	-	N/A
FIRST FLOOR - STORAGE AREA 2 FF		-	-	-	-	2	-	-	-	-	0.75	N/A

Zone name	SFP [W/(l/s)]										HR efficiency	
ID of system type	A	B	C	D	E	F	G	H	I			
Standard value	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1	Zone	Standard	
FIRST FLOOR - PANTRY CUM BREAKOUT-			-	-	2	-	-	-	-	0.75	N/A	
FIRST FLOOR - STAFF ROOM	-	-	-	-	2	-	-	-	-	0.75	N/A	
FIRST FLOOR - FF STORAGE AREA-	-	-	-	-	2	-	-	-	-	0.75	N/A	
GROUND FLOOR - STORAGE AREA-4	-	-	-	-	2	-	-	-	-	0.75	N/A	
GROUND FLOOR - STORAGE AREA 3	-	-	-	-	2	-	-	-	-	0.75	N/A	
GROUND FLOOR - STAFF ROOM	-	-	-	-	2	-	-	-	-	0.75	N/A	
GROUND FLOOR - office unit 1	-	-	-	-	2	-	-	-	-	0.75	N/A	
GROUND FLOOR - office unit 2	-	-	-	-	2	-	-	-	-	0.75	N/A	
GROUND FLOOR - office unit 3	-	-	-	-	2	-	-	-	-	0.75	N/A	
GROUND FLOOR - office unit 4	-	-	-	-	2	-	-	-	-	0.75	N/A	
GROUND FLOOR - Office unit 10	-	-	-	-	2	-	-	-	-	0.75	N/A	
GROUND FLOOR - Office unit 7	-	-	-	-	2	-	-	-	-	0.75	N/A	
GROUND FLOOR - Office unit 8	-	-	-	-	2	-	-	-	-	0.75	N/A	
GROUND FLOOR - Office unit 6	-	-	-	-	2	-	-	-	-	0.75	N/A	
GROUND FLOOR - SELF STORAGE	-	-	-	-	2	-	-	-	-	0.75	N/A	
GROUND FLOOR - STORAGE MAIN 2	-	-	-	-	2	-	-	-	-	0.75	N/A	
GROUND FLOOR - Office unit 9	-	-	-	-	2	-	-	-	-	0.75	N/A	
GROUND FLOOR - MEETING ROOM-	-	-	-	-	2	-	-	-	-	0.75	N/A	
GROUND FLOOR - STORAGE MAIN RECEPTION-	-	-	-	-	2	-	-	-	-	0.75	N/A	
GROUND FLOOR - OFFICE	-	-	-	-	2	-	-	-	-	0.75	N/A	

General lighting and display lighting		General luminaire	Display light source	
Zone name		Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m²]
Standard value		95	80	0.3
FIRST FLOOR - STORE 1		95	-	-
FIRST FLOOR - STORE		95	-	-
FIRST FLOOR - LIFT		95	-	-
FIRST FLOOR - LIFT		95	-	-
GROUND FLOOR - STORE		95	-	-
GROUND FLOOR - SEASONAL STORE		95	-	-
GROUND FLOOR - COMMUNAL KITCHEN		95	-	-
GROUND FLOOR - LIFT 1		95	-	-
FIRST FLOOR - TOILET		95	-	-
FIRST FLOOR - TOILET 1		95	-	-
FIRST FLOOR - STAIR 1		95	-	-
FIRST FLOOR - STAIR		95	-	-
FIRST FLOOR - STAIRS		95	-	-
GROUND FLOOR - TOILET 1		95	-	-
GROUND FLOOR - STAIR		95	-	-
GROUND FLOOR - TOILET		95	-	-
GROUND FLOOR - TOILET		95	-	-
GROUND FLOOR - PANTRY		95	-	-
GROUND FLOOR - STAIRCASE		95	-	-

General lighting and display lighting		General luminaire		Display light source	
Zone name		Efficacy [lm/W]		Efficacy [lm/W]	Power density [W/m²]
	Standard value	95		80	0.3
GROUND FLOOR - STAFF TEA ROOM		95		-	-
GROUND FLOOR - STAIR 2		95		-	-
GROUND FLOOR - WC		95		-	-
GROUND FLOOR - CORRIDOR 1		95		-	-
GROUND FLOOR - ACC STAIR		95		-	-
GROUND FLOOR - CORRIDOR		95		-	-
FIRST FLOOR - STORAGE AREA 2 FF		95		-	-
FIRST FLOOR - PANTRY CUM BREAKOUT		95		-	-
FIRST FLOOR - STAFF ROOM		95		-	-
FIRST FLOOR - FF STORAGE AREA		95		-	-
GROUND FLOOR - STORAGE AREA 4		95		-	-
GROUND FLOOR - STORAGE AREA 3		95		-	-
GROUND FLOOR - STAFF ROOM		95		-	-
GROUND FLOOR - office unit 1		95		-	-
GROUND FLOOR - office unit 2		95		-	-
GROUND FLOOR - office unit 3		95		-	-
GROUND FLOOR - office unit 4		95		-	-
GROUND FLOOR - Office unit 10		95		-	-
GROUND FLOOR - Office unit 7		95		-	-
GROUND FLOOR - Office unit 8		95		-	-
GROUND FLOOR - Office unit 6		95		-	-
GROUND FLOOR - SELF STORAGE		95		-	-
GROUND FLOOR - STORAGE MAIN 2		95		-	-
GROUND FLOOR - Office unit 9		95		-	-
GROUND FLOOR - MEETING ROOM		95		-	-
GROUND FLOOR - STORAGE MAIN RECEPTION		95		95	1.421
GROUND FLOOR - OFFICE		95		-	-

The spaces in the building should have appropriate passive control measures to limit solar gains in summer

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
GROUND FLOOR - PANTRY	N/A	N/A
GROUND FLOOR - STAFF TEA ROOM	N/A	N/A
FIRST FLOOR - STORAGE AREA 2 FF	N/A	N/A
FIRST FLOOR - PANTRY CUM BREAKOUT	N/A	N/A
FIRST FLOOR - STAFF ROOM	N/A	N/A
FIRST FLOOR - FF STORAGE AREA	N/A	N/A
GROUND FLOOR - STORAGE AREA 4	NO (-85%)	NO
GROUND FLOOR - STORAGE AREA 3	NO (-88.9%)	NO
GROUND FLOOR - STAFF ROOM	N/A	N/A
GROUND FLOOR - office unit 1	NO (-16.9%)	NO
GROUND FLOOR - office unit 2	YES (+77.4%)	NO
GROUND FLOOR - office unit 3	YES (+64.7%)	NO
GROUND FLOOR - office unit 4	YES (+135.9%)	NO

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
GROUND FLOOR - Office unit 10	YES (+97.4%)	NO
GROUND FLOOR - Office unit 7	YES (+165.5%)	NO
GROUND FLOOR - Office unit 8	YES (+392.8%)	NO
GROUND FLOOR - Office unit 6	YES (+167.2%)	NO
GROUND FLOOR - SELF STORAGE	N/A	N/A
GROUND FLOOR - STORAGE MAIN 2	NO (-92.5%)	NO
GROUND FLOOR - Office unit 9	YES (+164.7%)	NO
GROUND FLOOR - MEETING ROOM	N/A	N/A
GROUND FLOOR - STORAGE MAIN RECEPTION	NO (-23%)	NO
GROUND FLOOR - OFFICE	N/A	N/A

Regulation 25A: Consideration of high efficiency 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
Floor area [m ²]	4807	4807
External area [m ²]	10782.5	10782.5
Weather	SWI	SWI
Infiltration [m ³ /hm ² @ 50Pa]	15	5
Average conductance [W/K]	5324.8	3508.6
Average U-value [W/m ² K]	0.49	0.33
Alpha value* [%]	4.39	36.22

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

Building Use

% Area Building Type

	Retail/Financial and Professional Services
	Restaurants and Cafes/Drinking Establishments/Takeaways
	Offices and Workshop Businesses
	General Industrial and Special Industrial Groups
100	Storage or Distribution
	Hotels
	Residential Institutions: Hospitals and Care Homes
	Residential Institutions: Residential Schools
	Residential Institutions: Universities and Colleges
	Secure Residential Institutions
	Residential Spaces
	Non-residential Institutions: Community/Day Centre
	Non-residential Institutions: Libraries, Museums, and Galleries
	Non-residential Institutions: Education
	Non-residential Institutions: Primary Health Care Building
	Non-residential Institutions: Crown and County Courts
	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	29.52	13.01
Cooling	2.23	2.32
Auxiliary	7.91	3.82
Lighting	10.58	5.3
Hot water	5.9	5.95
Equipment*	31.44	31.44
TOTAL**	56.15	30.4

* 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	0	4.36
Wind turbines	0	0
CHP generators	0	0
Solar thermal systems	0	0
<i>Displaced electricity</i>	<i>0</i>	<i>4.36</i>

Energy & CO₂ Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m ²]	243.68	158.51
Primary energy [kWh _{PE} /m ²]	84.25	38.3
Total emissions [kg/m ²]	8.64	3.89

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	130.9	288.8	0	0	2.5	0	0	0	0
Notional	74.3	290	0	0	1	0	0	----	----
[ST] Other local room heater - unfanned, [HS] Direct or storage electric heater, [HFT] Electricity, [CFT] Natural Gas									
Actual	304.5	10.2	105.7	0	1.5	0.8	0	1	0
Notional	229.3	32.9	47.5	0	1.8	1.34	0	----	----
[ST] Split or multi-split system, [HS] ASHP, [HFT] Electricity, [CFT] Electricity									
Actual	196.1	32.6	23.4	2.6	8.8	2.33	3.55	2.5	5
Notional	97.1	42	10.2	2.6	3.9	2.64	4.4	----	----

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

Project name

Brunel Retail park - Proposed - Be Green**As designed**

Date: Tue Jun 13 10:59:31 2023

Administrative information

Building Details

Address:

Certifier details

Name: Ciaran Dorrity

Telephone number: 02074860680

Address: 8-9 Stephen Mews, London, W1T 1AF

Certification tool

Calculation engine: SBEM

Calculation engine version: v6.1.e.0

Interface to calculation engine: DesignBuilder SBEM

Interface to calculation engine version: v7.1.4

BRUKL compliance module version: v6.1.e.0

Foundation area [m²]: 2308.36The CO₂ emission and primary energy rates of the building must not exceed the targets

The building does not comply with England Building Regulations Part L 2021

Target CO ₂ emission rate (TER), kgCO ₂ /m ² .annum	3.89
Building CO ₂ emission rate (BER), kgCO ₂ /m ² .annum	6.63
Target primary energy rate (TPER), kWh _{PE} /m ² .annum	38.3
Building primary energy rate (BPER), kWh _{PE} /m ² .annum	63.17
Do the building's emission and primary energy rates exceed the targets?	BER > TER BPER > TPER

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

Fabric element	U _a -Limit	U _a -Calc	U _i -Calc	First surface with maximum value
Walls*	0.26	0.46	0.51	FIRST FLOOR - TOILET_P_5
Floors	0.18	0.44	0.45	GROUND FLOOR - TOILET_1_S_3
Pitched roofs	0.16	-	-	No heat loss pitched roofs
Flat roofs	0.18	0.44	0.45	FIRST FLOOR - TOILET_R_8
Windows** and roof windows	1.6	2.26	2.82	GROUND FLOOR - STORAGE AREA_4_G_5
Rooflights***	2.2	-	-	No external rooflights
Personnel doors^	1.6	-	-	No external personnel doors
Vehicle access & similar large doors	1.3	1.52	1.6	GROUND FLOOR - TOILET_1_D_8
High usage entrance doors	3	-	-	No external high usage entrance doors

U_a-Limit = Limiting area-weighted average U-values [W/(m²K)]U_i-Calc = Calculated maximum individual element U-values [W/(m²K)]U_a-Calc = Calculated area-weighted average U-values [W/(m²K)]

* 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.

*** Values for rooflights refer to the horizontal position.

^ For fire doors, limiting U-value is 1.8 W/m²K

NB: Neither roof ventilators (inc. smoke vents) nor swimming pool basins are modelled or checked against the limiting standards by the tool.

Air permeability	Limiting standard	This building
m ³ /(h.m ²) at 50 Pa	8	14.61

Building services

For details on the standard values listed below, system-specific guidance, and additional regulatory requirements, refer to the Approved Documents.

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- BOH - PROPOSED

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	1	-	-	-	-
Standard value	N/A	N/A	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					NO

2- Split System(PROPOSED)

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	4.5	5	-	-	-
Standard value	2.5*	5	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 all types >12 kW output, except absorption and gas engine heat pumps.

1- DHW-PROPOSED

	Water heating efficiency	Storage loss factor [kWh/litre per day]
This building	0.91	-
Standard value	0.91	N/A

Zone-level mechanical ventilation, exhaust, and terminal units

ID	System type in the Approved Documents
A	Local supply or extract ventilation units
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 balanced supply and extract ventilation system
E	Local balanced supply and extract ventilation units
F	Other local ventilation units
G	Fan assisted terminal variable air volume units
H	Fan coil units
I	Kitchen extract with the fan remote from the zone and a grease filter

NB: Limiting SFP may be increased by the amounts specified in the Approved Documents if the installation includes particular components.

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	2.3	2	0.5	0.5	0.4	1		
GROUND FLOOR - COMMUNAL KITCHEN		-	-	-	-	-	-	-	-	1.5	-	N/A
FIRST FLOOR - TOILET		-	-	0.5	-	-	-	-	-	-	-	N/A
FIRST FLOOR - TOILET 1		-	-	0.5	-	-	-	-	-	-	-	N/A
GROUND FLOOR - TOILET 1		-	-	0.5	-	-	-	-	-	-	-	N/A
GROUND FLOOR - TOILET		-	-	0.5	-	-	-	-	-	-	-	N/A
GROUND FLOOR - TOILET		-	-	0.5	-	-	-	-	-	-	-	N/A
GROUND FLOOR - WC		-	-	0.5	-	-	-	-	-	-	-	N/A
FIRST FLOOR - STORAGE AREA 2 FF		-	-	-	-	2	-	-	-	-	0.75	N/A

Zone name	SFP [W/(l/s)]										HR efficiency	
ID of system type	A	B	C	D	E	F	G	H	I			
Standard value	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1	Zone	Standard	
FIRST FLOOR - PANTRY CUM BREAKOUT-			-	-	2	-	-	-	-	0.75	N/A	
FIRST FLOOR - STAFF ROOM	-	-	-	-	2	-	-	-	-	0.75	N/A	
FIRST FLOOR - FF STORAGE AREA-	-	-	-	-	2	-	-	-	-	0.75	N/A	
GROUND FLOOR - STORAGE AREA-4	-	-	-	-	2	-	-	-	-	0.75	N/A	
GROUND FLOOR - STORAGE AREA-3	-	-	-	-	2	-	-	-	-	0.75	N/A	
GROUND FLOOR - STAFF ROOM	-	-	-	-	2	-	-	-	-	0.75	N/A	
GROUND FLOOR - office unit 1	-	-	-	-	2	-	-	-	-	0.75	N/A	
GROUND FLOOR - office unit 2	-	-	-	-	2	-	-	-	-	0.75	N/A	
GROUND FLOOR - office unit 3	-	-	-	-	2	-	-	-	-	0.75	N/A	
GROUND FLOOR - office unit 4	-	-	-	-	2	-	-	-	-	0.75	N/A	
GROUND FLOOR - Office unit 10	-	-	-	-	2	-	-	-	-	0.75	N/A	
GROUND FLOOR - Office unit 7	-	-	-	-	2	-	-	-	-	0.75	N/A	
GROUND FLOOR - Office unit 8	-	-	-	-	2	-	-	-	-	0.75	N/A	
GROUND FLOOR - Office unit 6	-	-	-	-	2	-	-	-	-	0.75	N/A	
GROUND FLOOR - SELF STORAGE	-	-	-	-	2	-	-	-	-	0.75	N/A	
GROUND FLOOR - STORAGE MAIN-2	-	-	-	-	2	-	-	-	-	0.75	N/A	
GROUND FLOOR - Office unit 9	-	-	-	-	2	-	-	-	-	0.75	N/A	
GROUND FLOOR - MEETING ROOM-	-	-	-	-	2	-	-	-	-	0.75	N/A	
GROUND FLOOR - STORAGE MAIN RECEPTION-	-	-	-	-	2	-	-	-	-	0.75	N/A	
GROUND FLOOR - OFFICE	-	-	-	-	2	-	-	-	-	0.75	N/A	

General lighting and display lighting		General luminaire	Display light source	
Zone name		Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m²]
Standard value		95	80	0.3
FIRST FLOOR - STORE 1		95	-	-
FIRST FLOOR - STORE		95	-	-
FIRST FLOOR - LIFT		95	-	-
FIRST FLOOR - LIFT		95	-	-
GROUND FLOOR - STORE		95	-	-
GROUND FLOOR - SEASONAL STORE		95	-	-
GROUND FLOOR - COMMUNAL KITCHEN		95	-	-
GROUND FLOOR - LIFT 1		95	-	-
FIRST FLOOR - TOILET		95	-	-
FIRST FLOOR - TOILET 1		95	-	-
FIRST FLOOR - STAIR 1		95	-	-
FIRST FLOOR - STAIR		95	-	-
FIRST FLOOR - STAIRS		95	-	-
GROUND FLOOR - TOILET 1		95	-	-
GROUND FLOOR - STAIR		95	-	-
GROUND FLOOR - TOILET		95	-	-
GROUND FLOOR - TOILET		95	-	-
GROUND FLOOR - PANTRY		95	-	-
GROUND FLOOR - STAIRCASE		95	-	-

General lighting and display lighting		General luminaire		Display light source	
Zone name		Efficacy [lm/W]		Efficacy [lm/W]	Power density [W/m²]
	Standard value	95		80	0.3
GROUND FLOOR - STAFF TEA ROOM		95		-	-
GROUND FLOOR - STAIR 2		95		-	-
GROUND FLOOR - WC		95		-	-
GROUND FLOOR - CORRIDOR 1		95		-	-
GROUND FLOOR - ACC STAIR		95		-	-
GROUND FLOOR - CORRIDOR		95		-	-
FIRST FLOOR - STORAGE AREA 2 FF		95		-	-
FIRST FLOOR - PANTRY CUM BREAKOUT		95		-	-
FIRST FLOOR - STAFF ROOM		95		-	-
FIRST FLOOR - FF STORAGE AREA		95		-	-
GROUND FLOOR - STORAGE AREA 4		95		-	-
GROUND FLOOR - STORAGE AREA 3		95		-	-
GROUND FLOOR - STAFF ROOM		95		-	-
GROUND FLOOR - office unit 1		95		-	-
GROUND FLOOR - office unit 2		95		-	-
GROUND FLOOR - office unit 3		95		-	-
GROUND FLOOR - office unit 4		95		-	-
GROUND FLOOR - Office unit 10		95		-	-
GROUND FLOOR - Office unit 7		95		-	-
GROUND FLOOR - Office unit 8		95		-	-
GROUND FLOOR - Office unit 6		95		-	-
GROUND FLOOR - SELF STORAGE		95		-	-
GROUND FLOOR - STORAGE MAIN 2		95		-	-
GROUND FLOOR - Office unit 9		95		-	-
GROUND FLOOR - MEETING ROOM		95		-	-
GROUND FLOOR - STORAGE MAIN RECEPTION		95		95	1.421
GROUND FLOOR - OFFICE		95		-	-

The spaces in the building should have appropriate passive control measures to limit solar gains in summer

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
GROUND FLOOR - PANTRY	N/A	N/A
GROUND FLOOR - STAFF TEA ROOM	N/A	N/A
FIRST FLOOR - STORAGE AREA 2 FF	N/A	N/A
FIRST FLOOR - PANTRY CUM BREAKOUT	N/A	N/A
FIRST FLOOR - STAFF ROOM	N/A	N/A
FIRST FLOOR - FF STORAGE AREA	N/A	N/A
GROUND FLOOR - STORAGE AREA 4	NO (-85%)	NO
GROUND FLOOR - STORAGE AREA 3	NO (-88.9%)	NO
GROUND FLOOR - STAFF ROOM	N/A	N/A
GROUND FLOOR - office unit 1	NO (-16.9%)	NO
GROUND FLOOR - office unit 2	YES (+77.4%)	NO
GROUND FLOOR - office unit 3	YES (+64.7%)	NO
GROUND FLOOR - office unit 4	YES (+135.9%)	NO

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
GROUND FLOOR - Office unit 10	YES (+97.4%)	NO
GROUND FLOOR - Office unit 7	YES (+165.5%)	NO
GROUND FLOOR - Office unit 8	YES (+392.8%)	NO
GROUND FLOOR - Office unit 6	YES (+167.2%)	NO
GROUND FLOOR - SELF STORAGE	N/A	N/A
GROUND FLOOR - STORAGE MAIN 2	NO (-92.5%)	NO
GROUND FLOOR - Office unit 9	YES (+164.7%)	NO
GROUND FLOOR - MEETING ROOM	N/A	N/A
GROUND FLOOR - STORAGE MAIN RECEPTION	NO (-23%)	NO
GROUND FLOOR - OFFICE	N/A	N/A

Regulation 25A: Consideration of high efficiency 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
Floor area [m ²]	4807	4807
External area [m ²]	10782.5	10782.5
Weather	SWI	SWI
Infiltration [m ³ /hm ² @ 50Pa]	15	5
Average conductance [W/K]	5324.8	3508.6
Average U-value [W/m ² K]	0.49	0.33
Alpha value* [%]	4.39	36.22

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

Building Use

% Area Building Type

Retail/Financial and Professional Services
Restaurants and Cafes/Drinking Establishments/Takeaways
Offices and Workshop Businesses
General Industrial and Special Industrial Groups

100 Storage or Distribution

Hotels
Residential Institutions: Hospitals and Care Homes
Residential Institutions: Residential Schools
Residential Institutions: Universities and Colleges
Secure Residential Institutions
Residential Spaces
Non-residential Institutions: Community/Day Centre
Non-residential Institutions: Libraries, Museums, and Galleries
Non-residential Institutions: Education
Non-residential Institutions: Primary Health Care Building
Non-residential Institutions: Crown and County Courts
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	20.43	13.01
Cooling	2.23	2.32
Auxiliary	7.91	3.82
Lighting	10.58	5.3
Hot water	5.9	5.95
Equipment*	31.44	31.44
TOTAL**	47.06	30.4

* 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	4.6	4.36
Wind turbines	0	0
CHP generators	0	0
Solar thermal systems	0	0
<i>Displaced electricity</i>	4.6	4.36

Energy & CO₂ Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m ²]	243.68	158.51
Primary energy [kWh _{PE} /m ²]	63.17	38.3
Total emissions [kg/m ²]	6.63	3.89

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	130.9	288.8	0	0	2.5	0	0	0	0
Notional	74.3	290	0	0	1	0	0	----	----
[ST] Other local room heater - unfanned, [HS] Direct or storage electric heater, [HFT] Electricity, [CFT] Natural Gas									
Actual	304.5	10.2	105.7	0	1.5	0.8	0	1	0
Notional	229.3	32.9	47.5	0	1.8	1.34	0	----	----
[ST] Split or multi-split system, [HS] ASHP, [HFT] Electricity, [CFT] Electricity									
Actual	196.1	32.6	13	2.6	8.8	4.19	3.55	4.5	5
Notional	97.1	42	10.2	2.6	3.9	2.64	4.4	----	----

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