Hampstead Police Station – 26 Rosslyn Hill, London, NW3 1PD

Sustainability Report

February 2024

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Document Control

Revision History

Number	Reason	Date
1	First issue for comment	31st January 2024
2	Issued for Submission to London Borough of Camden	14th February 2024
3	Issued for Submission to London Borough of Camden	13th March 2024
4	Revised Issue for Submission to London Borough of Camden	31st May 2024

Quality Assurance

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Executive summary

This report has been prepared to summarise the sustainable design principles incorporated into the design of proposed scheme at former Hampstead Police Station.

The proposals include refurbishment and extension of the existing building to provide commercial spaces and residential dwellings created by change of use. The refurbishment will include restoration of existing heritage features of the building and enhancing existing fabric where possible to improve energy efficiency of the building. The refurbished building will provide commercial office space on lower ground and ground floors; and 5 no. residential dwellings over first to second floors.

Planning guidance

Camden Council planning guidance documents refer to BRE Home Quality Mark (HQM), Passivhaus, or other equivalent standards to demonstrate sustainable design for dwellings. Camden planning policies do not require BREEAM certification for domestic projects of 5 dwellings.

The BRE HQM is a voluntary standard taken over from the Code for Sustainable Homes, which is now part of the current building regulations, therefore it is not considered necessary to carry out a BREEAM certification for domestic areas of the development as sustainable principles will be followed to comply with the building regulations.

Due to the small scale of the project and site constraints, it is not feasible to conduct an HQM assessment for this proposed development, which is a voluntary standard.

Camden planning policies expect all commercial developments of over 500m² floor area to achieve an ‘Excellent’ BREEAM rating. A BREEAM Pre-assessment has been carried out for the proposed non-domestic areas of the development that indicates an “Excellent” rating based on the current scheme proposals and prior to carrying out a project life cycle assessment. It is proposed to carry out a project life cycle assessment in the next stage of project to maximise BREEAM credits achievable under ‘Materials’ section of BREEAM certification.

Sustainable design and management

All possible passive design measures have been considered, including efficient building fabric, highly-insulated walls and highly efficient glazing, efficient systems (ASHP), the inclusion of green roof, and renewable/low carbon energy sources such as PV to maximise carbon savings for the site.

The considerate contractor scheme is encouraged to be implemented during the construction of the development. Construction site waste will be managed in such a way as to reduce the amount of waste produced as much as possible, and the waste hierarchy will be followed.

Health and wellbeing

The indoor air quality will be maintained through mechanical ventilation with heat recovery (MVHR) using a combination of carbon filters and natural ventilation by opening the windows.

Thermal modelling has been carried out to inform the building design to provide a comfortable thermal environment that considers current climatic conditions and projected climate change scenario conditions.

Large proportions of existing windows and floor to ceiling heights help achieve good levels of average daylight factor and the proposal to create multiple small office spaces within the building result in over 80% of the floor area in every office to be within 7m of a window, earning 1 BREEAM credit for view out.

The design team will adopt "Secured by Design security" measures to ensure best-practice guidelines are followed during design development.

All-electric Air source heat pumps (ASHP) with radiators and hot water cylinder is proposed for each dwelling.

Transport

The location provides a range of transport options, including the London Overground (Hampstead Heath), London Underground (Hampstead / Belsize Park Station). The Public Transport Accessibility Level (PTAL) rating of 4 confirms that the site has good public transport.

Water

This development will be designed to reduce water consumption to less than 110 litres per person per day (including 5 litres for external water use) through the use of water efficient fittings, in line with the recommended target set out in the London Plan using water-efficient fittings.

Material

Majority of the existing building fabric, structure is being retained resulting in very low carbon footprint in comparison to a new build development of a similar size. A project life cycle assessment will be instructed in the next stage of the project to maximise BREEAM credits for low embodied carbon due to retaining of existing materials. Any new materials required for the proposed scheme will be carefully selected/specified to reduce the embodied carbon of the development wherever possible. Responsible sourcing will also be pursued. All timber used on-site during the construction phase and within the building will be from legal sources. Where possible, materials will be sourced locally. Sourcing of other materials will include products where the manufacturer employs an environmental management system such as ISO 14001 or BES 600.

Non-toxic materials will be used wherever possible, including the specification of products with a low VOC content in line with European testing standards.

Waste management

Construction site waste will be managed in such a way as to reduce the amount of waste produced as much as possible, and the waste hierarchy will be followed. Regular waste and recycling bins will be provided to separate waste to facilitate recycling. In addition, at least 85% of waste that does arise will be recycled using an external waste contractor.

Noise

The development will comply with Building Regulations Part E, providing good sound insulation. All replacement and new windows will be specified as high-efficiency double glazing to minimise noise transmission and achieve high thermal performance.

Air quality

The construction site will be managed so that the environmental impact is minimised. This includes following best practice policies for dust pollution by using dust sheets, covering skips and damping down where appropriate.

No gas appliances or boilers are proposed to minimise NOx emissions from the proposed development. Insulation materials will have low Global Warming Potential (GWP) and a green roof will contribute to improve local air quality.

Landscape and ecology

The development is considered low-moderate ecological value within the local context as there is an existing structure on the site. Measures will be taken during construction to minimise the impact on ecology by timing works appropriately, following best practice guidance, and through the soft landscape design.

The development proposals include provision of external amenity spaces in the form of balconies, roof terraces, rear courtyard and a green roof. Mixed planting is recommended on the green roof. A green sedum roof is laid over the retained section, and biodiversity will be introduced into the green roof. The green roof design enhances the local environment and improves amenity areas.

The development is in flood zone 1, an area with a low probability of flooding. The inclusion of a green roof dissipates any excess water over an extended period, enabling the terrestrial drainage systems to cope better.

1 Introduction

1.1 Peter Deer and Associates Ltd (PDA) have been appointed to produce a Sustainability report outlining how the proposed development complies with the sustainable design expectation of the Greater London Authority (GLA) and London Borough of Camden's Planning Policies as set out in the following planning documents;

- Sustainable Design and Construction SPG (GLA) April 2014
- Hampstead Neighbourhood Plan 2018
- Home Improvements Camden Planning Guidance January 2021
- Camden Local Plan 2017
- Camden Climate Action Plan 2020
- Camden Energy Efficiency and Adaptation CPG Document

1.2 Sustainable design has an important role in helping to avoid increased vulnerability to the range of impacts arising from climate change and in managing risks through adaptation. The sustainable design aims to minimise the adverse effects of the development on the environment and the health and comfort of building occupants, thereby improving building performance. The sustainability objectives are to reduce the consumption of non-renewable resources, minimise waste, and create healthy, productive environments. Sustainable design standards include the following aspects:

- Energy use and carbon emissions
- Sustainable building standards
- Water consumption
- Biodiversity and access to nature
- Climate change adaptation: flood and overheating risk
- Sustainable materials, waste, and construction impacts
- Operational sustainability

1.3 This document should be read in conjunction with:

- Design and Access Statement
- Energy Statement

Site location

1.4 Location: 26 Rosslyn Hill, London, NW3 1PD. Proposed dwelling units face southwest.

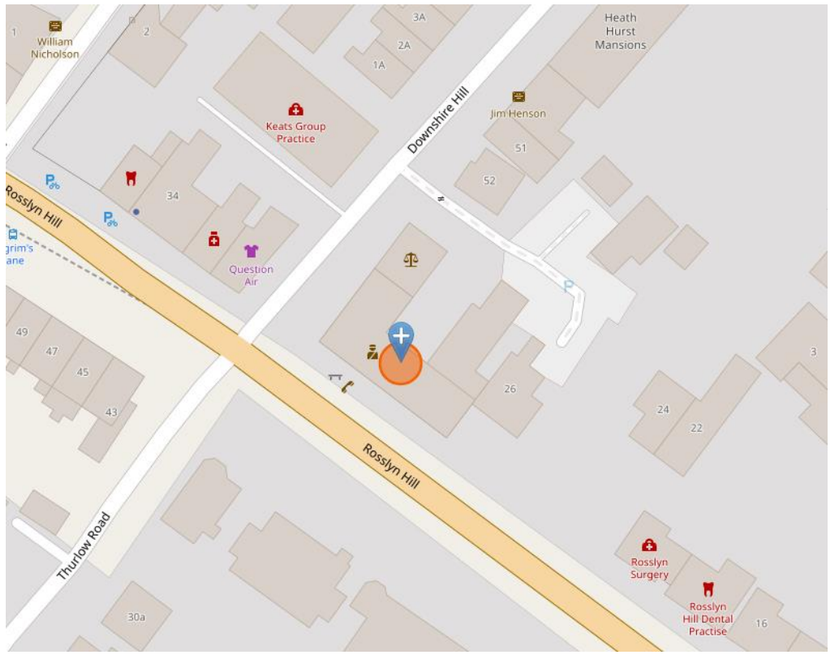

Figure 1 Site location (Open Street Map 2023)

1.5 The site is located in Hampstead within the London Borough of Camden. It is located on the junction of Rosslyn Hill and Downshire Hill.

Proposed development

1.6 This development contains 5 dwelling units and commercial office space. Each dwelling would have access to a private balcony.

1.7 The residential entrances plus cycle and waste storage areas are accessible from the public street.

1.8 DMFK Architects have designed replacement windows to be openable, allowing crossflow ventilation through the dwellings. This recommended design strategy is supported by CIBSE overheating guidance documents.

1.9 Full details of the proposal are set out in DMFK Architect's Design and Access Statement. The proposed development includes 5no. dwellings, and it is not regarded as major development according to the London Borough of Camden planning guidance documents.

Ref	Type	Floor Area	Living Room Area
Unit 01	2B_3P	105.00 m²	29.45 m²
Unit 02	1B_2P	92.00 m²	43.34 m²
Unit 03	2B_3P	119.00 m²	25.15 m²
Unit 04	1B_2P	102.00 m²	47.46 m²
Unit 05	3B_6P	225.00 m²	58.08 m²

Table 1 Accommodation Tenure Schedule

Transport

1.10 The location provides a range of transport options, including the London Overground (Hampstead Heath Station), London Underground (Hampstead Underground Station) and local bus routes. The Public Transport Accessibility Level (PTAL) rating of 4 confirms that the site has good public transport.

2 Planning Policy Requirements

National Planning Policy Framework

2.1 The National Planning Policy Framework (NPPF) document sets out the Government's planning policies for England and was updated December 2023.

2.2 The NPPF includes a 'presumption in favour of sustainable development. It states that for plan-making, the presumption means that local authorities should positively seek opportunities to meet the development needs of their area and that plans should meet objectively assessed needs. Plans should also be based on the Local Plan.

2.3 Planning policies and decisions should plan positively for the provision and use of shared spaces, community facilities (such as local shops, meeting places, sports venues, open spaces, cultural buildings, public houses, and places of worship) and other local services to enhance the sustainability of communities and residential environments.

2.4 New Development should be planned for in ways that can help to reduce greenhouse gas emissions, in consideration of its location, orientation, and design. Any local requirements for the sustainability of buildings should reflect the Government's policy or national technical standards.

London Plan

2.5 The London Plan (March 2021) is the mayor's planning strategy for Greater London. It sets borough-level housing targets and identifies locations for future growth of London-wide importance.

2.6 The London Plan is the overall strategic Plan for London, setting out an integrated economic, environmental, transport and social framework for the development of London over the next 20 to 25 years.

2.7 The London Plan is part of the Development Plan. It guides boroughs' development plans to ensure that they work toward a shared vision for London. It establishes policies that allow everyone involved in new developments to know what is expected.

2.8 To support London's resilience to a changing climate and tackle climate change, the Chapter 9 of the London Plan focuses on Sustainable infrastructure which contains a range of policies relating to sustainable design and construction.

2.9 Sustainable Development is a development that meets the needs of the present generation without compromising the ability of future generations to meet their own social, economic, and environmental needs. The proposed development will be designed to implement sustainable design and construction practices. The design team will consider how the design, building services and project management from inception can influence the number of resources used during a development's construction, occupation, and management.

2.10 The design team acknowledges that designing sustainability measures at the outset of a development's design can minimise additional perceived costs. Therefore, proposed development has been designed in accordance with the guidance in Camden Supplementary Planning Documents at the inception of this development and the procurement and construction stages will follow the sustainable design principles.

London Borough of Camden

2.11 The Council aims to tackle the causes of climate change in the borough by ensuring developments use less energy and assessing the feasibility of decentralised energy and renewable energy technologies.

2.12 Any new development in Camden can potentially increase carbon dioxide emissions in the borough. Suppose we are to achieve local and support national carbon dioxide reduction targets. In that case, it is crucial that planning policy limits carbon dioxide emissions from new development wherever possible and supports sensitive energy efficiency improvements to existing buildings.

2.13 The Council will seek to minimise and mitigate climate change by requiring developments to incorporate the three aspects of the energy hierarchy of the London Plan 2021: Firstly, reducing the demand for energy (lean option), secondly supplying energy in the most efficient way (clean option), and thirdly using renewable energy sources (green option).

Policy CC1 Climate change Mitigation

The Council will require all development to minimise the effects of climate change and encourage all developments to meet the highest possible environmental standards that are financially viable during construction and occupation.

We will:

a. promote zero carbon development and require all development to reduce carbon dioxide emissions through following the steps in the energy hierarchy.

b. require all major development to demonstrate how London Plan targets for carbon dioxide emissions have been me.;

c. ensure that the location of development and mix of land uses minimise the need to travel by car and help to support decentralised energy networks.

d. support and encourage sensitive energy efficiency improvements to existing buildings.

e. require all proposals that involve substantial demolition to demonstrate that it is not possible to retain and improve the existing building; and

f. expect all developments to optimise resource efficiency.

For decentralised energy networks, we will promote decentralised energy by:

g. working with local organisations and developers to implement decentralised energy networks in the parts of Camden most likely to support them.

h. protecting existing decentralised energy networks (e.g. at Gower Street, Bloomsbury, King's Cross, Gospel Oak and Somers Town) and safeguarding potential network routes; and

i. requiring all major developments to assess the feasibility of connecting to an existing decentralised energy network, or where this is not possible establishing a new network.

To ensure that the Council can monitor the effectiveness of renewable and low carbon technologies, major developments will be required to install appropriate monitoring equipment.

Table 2 Camden Local Plan CC1 (March 2021)

2.14 New developments in Camden will be expected to be designed to minimise energy use and CO_2 emissions in operation through the application of the energy hierarchy. The Council's Sustainability Plan 'Green Action for Change' commits the Council to seek low and zero-carbon buildings. It is understood that some sustainable

design measures may be challenging for listed buildings and some conservation areas, and we would advise developers to engage early with the Council to develop innovative solutions.

2.15 Adapting to a changing climate is identified in Camden's environmental sustainability plan, Green Action for Change (2011-2020). The three key risks that require adaptation are flooding, drought and overheating. Specific design measures and 'green infrastructure' such as green roofs, green walls and open spaces can help mitigate some of these risks.

Policy CC2 Adapting to climate change.

The Council will require development to be resilient to climate change. All development should adopt appropriate climate change adaptation measures such as:

The protection of existing green spaces and promoting new appropriate green infrastructure.

a. not increasing, and wherever possible reducing, surface water runoff through increasing permeable surfaces and use of Sustainable Drainage Systems.

b. incorporating bio-diverse roofs, combination green and blue roofs and green walls where appropriate; and

c. measures to reduce the impact of urban and dwelling overheating, including the application of the cooling hierarchy.

d. Any development involving 5 or more residential units or 500 sqm or more of any additional floorspace is required to demonstrate the above in a Sustainability Statement.

e. Sustainable design and construction measures

f. The Council will promote and measure sustainable design and construction by:

g. ensuring development schemes demonstrate how adaptation measures and sustainable development principles have been incorporated into the design and proposed implementation.

h. encourage new build residential development to use the Home Quality Mark and Passivhaus design standards.

i. encouraging conversions and extensions of 500 sqm of residential floorspace or above or five or more dwellings to achieve "excellent" in BREEAM domestic refurbishment; and

j. expecting non-domestic developments of 500 sqm of floorspace or above to achieve "excellent" in BREEAM assessments and encouraging zero carbon in new development from 2019.

Table 3 Camden Local Plan CC2 (March 2021)

2.16 To minimise the risks of climate change, the London Borough of Camden will expect the design of developments to consider anticipated changes to the climate.

2.17 Development should also consider the impacts of overheating and flooding on human health and should be designed so that they are adaptable by policies CC2 Adapting to climate change and CC3 Water and flooding.

2.18 As noted in Policy CC2 Adapting to climate change, flooding and drought are key risks which require mitigation and adaptation measures in the borough. Camden experienced significant flooding in 1975 and 2002, and the probability of such recurring events is likely to increase due to climate change. Changes to our climate can also threaten the quantity and quality of our water supply. Such risks impact the health and well-being of Camden residents.

2.19 This development is retaining the existing ground floor slab, and much of the 1st floor slab, boundary walls and the steel frame therefore utilising much of the embodied carbon of the existing building in the creation of the new dwellings.

2.20 Despite the re-use of most of the existing fabric the development is considered as a newly built development and the BREEAM Domestic Refurbishment is not relevant to this scheme.

Policy CC3: Water and Flooding

Council will seek to ensure that development does not increase flood risk and reduces the risk of flooding where possible.

We will require development to:

a. incorporate water efficiency measures.

b. avoid harm to the water environment and improve water quality.

c. consider the impact of development in areas at risk of flooding (including drainage).

d. incorporate flood resilient measures in areas prone to flooding.

e. utilise Sustainable Drainage Systems (SuDS) in line with the drainage hierarchy to achieve a greenfield run-off rate where feasible; and

f. not locate vulnerable development in flood-prone areas.

Where an assessment of flood risk is required, developments should consider surface water flooding in detail and groundwater flooding where applicable. The Council will protect the borough's existing drinking water and foul water infrastructure, including the reservoirs at Barrow Hill, Hampstead Heath, Highgate and Kidderpore.

Table 4 Camden Local Plan CC3 (March 2021)

2.21 Developments must be designed to be water efficient. This can be achieved by installing water-efficient fittings and appliances (which can help reduce energy consumption and water consumption) and by capturing and reusing rainwater and grey water onsite. Residential developments will be expected to meet the requirement of 110 litres per person per day (including 5 litres for external water use). Refurbishments and other non-domestic development will be expected to meet BREEAM water efficiency credits. Major and high or intense water use developments, such as hotels, hostels and student housing, should include grey water and rainwater harvesting systems. Where such a system is not feasible or practical, developers must demonstrate to the Council's satisfaction that this is the case.

2.22 Air pollution is associated with many adverse health impacts, and it particularly affects the most vulnerable in society. It is recognised that parts of Camden have some of the poorest air quality levels in London, and since 2000 the whole of the borough has been declared an Air Quality Management Area (AQMA) for both NO_2 (Nitrogen Dioxide) and PM10 (Particulate Matter). Camden is also working to assess and address PM2.5 (the smallest fraction of particulate) despite Camden meeting EU limit values for PM2.5, research suggests that particulates of this size have the worst health impacts.

Policy CC4: Air quality

The Council will ensure that the impact of development on air quality is mitigated and ensure that exposure to poor air quality is reduced in the borough.

The Council will take into account the impact of air quality when assessing development proposals, through the consideration of both the exposure of occupants to air pollution and the effect of the development on air quality. Consideration must be taken to the actions identified in the Council's Air Quality Action Plan.

Air Quality Assessments (AQAs) are required where development is likely to expose residents to high levels of air pollution. Where the AQA shows that a development would cause harm to air quality, the Council will not grant planning permission unless measures are adopted to mitigate the impact. Similarly, developments that introduce sensitive receptors (i.e. housing, schools) in locations of poor air quality will not be acceptable unless designed to mitigate the impact.

Development that involves significant demolition, construction or earthworks will also be required to assess the risk of dust and emissions impacts in an AQA and include appropriate mitigation measures to be secured in a Construction Management Plan.

Table 5 Camden Local Plan CC4 (March 2021)

2.23 To help reduce air pollution and adhere to London planning policy, developments must demonstrate that they comply with Policy 7.14 of the London Plan (to be at least air quality neutral).

2.24 Developments will also be expected to include measures to ensure that occupants' exposure to air pollution is reduced to acceptable levels. In addition to mitigation, major developments in these areas will be expected to address local problems of air quality which may include various design solutions and buffers. Measures that can be taken to reduce exposure to air pollution are contained in our supplementary planning document Camden Planning Guidance on amenity.

Policy CC5: Waste

The Council will seek to make Camden a low waste borough. We will:

g. aim to reduce the amount of waste produced in the borough and increase recycling and the reuse of materials to meet the London Plan targets of 50% of household waste recycled/composted by 2020 and aspiring to achieve 60% by 2031;

h. deal with North London's waste by working with our partner boroughs in North London to produce a Waste Plan, which will ensure that sufficient land is allocated to manage the amount of waste apportioned to the area in the London Plan;

i. safeguard Camden's existing waste site at Regis Road unless a suitable compensatory waste site is provided that replaces the maximum throughput achievable at the existing site; and

j. make sure that developments include facilities for the storage and collection of waste and recycling.

Table 6 Camden Local Plan CC5 (March 2021)

2.25 The Council recognises that Camden cannot adequately deal with its isolated waste. Therefore, it is a member of the North London Waste Authority, which is responsible for the disposal of waste collected in the boroughs of Barnet, Camden, Enfield, Haringey, Hackney, Islington and Waltham Forest. London Borough of Camden has adopted the North London Waste Plan (NLWP) that to provides policies against which planning applications for waste development are assessed, alongside other relevant planning policies/guidance.

2.26 NLWP recognises the importance of waste management to achieve a sustainable development and treats waste as a resource rather than a nuisance, promoting the principles of waste hierarchy below.

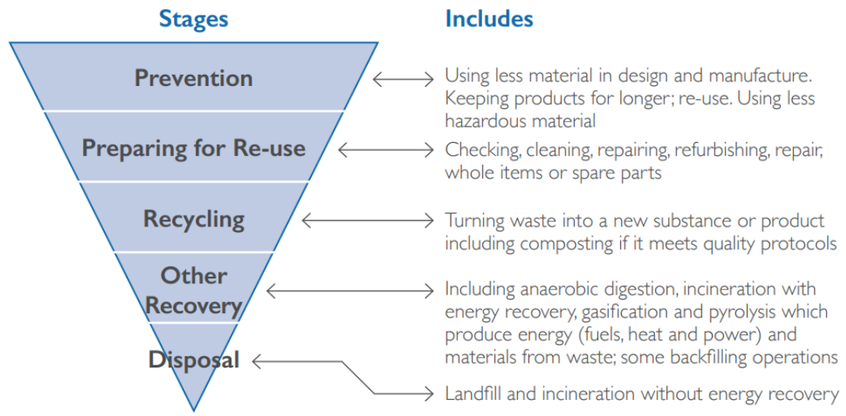

Figure 2 Waste Hierarchy (North London Waste Plan)

2.27 This scheme is design in accordance with Camden local plan policies mentioned in this section. All possible design options have been considered to maximise use of sustainable design principle by followings:

- Efficient fabric design and passive measures to reduce energy demand
- Use of a highly efficient energy source such as an all-electric air source heat pump
- It is proposed to retain majority of the existing structure and building fabric due to Grade II listing therefore, utilising much of the embodied carbon of the existing building in the creation of the new dwellings.
- The inclusion of a green roof will reduce rate of surface water run-off, reduce overheating risk and improve local air quality.
- The dwellings will be fitted with bins to allow for the segregation of waste to allow for recycling in accordance with Local plan policy CC5.

2.28 Camden energy efficiency and adaptation planning guidance document requires all developments of 5 or more dwellings or 500m² of additional floorspace to address sustainable design and construction measures in a Sustainability statement.

2.29 Camden energy efficiency and adaptation planning guidance document suggests BREEAM as a way of demonstrating sustainable design and construction measures have been incorporated in to a development.

3 BREEAM

3.1 London Borough Of Camden expects developments with over 500m² floor area of non-domestic use to achieve a BREEAM “Excellent” rating.

3.2 BREEAM rating benchmarks enable a client and all other stakeholders to compare the performance of a newly constructed building with other BREEAM-rated buildings and the typical sustainability performance of a stock of new non-domestic buildings in the UK.

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

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

3.4 Appendix A includes a BREEAM Refurbishment and Fitout Pre-assessment carried out for non residential areas in the proposed development. The Pre-assessment indicates a score of 70% resulting in an “Excellent” rating based on the proposed scheme.

3.5 As this proposed development involves restoration of an existing listed building, there are limitations on improvements/changes that can be carried out to existing building fabric to reduce energy demand but replacing existing single glazed windows with new double glazing and replacing all building services systems with highly efficient modern services improves building energy performance significantly.

4 Management

4.1 At this early RIBA planning stage 2, a contractor has not been appointed to undertake the construction works. However, the information and parameters within this document will form part of any tender documentation. The appointed contractor will be required to comply with the outlined methodology described in this document.

4.2 The Considerate Constructors Scheme (CCS) is a voluntary scheme, to demonstrate that Scheme-registered contractors and organisations are actively trying to improve the way they work, by raising their standards in being more considerate to communities, the environment and their own workforce. The choice of contractor to carry out works for the proposed scheme will be selected based on their previous performance of achieving high CCS ratings on other projects.

4.3 As part of RIBA Stage 3 works, the design team will complete a pre-demolition audit of any existing parts of the building, structure or hard surfaces that can be retained/recycled before stripping out. The scope of the pre-demolition audit will be to consider materials for re-use and set targets for waste management.

4.4 As a listed building the proposed scheme intends to retain majority of the existing structure and re-use or recycle the existing building material to maximise its sustainability potential and reduce embodied carbon emissions related to this development, where possible new material will be sourced locally.

4.5 The principal contractor will be required to operate an environmental management system (EMS) covering their primary operations. The EMS will be either:

- Third-party certified, to ISO 14001/EMAS or equivalent standard; or
- Compliant with BS 8555:2016

4.6 As part of the building contract, the principal contractor will be required to implement best practice pollution prevention policies and procedures on-site following Pollution Prevention Guidelines, working at construction and demolition sites: PPG6.

4.7 The broad principles of a framework site-wide Construction Management Plan (CMP) are identified in this report. As part of the tendering process, the main contractors will be required to submit a statement demonstrating how they will comply with the CMP and, after the appointment, provide detailed documentation to prove this compliance.

4.8 To ensure local people are employed on site, the selected contractor will be encouraged to take on young apprentices or administration staff who live or study within the borough as part of their employment. During the construction process, there are many opportunities where some can be given an opportunity for employment or new skills. Often local higher education colleges have lists of possible candidates who may benefit from the experience.

4.9 The best practicable means of preventing, reducing and minimising dust will be adopted. The proposed development will adhere to the relevant Code of Practice during construction.

4.10 Under the Considerate Contractors Scheme, reasonable practice procedures will be followed to mitigate noise, vibration, and air pollution impacts. Measures currently planned to include:

- Hydraulic construction to be used in preference to percussive techniques where practical;
- Off-site prefabrication to be used, where applicable.
- All plant and equipment used for the works must be maintained, silenced where appropriate and operated to prevent excessive noise. To be switched off when not in use and where practicable;
- The plant will be certified to meet relevant current legislation and British Standards;
- Loading and unloading of vehicles, dismantling of site equipment such as scaffolding, or moving equipment or materials around the site will be conducted in such a manner as to minimise noise generation;
- The constructor will not burn waste on site;
- Where possible, construction works will be carried out using methods that minimise noise. In some specific cases, there is little reasonable choice other than to use percussion tools in one form or another. Quieter types of machinery will be specified for these works where possible.

4.11 During the construction, the contractor will be required to provide an appropriate wheel-washing system to remove mud, stones and any other extraneous materials from the wheels and chassis of construction vehicles exiting the site, and all loads of excavation soil or other such matter shall be fully covered.

4.12 To reduce the impact of construction on local roads and population, the contractor will be required to provide adequate room for storing materials on site- i.e., masonry/stone; however, it is expected that significant components such as steelwork will be programmed to arrive just in time. A delivery zone will be established on site and will hold a minimum of one HGV at any time. The proposed development scale is such that no provision of an off-site holding area for vehicles is anticipated to be required.

4.13 To maintain public relations a site agent will be appointed to handle all complaints and enquiries. This individual will be named at the site entrance, with a contact telephone number. Any complaints will be logged on site, thoroughly investigated and reported to the client as soon as possible. The complainant will be informed as to what action will be taken. In unusual activities or events, the client and other relevant third parties (i.e., statutory and non-statutory bodies) will be notified before the work is carried out.

4.14 The main contractor will be required to employ a specialist commissioning manager rather than a general sub-contractor, to be able to independently verify the work carried out by the project team members installing the systems. The commissioning manager will review the design and oversee the installation and commissioning of the building services, including but not limited to the following elements – heating systems, hot and cold-water services, mechanical ventilation, life safety systems, building management systems, security and access control systems, renewable energy sources, and any other complex systems.

4.15 The contractor will be required to provide a building training day before the handover and occupation of the building. The training schedules shall include the following as a minimum:

- The building's design intent.
- Introduction to the non-technical building user guide for building occupiers and relevant building documentation
- Aftercare provision and aftercare team primary contacts include scheduled commissioning and post-occupancy evaluation.
- Introduction to and demonstration of installed systems and key features, particularly building management systems, controls, and interfaces.

- Introduction to the technical building user guide for facilities managers and other relevant building documentation, e.g., design data, technical guides, maintenance strategy, operations, and maintenance (O&M) manual, commissioning records, log book etc.
- Maintenance requirements, including any maintenance contracts and regimes in place

5 Health and Wellbeing

5.1 The health and Well-being category encourages building users' increased health, wellbeing, and safety. Issues within this category reward building design and specification decisions that create a healthy, safe, and comfortable internal and external environment.

5.2 Visual comfort provides internal daylight conditions that facilitate good visual comfort by designing the potential for glare, achieving good practice daylight factors and having an excellent outside view. As a listed building with large existing windows, all dwellings will be designed to achieve an average daylight factor of 0.90.

5.3 The proposed scheme creates multiple small to medium sized office spaces resulting in over 80% of floor area in each office to be within 7m of a window, resulting in good levels of view out.

5.4 Indoor air quality can be maintained through mechanical ventilation with heat recovery (MVHR) using a combination of carbon filters and natural ventilation by opening the windows. The proposed scheme will utilise MVHR systems to provide background ventilation with heat recovery from the exhaust air and a summer bypass of the heat recovery element. Commercial spaces will be provided with mechanical ventilation systems with heat recovery to maintain CO2 levels of below 1000ppm.

5.5 It is also crucial that the potential impact on future occupants of the building is appropriately considered, especially if openable windows are relied upon to relieve overheating.

5.6 Thermal modelling has been carried out to inform the building design to provide a comfortable thermal environment that considers current climatic conditions without the need for active cooling in residential areas.

5.7 The design team will adopt "Secured by Design security" measures to ensure best-practice guidelines are followed during design development. The below points summarise some of the concerns and measures that will be addressed.

- CCTV system (monitoring live 24/7) with visitor door entry covering communal entrances (where Secure (Communal) Mail Delivery facilities) and internal lobby areas will be introduced. The installation complies with the regulation (BS 7958: 2015 Closed Circuit television Management and Operation).
- The electricity meters will be located in safe locations within the building.
- Frames, doors and locks have a secured design to pass BS7950/PAS 24 standards.
- Only Windows and doors tested to meet BS7950 are to be installed.
- Using secure doors/windows to relevant security ratings like PAS 24 and/or ensuring that building fabric systems are robustly constructed will minimise unintended access.
- Lighting for each elevation with a door set that the public, visitors, or occupants of the building are expected to use.
- 24-hour lighting (ideally using photoelectric cells) designed for the building's communal areas.
- The key fobs access the building and communal areas via video entry systems to ensure only authorised individuals can enter the development.
- Separation of residential and commercial entrances.

5.8 The layout will be designed to have clearly defined routes for all user types, natural forms of surveillance, and physical protection systems. Places encouraging activity and maintaining a managed/maintained environment will help prevent crime. With the back of the residential building overlooking pedestrian routes around the site due to the site constraints, it is believed the form of the building will help minimise crime.

5.9 The development will incorporate passive solar design measures. The proposed windows will aim to maximise daylight and, at the same time, minimise overheating. The glazing specification will be selected to provide a balance of solar control and access to passive solar gain.

5.10 It is proposed that dwellings will utilise openable windows for purge ventilation, with a whole house background mechanical ventilation system with heat recovery. The MVHR provides background ventilation with heat recovery from the exhaust air and a summer bypass of the heat recovery element.

6 Energy

6.1 Emissions from buildings account for 37% of total UK greenhouse gas emissions. These are made up of 45% direct emissions from burning fossil fuels for heat and 55% indirect emissions related to electricity use. Factors such as thermal insulation, air permeability, shading and glazing areas have been considered to reduce heating, cooling, and lighting demands.

6.2 BREEAM requires sustainable design principles to be adopted to reduce energy usage and carbon emissions of the building, energy monitoring to be deployed to record energy consumption for end uses and identify high usage areas. Energy modelling has been carried out using an National Calculation Method (NCM) compliant software to identify existing building energy performance for comparison with building energy performance with proposed improvements. The results indicate a significant improvement in building energy performance due to reduction in energy demand because of replacing windows and replacing existing building services systems with higher efficiency systems.

6.3 The proposed development has been designed following London Plan energy hierarchy to reduce energy demand and implement renewable energy sources. Energy statement accompanying the planning application reports a carbon emission reduction of 25% by reducing energy demand and use of renewable energy sources.

6.4 Smart energy meters will be installed in the proposed development, which will allow the building managers to download/record the occupational energy demand and identify times of day with higher energy demand. The building energy manager will be able to use the data provided to identify potential energy savings by promoting energy efficiency to the building users.

6.5 All fixed building services such as lighting will be specified as low energy fittings and automated controls strategy will be implemented to minimise energy wastage.

6.6 All external lighting will be carefully selected to ensure average luminous efficacy is above 60 lumens per circuit watt.

6.7 Lighting controls for external lighting will include photocell sensors, PIR sensors and time controlled switched to prevent operation of light fittings during daylight hours and to automatically control the operation of external lighting in areas of low/intermittent traffic.

6.8 The design team has carried out thermal modelling and analysed existing building fabric to influence design decisions on building fabric improvements that should be considered for reduction in energy demand for building services. It is proposed to replace existing single glazed windows of the building which are in disrepair with new slim profile double glazing which will not have a great impact on heritage appearance of the building. Adding internal insulation to existing solid walls will have a significant impact on thermal comfort and energy demand reduction but to preserve heritage features (curved window reveals, cornicing, etc) of the building, internal insulation to existing walls is not being proposed.

6.9 A feasibility study has been carried out to identify the most appropriate low carbon technology that can be used for this development, and it is proposed to utilise high efficiency Variable refrigerant flow (VRF) systems to provide space heating and cooling to all office spaces. VRF systems extract and reject heat to/from air to achieve COPs of up to 6 which result in a great improvement in building energy performance in comparison to traditional gas/oil fired boiler with radiators.

6.10 The client/building operator will select only energy efficiency "A" rated appliances.

6.11 The building materials and the operational sectors of this development have achieved a 'good' Green Guide rating with a long lifespan in terms of their durability and with most of the existing structures retaining and re-using on-site, and the materials have a good percentage of recyclability.

6.12 There are 2no. passenger lifts being proposed for this development. The lift supplier will be required to carry out analysis of the building usage pattern, occupancy density to identify optimum size of lifts. Both new lifts will need to include regenerative drives and vertical transportation system with lowest energy consumption shall be installed.

6.13 Both new lifts will need to be able to operate in a standby condition during off-peak periods. Lift car lighting will be high efficacy fittings with an average luminous efficacy of above 60 lumens per circuit watt.

6.14 Lift drive controllers will be capable of variable speed control of the drive motor.

7 Transport

7.1 Sustainable travel is any form of transport that keeps damage to our environment and the future to a minimum. Motor vehicles create carbon emissions and other pollutants that damage the environment, add to global warming, and reduce air quality for residents. They can also cause more congestion, longer delays, increased parking problems and reduced road safety. London Borough of Camden Council encourages patterns and nodes of developments that reduce the need for private motor vehicle travel by improving accessibility to public transport and having travel plans that help reduce emissions by promoting alternatives to cars.

7.2 The proposed scheme is being designed as a “Car Free” development, no on-site car parking will be available, and the dwellings are designed to encourage occupiers to use public transport options or walk and cycle.

7.3 The location provides a range of transport options, including the London Overground, London Underground and bus routes. The Public Transport Accessibility Level (PTAL) rating of 4 confirms that the site has good public transport links. https://tfl.gov.uk/info-for/urban-planning-and-construction/planning-with-webcat/webcat?Input=nw3+1pd&PlaceHolderText=eg.+NW1+6XE+or+530273%2C+179613&type=Ptal&zoomLevel=15

Figure 3 TFL WebCAT Map for the site

8 Water

8.1 The UK has less water per person than most other European countries. London is drier than Istanbul, and the South East of England has less water available per person than Sudan and Syria.

8.2 Approved Document Part G of the Building Regulations in April 2010 sets a 'whole building' standard of 125 litres per person per day for domestic buildings. The building regulation limits internal water use to120 litres per person per day and an allowance of 5 litres per day for outdoor water use.

8.3 Water fittings will be specified with the following or similar rates to the target 55% improvement in water consumption benchmark as per WAT01 of BREEAM. This development aims to reduce water consumption in line with the recommended target set out in the London Plan and BREEAM WAT01 using water-efficient fittings listed below (Table 8).

Fitting	Fitting specification
WC	3 litres effective flush volume
Kitchen sink tap	5 litres per min
Washbasin tap	3 litres per min
Shower	3.5 litres per min
Bath	100 litres
Washing machine	30 litres/use
Dishwasher	10 litres/cycle

8.4 Sub-metering water consumption will be incorporated in the proposed scheme to allow large water consumers to be identified and to encourage reducing water use where practical.

8.5 A leak detection system will be specified and installed in the commercial areas. This system will be:

- A permanent automated water leak detection system that alerts the building occupants to the leak OR an inbuilt automated diagnostic procedure for detecting leaks
- Activated when the flow of water passing through the water meter/data logger is at a flow rate above pre-set maximum for a pre-set time
- Able to identify different flows and, therefore, leakage rates
- Programmable to suit the owner/occupiers water consumption criteria

9 Materials

9.1 The environmental impact focuses on sustainable manufacturing, responsible resourcing, and end-of-life recycling. The issue focuses on construction product efficiency, environmental impact, responsible sourcing, and product durability.

9.2 Majority of the existing structure, including external walls, ground floor slab and roof will be retained and re-used as part of the construction, which will greatly reduce the material-related carbon emission.

9.3 The development will be designed to allow the use of locally sourced materials to reduce the embodied carbon related to this site.

9.4 Credible certification schemes such as BES 6001 and ISO 14001 increase confidence in suppliers that responsibly sourced materials are being provided. The design team will ensure all materials specified are sourced from suppliers that are certified and can provide sources of all materials supplied.

9.5 Non-toxic materials will be used wherever possible, including the specification of products with a low VOC content in line with European testing standards.

9.6 A project life cycle assessment will be instructed in the next stage of the project to maximise BREEAM credits for low embodied carbon due to retaining of existing materials. Any new materials required for the proposed scheme will be carefully selected/specified to reduce the embodied carbon of the development wherever possible. Based on the amount of existing building fabric/structure being retained, it is predicted that at least 10% of the BREEAM MAT01 points will be achieved for this development resulting in 1 credit being achieved for BREEAM MAT01.

9.7 The main contractor will be required to produce a sustainable procurement plan at the start of the project to ensure all new materials are responsibly sourced in the most sustainable way possible.

10 Waste

10.1 As waste treatment and disposal have both positive and negative impacts on the environment and climate. The contractor will be required to follow waste management practices in line with London Borough of Camden waste management hierarchy, which is to:

- *Reduce* - Construction and operation of multi-residential
- *Re-use* - Review the recyclability of selected construction materials,
- *Recycle waste* - Provision of waste recycling facilities during construction and end-of-life dismantling

10.2 In accordance with the London Plan, a Site Waste Management Plan (SWMP) will be implemented. The contractor will be contracted to reduce construction waste and ensure that at least 85% of the waste is recycled on or off site and not sent to a landfill site.

10.3 The waste produced during construction will be segregated and stored separately. The segregation of the materials as a minimum will include paper, glass, plastic, cardboard, metal, and other construction waste. Every effort will be made to re-use these materials on-site before sending them to recycling facilities or landfill.

10.4 The existing structure, including external walls, ground floor slabs, and roof structure, will be retained and re-used as part of the construction, which will greatly reduce the on-site construction waste.

10.5 A Pre-demolition audit will be conducted prior to detailed design stage and strip out works commencement to identify materials that can be re-used on or off site and strip out contractor will be meet targets set within the pre-demolition audit to maximise re-use and recycling opportunities.

10.6 Waste generated from site will be either re-used on site, sent to another site for use or sent back to manufacturers for closed loop recycling. It is estimated that at least 50% of the total points available in BREEAM WST01 will be achieved, resulting in 1 credit for reuse and recycling of materials.

10.7 The main contractor will be required to develop a Resource Management Plan (RMP) to demonstrate how the targets set in Pre-demolition audit will be achieved.

10.8 The design of the building incorporates recommendations made in the Operational Waste Management Strategy produced by Velocity Transport Planning Ltd. to reduce the overall impact of waste generation through the recycling of materials from operational phase of the development.

10.9 Domestic and Operational Waste - Provision of adequate refuse and recycling storage space, allowing the accessible collection to reduce household waste/operational waste in all developments. A dedicated refuse storage areas has been incorporated in the design to allow commercial and residential occupiers to store segregated waste for collection.

11 Land Use and Ecology

11.1 The development is considered low-moderate ecological value within the local context as there is an existing building structure on the site. Measures will be taken during construction to minimise the impact on ecology by timing works appropriately, following best practice guidance, and through the soft landscape design. The design includes external amenity spaces for each dwelling, roof terraces for commercial occupiers and green roofs. Mixed planting is recommended on the green roof to promote biodiversity.

11.2 Incorporation of green roofs in the proposed scheme will promote biodiversity, contribute towards improving local air quality, reduce overheating risk and provide attenuation to surface water runoff.

11.3 The drainage strategy adopted for this scheme has been to reduce surface water discharge rates and sediment transfer from roof drainage to the receiving surface water sewer by using individual downpipes and rainwater attenuation tanks.

12 Pollution

12.1 The proposed building services systems will be selected based on the global warming potential of the refrigerants used in the system. Natural refrigerants will be preferred in the selection process of building services systems contributing towards a zero ODP, low GWP, and efficient, safe, and non-toxic environment.

12.2 Domestic Air Source Heat Pumps will be hermetically sealed units with minimal amount of refrigerant contained within the outdoor unit, reducing the risks of leaks.

12.3 VRF systems for commercial areas will incorporate refrigerant leak detection systems to alert the building occupiers/maintenance engineers of a refrigerant leak to minimise the refrigerant gas released into the atmosphere in the event of a leak.

12.4 VRF systems will be selected to ensure refrigerants have Direct Effect Life Cycle CO_2 equivalent emissions (DELC CO_{2e}) of less than 100KgCO_{2e}/kW of heating/cooling.

12.5 Refrigerant leak detection systems will also be installed in the commercial spaces to provide early indication of refrigerant leaks.

12.6 Air pollution is associated with several adverse health impacts, particularly affecting the most vulnerable in society. The whole of Camden Borough has been declared an Air Quality Management Area (AQMA) for both NO2 (Nitrogen Dioxide) and PM10 (Particulate Matter). Camden is also working to assess and address PM2.5 (the smallest fraction of particulate); despite Camden meeting EU limit values for PM2.5, research suggests that particulates of this size have the worst health impacts.

12.7 Air quality is particularly severe along major roads and railway lines through the borough. This site is close distance to a major road and TFL railway line.

12.8 The construction site air quality plan outlines how dust emissions from demolition and construction must be controlled and delivery vehicle movements reduced.

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13 Appendices

Appendix A. BREEAM Pre-assessment

BREEAM®

Code for a Sustainable Built Environment
www.breeam.com

BREEAM UK Refurbishment & Fit-out 2014

Commercial Areas

Pre-assessment

31 May 2024 Assessment report

PwC's BREEAM Outstanding rated One Embankment Place in London. Image Hufton + Crow.

bre

Assessment references

Registration number:	4781-240307ac	**Date created:**	7/3/2024
Created by:	adrian holmes		

Site details

Site name:	
Address:	
Town:	
County:	
Postcode:	
Country:	

Certificate details

The certificate will have the name of the architect (if entered above) and the name of the developer (from above).

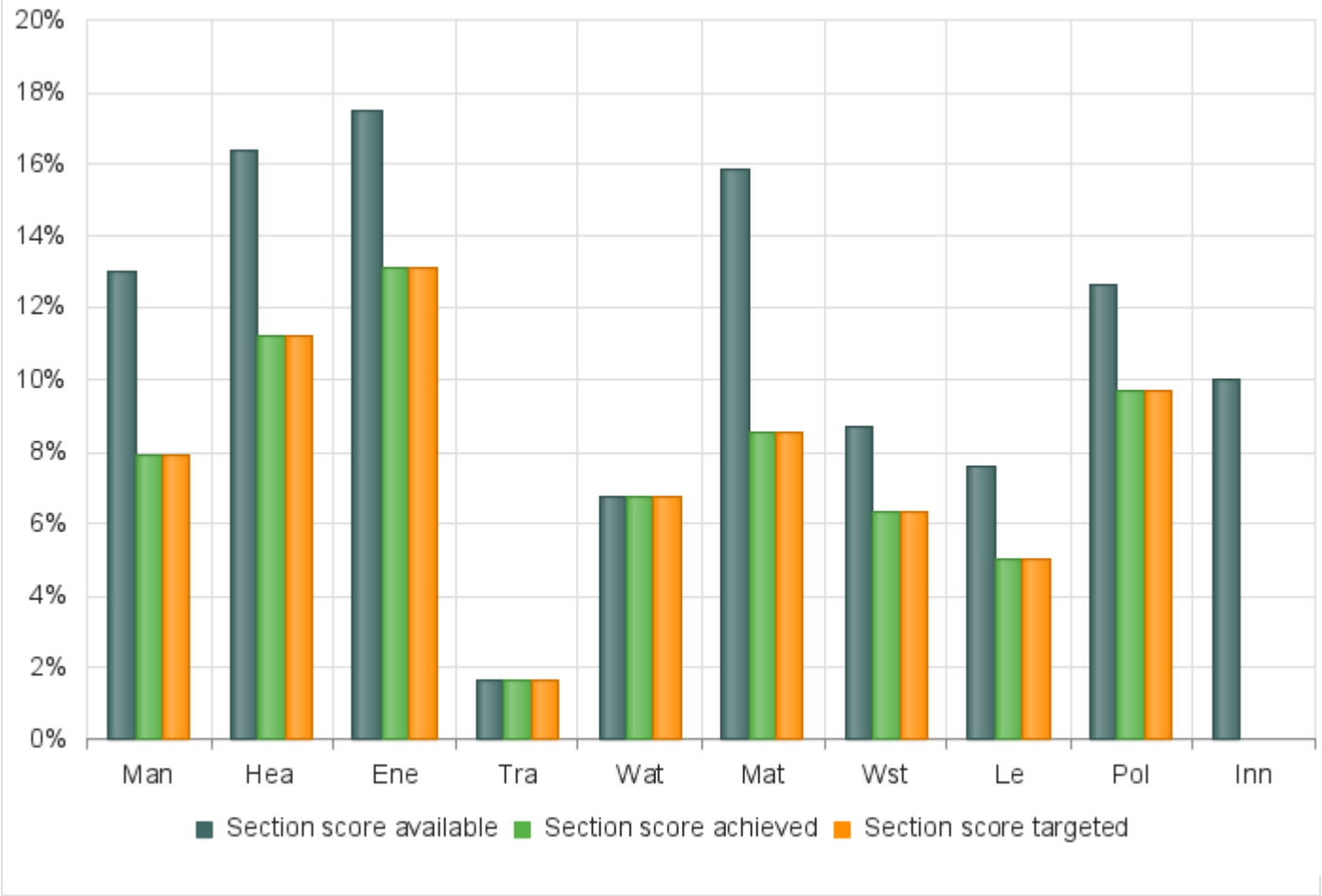
Any other names to appear on the certificate are listed below:

Name	Label

BREEAM Rating

	Credits available	Credits achieved	Credits targeted	% Credits achieved	Weighting	Category score	Target score
Man	18.0	11.0	11.0	61.11%	13.00%	7.94%	7.94%
Hea	19.0	13.0	13.0	68.42%	16.38%	11.20%	11.20%
Ene	24.0	18.0	18.0	75.00%	17.47%	13.10%	13.10%
Tra	2.0	2.0	2.0	100.00%	1.69%	1.68%	1.68%
Wat	8.0	8.0	8.0	100.00%	6.74%	6.74%	6.74%
Mat	13.0	7.0	7.0	53.85%	15.80%	8.50%	8.50%
Wst	11.0	8.0	8.0	72.73%	8.69%	6.32%	6.32%
Le	3.0	2.0	2.0	66.67%	7.59%	5.05%	5.05%
Pol	13.0	10.0	10.0	76.92%	12.64%	9.72%	9.72%
Inn	10.0	0.0	0.0	0.00%	10.00%	0.00%	0.00%
Total	121.0	79.0	79.0	65.29%	-	70.29%	70.29%
Rating	-	-	-	-	-	★★★★☆ **Excellent**	Excelle

Performance by environmental category



Issue scores

Please Note: X means the exemplary credit for the relevant issue

Management

Man 01 Project Brief and design
1 / 4

Man 02 Life cycle cost and service life planning
1 / 4

Man 03 Responsible construction practices
5 / 6 X: 0 / 1

Man 04 Commissioning and handover
4 / 4

Man 05 Aftercare
N/A

Health and Wellbeing

Hea 01 Visual comfort
3 / 7 X: 0 / 1

Hea 02 Indoor air quality
3 / 5 X: 0 / 2

Hea 03 Safe containment in laboratories
N/A

Hea 04 Thermal comfort
3 / 3

Hea 05 Acoustic performance
3 / 3

Hea 06 Safety and security
1 / 1

Energy

Ene 01 Reduction of energy use and carbon emissions
9 / 15 X: 0 / 5

Ene 02 Energy monitoring
2 / 2

Ene 03 External lighting
1 / 1

Ene 04 Low carbon design
3 / 3

Ene 05 Energy efficient cold storage
N/A

Ene 06 Energy efficient transportation systems
3 / 3

Ene 07 Energy efficient laboratory systems
N/A

Ene 08 Energy efficient equipment
N/A

Ene 09 Drying space
N/A

Transport

Tra 01 Sustainable transport solutions
N/A

Tra 02 Proximity to Amenities
1 / 1

Tra 03 Cyclist facilities
N/A

Tra 04 Maximum car parking capacity
N/A

Tra 05 Travel plan
1 / 1

Water

Wat 01 Water consumption
5 / 5 X: 0 / 1

Wat 02 Water monitoring
1 / 1

Wat 03 Water leak detection and prevention

2 / 2

Wat 04 Water efficient equipment

N/A

Materials

Mat 01 Life cycle impacts

1 / 6 X: 0 / 1

Mat 03 Responsible sourcing

3 / 4 X: 0 / 1

Mat 04 Insulation

1 / 1

Mat 05 Designing for durability and resilience

1 / 1

Mat 06 Material efficiency

1 / 1

Waste

Wst 01 Construction waste management

6 / 7 X: 0 / 1

Wst 02 Recycled aggregates

N/A

Wst 03 Operational waste

1 / 1

Wst 04 Speculative finishes

1 / 1

Wst 05 Adaptation to climate change

0 / 1 X: 0 / 1

Wst 06 Functional adaptability

0 / 1

Land use and ecology

Le 02 Protection of ecological features

N/A

Le 04 Enhancing site ecology

1 / 1

Le 05 Long term impact on biodiversity

1 / 2

Pollution

Pol 01 Impact of refrigerants

2 / 3

Pol 02 Nox Emissions

3 / 3

Pol 03 Flood risk management and reducing surface water run-off

3 / 5 X: 0 / 1

Pol 04 Reduction of Night Time Light Pollution

1 / 1

Pol 05 Noise attenuation

1 / 1

Innovation

Inn 01 Innovation

0 / 0 X: 0 / 10

Initial details

Part 1 : Fabric and structure : Yes

Part 2 : Core services : Yes

Part 3 : Local services : Yes

Part 4 : Interior design : Yes

Technical manual issue number : SD216 Issue 1.0

Project type : Change of use

Client : Developer

Assessment stage : Design

Building type (main description) : Office

Building type (sub-group) : Office - General office building

Building floor area (NIFA) Net internal floor area : 960

Building floor area (GIFA) Gross internal floor area : 1122

Refurbishment/Fit-out assessment area : 960

What range does the projects value fall into? : >= Â£2 million

New extension assessment area (if applicable within the scope of the assessment) : 90

Historic building (listed building or building in a conservation area) : Yes, grade 2 listed (England or Wales)

Is commercial and/or industrial scale refrigeration or storage specified/present : No

Are building user transportation systems (lifts and/or escalators) specified/present? : Yes, newly specified transportation systems

Are there systems that significantly contribute towards unregulated energy demands? : No

For industrial buildings, are there office areas? : N/A

For tenant fit-out projects, are sanitary fittings within scope of the refurbishment or fit-out zone? : N/A

Does the building have or mitigate any unregulated water demand? e.g. irrigation or soft-landscaped areas requiring no irrigation, car washing, other significant process related : No

Are there new or existing landscaping areas within the refurbishment or fit-out zone and within developer control? : Yes - new only

Are there any external areas within the refurbishment or fit-out zone and within developer control that can feasibly be enhanced in line with LE 04 : Yes

Is there any local cooling present or within scope of refurbishment or fit-out works? : Yes

Is there any local heating or hot water present or within scope of refurbishment or fit-out works? : Yes

Is any externally mounted plant present or specified? : Yes

Is this a speculative refurbishment? : Yes

Is external lighting within scope of the refurbishment or fit-out zone? : Yes

Is this a simple building? : No

If undertaking a Part 4 assessment, is there any equipment specified that requires commissioning (see Man04 CN13) : Yes

Is any new insulation specified? : Yes

Is Wat01 within the scope of the assessment in accordance with Table 42? : Yes

Are high grade aggregates to be used in the refurbishment scheme? : No

Are there laboratories present and if so what % of total building area do they represent : No laboratories present

Laboratory containment area :

Category assessment
Management (Man)

Man 01 Project Brief and design

Assessment criteria

Stakeholder consultation (project delivery) :	Yes
Stakeholder consultation (third party) :	No
Sustainability champion (design) :	Yes
Sustainability champion (monitoring progress) :	Yes

Credit scoring

Credits scored :	1

Credits awarded : 1

Comments :

Stakeholders and Design team to hold a meeting. Sustainability champion to be appointed at design stage and to monitor construction stage.

Man 02 Life cycle cost and service life planning

Assessment criteria

Elemental life cycle cost (LCC) :	No
Component level LCC plan :	No
Capital cost reporting :	Yes
Capital cost of the project :	3000

Credit scoring

Credits scored :	1

Credits awarded : 1

Comments :

Capital cost to be reported by client

Man 03 Responsible construction practices

Assessment criteria

Is all timber used in the project 'legally harvested and traded timber'? :	Yes
Environmental management :	Yes
Construction stage sustainability champion :	No
Considerate construction :	2
Has the project achieve the minimum standard for an Excellent or Outstanding rating? :	Minimum standard for Excellent rating
Monitoring of refurbishment or fit-out site impacts :	Yes
Utility consumption :	Yes
Transport of construction materials and waste :	Yes
Exemplary level criteria - considerate construction :	Yes

Key Performance Indicators: Construction site energy use

Energy consumption (total) - site processes :

Energy consumption (intensity) - site processes :

Distance (total) - materials transport to site :

Distance (total) - waste transport from site :

Energy consumption (total) - materials transport to site :

Energy consumption (total) - waste transport from site :

Energy consumption (intensity) - materials transport to site :

Energy consumption (intensity) - waste transport from site :

Key Performance Indicators: Construction site greenhouse gas emissions

Process greenhouse gas emissions (total) - site processes :

Greenhouse gas emissions (intensity) - site processes :

Greenhouse gas emissions (total) - materials transport to site :

Greenhouse gas emissions (total) - waste transport from site :

Greenhouse gas emissions (intensity) - materials transport to site :

Greenhouse gas emissions (intensity) - waste transport from site :

Key Performance Indicators: Construction site use of freshwater resources

Use of freshwater resource (total) - site processes :

Use of freshwater resource (intensity) - site processes :

Credit scoring

Credits scored :	5
Exemplary credits scored :	0

Credits awarded : 5

Comments :

The requirement for the principal contractor to be ISO14001 certified, source timber from sustainable sources, operate a compliant EMS and adopt best practice pollution prevention policies and procedures to be written into the tender specifications when appointing contractor. Contractor to appoint member of site management team as Sustainability Champion. Site construction site log to include consumption data. See BRE SMART WASTE management tool. The requirements for the principal contractor to comply with the CCS scheme achieving a score between 24 and 31.5 to be written in the tender specification. The principal contractor needs to provide a CCS certificate in the post-construction stage of the assessment.

Man 04 Commissioning and handover

Assessment criteria

Commissioning schedule and responsibilities :	Yes
Commissioning building services :	Yes
Commissioning building fabric :	Yes
Handover :	Yes
Has a Building User Guide been developed prior to handover? :	Yes

Credit scoring

Credits scored : 4

Credits awarded : 4

Comments :

An appropriate project team member(s) will be appointed to monitor and programme pre-commissioning, commissioning and where necessary, re-commissioning on behalf of the client.

Man 05 Aftercare

Assessment criteria - N/A

Comments :

Architect to provide evidence for project brief and design. Building services engineer to provide evidence for commissioning and seasonal commissioning. The requirements are to monitor energy and water for at least 12 months and providing aftercare support to all the building occupiers to be written into the briefing document.

Health and Wellbeing (Hea)

Hea 01 Visual comfort

Assessment criteria

Glare control :	Yes
Daylighting :	No
View out :	Yes
Internal and external lighting levels, zoning and controls :	Yes
Exemplary level daylighting :	No

Credit scoring

Credits scored :	3
Exemplary credits scored :	0

Credits awarded : 3

Comments :

Building services engineer to provide led lamp specifications and internal and external lighting specifications. The detailed internal daylighting calculation is to be undertaken to meet the BREEAM criteria for achieving the daylight credits.

Hea 02 Indoor air quality

Assessment criteria

Min. sources of air pollution: indoor air quality plan :	Yes
Ventilation :	No
VOCs (products) :	Yes
VOCs (post construction) :	Yes
Adaptability - potential for natural ventilation :	No
Exemplary level VOCs (products) :	No

Key performance indicators: Indoor air quality

Concentration levels of formaldehyde :

Total volatile organic compound (TVOC) concentration :

Credit scoring

Credits scored :	3
Exemplary credits scored :	0

Credits awarded : 3

Comments :

An indoor air quality plan will need to be developed. Architect to specify materials with low VOC's. Building/Rooms designed in accordance with CIBSE AM10 and provided with openable windows of at least 5% of the floor area, room depths in accordance with CIBSE AM10 to allow rooms to be ventilated naturally.

Hea 03 Safe containment in laboratories

Assessment criteria - N/A

Hea 04 Thermal comfort

Assessment criteria

Thermal modelling :	Yes
Criterion 4 - Impact of fit-out on thermal comfort :	Yes
Adaptability - for a projected climate change scenario :	Yes
Thermal zoning and control :	Yes

Key Performance Indicators: Thermal comfort

Predicted Mean Vote (PMV) :

Predicted Percentage Dissatisfied (PPD) :

Key Performance Indicators: Adaptability

Predicted Mean Vote (PMV) :

Predicted Percentage Dissatisfied (PPD) :

Credit scoring

Credits scored :	3
Exemplary credits scored :	0

Credits awarded : 3

Comments :

The CIBSE Guide A operative temperature ranges correspond to a PMV of +/- 0.25 which sits between the Category A and Category B

Hea 05 Acoustic performance

Assessment criteria

Acoustic performance standards and testing requirements complied with :	Yes

Credit scoring

Credits scored :	3

Credits awarded : 3

Comments :

Acoustic consultant to be appointed at design stage to advice on insulation and finishes specification to minimise indoor ambient noise levels and reverberation.

Hea 06 Safety and security

Assessment criteria

Security of site and building :	Yes

Credit scoring

Credits scored :	1

Credits awarded : 1

Comments :

A Suitably Qualified Security Specialist (SQSS) conducts an evidence based Security Needs Assessment (SNA) and develops a set of recommendations or solutions to be implemented by the design team.

Energy (Ene)

Ene 01 Reduction of energy use and carbon emissions

Assessment option

Which option is being followed :	Option 1: Whole building energy model

Building Score

Country :	England
Upload existing building '_epc.inp' file :	
Upload proposed building '_epc.inp' file :	
Credits :	9.0
Actual (existing) building energy demand (DemEx) :	371.19 MJ/m2
Reference building energy demand (DemRef) :	374.12 MJ/m2
Actual (proposed) building energy demand (DemProp) :	350.77 MJ/m2
Actual (existing) building primary energy consumption (PEEx) :	204.79 kWh/m2
Reference building primary energy consumption (PERef) :	211.0 kWh/m2
Actual (proposed) building primary energy consumption (PEProp) :	144.64 kWh/m2
Actual (existing) building CO2 emissions (BEREx) :	11.14 KgCO2/m2
Reference building CO2 emissions (SER) :	15.34 KgCO2/m2
Actual (proposed) building CO2 emissions (BERProp) :	9.02 kgCO2/m2
Building energy demand individual parameter EPR (Energy performance Ratio) :	0.27
Primary energy consumption individual parameter EPR (Energy performance Ratio) :	0.78
Building CO2 emissions individual parameter EPR (Energy performance Ratio) :	0.75
EPRNDR (Energy Performance Ratio Non Domestic Refurbishment) :	0.59

Historic buildings

Historic buildings study compliant :	Yes

Historic building credits scored :	2

Exemplary Assessment Criteria

Zero regulated carbon :	No
Equivalent % of the building's 'regulated' energy consumption generated by carbon neutral sources and used to meet energy demand from 'unregulated' building systems or processes? :	No
Is the building designed to be carbon negative? :	
If the building is defined as 'carbon negative' what is the total (modelled) renewable/carbon neutral energy generated and exported? :	

Credit scoring

Exemplary credits scored :	0

Credits awarded : 9

Ene 02 Energy monitoring

Assessment criteria

Sub-metering of major energy consuming systems :	Yes
Sub-metering of high energy load and tenancy areas :	Yes

Credit scoring

Exemplary credits scored :	0
Credits scored :	2

Credits awarded : 2

Comments :

Energy metering of all distribution board to be fitted with energy meters for small power and lighting. HVAC to be separately metered.

Ene 03 External lighting

Assessment criteria

External lighting specification :	Yes

Credit scoring

Credits scored :	1
Exemplary credits scored :	0

Credits awarded : 1

Ene 04 Low carbon design

Assessment criteria

Passive design analysis :	Yes
Free cooling :	Yes
Low and zero carbon technologies :	Yes
Total on-site and/or near-site LZC energy generation :	52847

Credit scoring

Credits scored :	3
Exemplary credits scored :	0

Credits awarded : 3

Ene 05 Energy efficient cold storage

Assessment criteria - N/A

Ene 06 Energy efficient transportation systems

Assessment criteria

Energy consumption :	Yes
Energy efficient features :	Yes

Credit scoring

Credits scored :	3
Exemplary credits scored :	0

Credits awarded : 3

Comments :

Energy efficient fully BREEAM compliant lifts.

Ene 07 Energy efficient laboratory systems

Assessment criteria - N/A

Ene 08 Energy efficient equipment

Assessment criteria - N/A

Ene 09 Drying space

Assessment criteria - N/A

Transport (Tra)

Tra 01 Sustainable transport solutions

Assessment criteria

Building type category (for purposes of Tra01 assessment :

Public transport accessibility index :

Ref A building dedicated bus services :

Ref B enhanced cycle storage space provision :

Ref C enhanced cyclist facilities :

Ref D electric vehicle charging points :

Ref E car sharing spaces :

Ref F digital information points :

Ref G onsite facilities to reduce the need to travel :

Ref H improvement actions to enhance Accessibility Index :

Credit scoring

Credits scored :	0
Exemplary credits scored :	0

Credits awarded : 0

Tra 02 Proximity to Amenities

Assessment criteria

Close proximity and accessibility to applicable amenities :	Yes

Credit scoring

Credits scored :	1
Exemplary credits scored :	0

Credits awarded : 1

Comments :

Amenities to be within 500m - Appropriate food outlet, Access to cash, Access to a recreation/leisure facility for fitness/sports. Oak & Poppy restaurant, Banks on high street + post office and the armoury gym

Tra 03 Cyclist facilities

Assessment criteria

Building type category (for purpose of Tra03 issue assessment) :

Number of compliant cycle storage spaces provided :

Showers :

Changing facilities :

Lockers :

Drying space :

Cyclist facilities compliant :

Cycle storage spaces compliant :

Credit scoring

Credits scored :	0
Exemplary credits scored :	0

Credits awarded : 0

Tra 04 Maximum car parking capacity

Assessment criteria

Building type category (for purpose of Tra04 issue assessment) :

Maximum car parking capacity compliant :

Credit scoring

Credits scored :	0
Exemplary credits scored :	0

Credits awarded : 0

Tra 05 Travel plan

Assessment criteria

Travel plan based on site specific travel survey/assessment :	Yes

Credit scoring

Credits scored :	1
Exemplary credits scored :	0

Credits awarded : 1

Comments :

Travel plan to be produced by specialist consultant.

Water (Wat)

Wat 01 Water consumption

Standard approach data	
Water consumption :	82 L/person/day
Water demand met via greywater/rainwater sources :	0 L/person/day
Total net water consumption :	93 L/person/day
Improvement on baseline performance :	55 %

Key performance indicator	
Total net water consumption :	0.5 m^3 /person/yr
Default building occupancy :	150

Alternative approach data	
Overall level achieved :	Level 5
Percentage of demand met from grey or rainwater :	0 %

Credit scoring	
Credits scored :	5
Exemplary credits scored :	0

Credits awarded : 5

Comments :

low water usage fittings specified.

Wat 02 Water monitoring

Assessment criteria	
Water meter on the mains water supply to the building(s) :	Yes
Metering/monitoring equipment on supply to plant/building areas :	Yes
Pulsed output or other open protocol communication output :	Yes

Existing BMS connection :	No

Credit scoring

Credits scored :	1
Exemplary credits scored :	0

Credits awarded : 1

Wat 03 Water leak detection and prevention

Assessment criteria

Leak detection on building's mains water supply :	Yes
Flow control device to each sanitary area/facility :	Yes

Credit scoring

Credits scored :	2
Exemplary credits scored :	0

Credits awarded : 2

Wat 04 Water efficient equipment

Assessment criteria - N/A

Materials (Mat)

Mat 01 Life cycle impacts

Assessment criteria

Exemplary level compliant :	No
Options :	Option 1
Option 1: Total Mat 01 points achieved :	

Credit scoring

Credits scored :	1
Exemplary credits scored :	0

Credits awarded : 1

Comments :

Project lifecycle assessment study - project uses a life cycle assessment (LCA) tool or undertakes a building information model life cycle assessment (BIM LCA) to measure the life cycle environmental impact of the refurbishment or fit-out works. Atleast 50% points achieved using BREEAM Mat01 calculator.

Mat 03 Responsible sourcing

Assessment criteria

All timber and timber based products are 'Legally harvested and traded timber' :	Yes
Is there a documented sustainable procurement plan :	Yes
Have at least three material types been responsibly sourced (criterion 1) :	Yes
% of available RSM points achieved :	

Credit scoring

Credits scored :	3
Exemplary credits scored :	0

Credits awarded : 3

Comments :

sustainable procurement plan - The principal contractor sources materials for the project in accordance with a documented sustainable procurement plan. Raw materials (timber, metal, clay, concrete) for doors, windows, walls, floor, roof to be responsibly sourced from one of the responsible sourcing schemes recognised by BREEAM.

Mat 04 Insulation

Assessment criteria

Embodied impact - insulation index :

Credit scoring

Credits scored :	1
Exemplary credits scored :	0

Credits awarded : 1

Comments :

Architect to ensure insulation with green guide rating of A+ is specified.

Mat 05 Designing for durability and resilience

Assessment criteria

Protecting vulnerable parts of the building from damage :	Yes
Protecting exposed parts of the building from material degradation :	Yes

Credit scoring

Credits scored :	1
Exemplary credits scored :	0

Credits awarded : 1

Comments :

Architect to ensure suitable finishes and products are specified to protect building interior and exterior from damage. For example, interior areas with high footfall to have suitable floor finishes, exterior areas with vehicle access to ensure corners/junctions/components at most

risk of impact from vehicle are robust.

Mat 06 Material efficiency

Assessment criteria	
Material optimisation measures investigated and implemented at relevant stages :	Yes

Credit scoring	
Credits scored :	1
Exemplary credits scored :	0

Credits awarded : 1

Comments :

Design team to ensure use of new materials and environmental impact of materials can be minimised. Re-use existing materials on site where possible.

Waste (Wst)

Wst 01 Construction waste management

Assessment criteria

Pre-refurbishment audit :	Yes
Resource management plan :	Yes
% of points achieved for direct re-used or recycled (table 64) :	

Key performance indicator - construction waste

Measure/units for the data being reported :

Non-hazardous construction waste (excluding strip-out/demolition/excavation) :	
Exemplary level compliant - Resource efficiency and diversion of waste from landfill :	Yes
Non-hazardous non-demolition construction waste diverted from landfill :	
Total non-hazardous demolition waste generated :	
Non-hazardous demolition waste diverted from landfill :	
Material for reuse :	
Material for recycling :	
Material for energy recovery :	
Hazardous waste to disposal :	

Credit scoring

Credits scored :	6
Exemplary credits scored :	0

Credits awarded : 6

Comments :

Suitably qualified professional to be appointed to produce a Resource Management Plan. All waste generated from site to be re-used on site or sent back to manufacturer for closed loop recycling.

Wst 02 Recycled aggregates

Assessment criteria - N/A

Wst 03 Operational waste

Assessment criteria

Segregation and storage of operational recyclable waste volumes :	Yes
Static waste compactor(s) or baler(s) :	N/A
Vessel(s) for composting suitable organic waste :	N/A

Credit scoring

Credits scored :	1
Exemplary credits scored :	0

Credits awarded : 1

Comments :

Separate waste area provided for office and resi + waste area to be large enough for segragation of waste i.e. separate bins for recyclable and non recyclable waste.

Wst 04 Speculative finishes

Assessment criteria

Speculative finishes compliance :	Yes

Credit scoring

Credits scored :	1
Exemplary credits scored :	0

Credits awarded : 1

Comments :

Minimise waste by only specifying installing finishes (carpets, ceilings) in show area or where occupier is known. If refurbishing speculative office spaces, do not install finishes to avoid waste due to tenant's CAT B fit outs.

Wst 05 Adaptation to climate change

Assessment criteria

Adaptation to climate change - structural and fabric resilience :

Exemplary level - responding to adaptation to climate change :

Credit scoring

Credits scored :	0
Exemplary credits scored :	0

Credits awarded : 0

Wst 06 Functional adaptability

Assessment criteria

Functional adaptability :

Credit scoring

Credits scored :	0
Exemplary credits scored :	0

Credits awarded : 0

Land use and ecology (Le)

Le 02 Protection of ecological features

Assessment criteria - N/A

Le 04 Enhancing site ecology

Assessment criteria

Suitably qualified ecologist appointment (SQE) :	Yes
Ecologist's report and recommendations :	Yes

Credit scoring

Credits scored :	1

Credits awarded : 1

Comments :

Ecologist to be appointed to provide report on how to improve site ecology.

Le 05 Long term impact on biodiversity

Assessment criteria

Suitably qualified ecologist appointment (SQE) :	Yes
Landscape and habitat management plan :	Yes
Number of applicable measures :	2
Number of applicable measures implemented :	2

Credit scoring

Credits scored :	1

Credits awarded : 1

Comments :

Ecologist to confirm that all relevant UK and EU legislation relating to the protection and

enhancement of ecology has been complied with during the refurbishment or fit-out process. Principal contractor nominates a Biodiversity Champion with the authority to influence site activities and ensure that detrimental impacts on site biodiversity are minimised in line with the recommendations of a Suitably Qualified Ecologist. Principal contractor trains the site workforce on how to protect site ecology during the project. Specific training must be carried out for the entire site workforce to ensure they are aware of how to avoid damaging site ecology during operations on-site. Training should be based on the findings and recommendations for protection of ecological features highlighted within a report prepared by a Suitably Qualified Ecologist.

Pollution (Pol)

Pol 01 Impact of refrigerants

Assessment criteria

Does the building require the use of refrigerants within its installed plant/systems? :	Yes
BS EN 378:2008 and IoR Ammonia Refrigeration System CoP (where applicable)? :	No
Global Warming Potential of the specified refrigerant(s) 10 or less? :	No
Total Direct Effect Life Cycle CO2eq. Emissions from the system :	1000 kgCO2eq/kW coolth capacity
Cooling/Heating capacity of the system :	100
BREEAM compliant refrigerant leak detection and containment :	Yes

Credit scoring

Credits scored :	2
Exemplary credits scored :	0

Credits awarded : 2

Comments :

Refrigerant leak detection systems to be installed.

Pol 02 Nox Emissions

Assessment criteria

Nox emission level - space heating :	0 mg/kWh
Nox emission level - cooling :	0 mg/kWh
Nox emission level - water heating :	0 mg/kWh
Does this building meet BREEAMs compliance note relating to the definition of a highly insulated building? :	No
Energy consumption: heating and hot water :	

Credit scoring

Credits scored :	3
Exemplary credits scored :	0

Credits awarded : 3

Comments :

All electric, highly efficient domestic hot water production.

Pol 03 Flood risk management and reducing surface water run-off

Assessment criteria

Annual probability of flooding :	Low
Avoidance of flooding :	Yes
Flood resilience of resistance strategy :	Yes
Neutral impact on surface water :	Yes
Reducing run-off :	Yes
Minimising watercourse pollution :	Yes
Exemplary level compliant :	No

Credit scoring

Credits scored :	3
Exemplary credits scored :	0

Credits awarded : 3

Comments :

Reduce surface water run-off by implementing SUDs.

Pol 04 Reduction of Night Time Light Pollution

Assessment criteria

External lighting specification :	Yes

Credit scoring

Credits scored :	1
Exemplary credits scored :	0

Credits awarded : 1

Comments :

Reduce light pollution by suitable external lighting design, selection of light fittings and controls.

Pol 05 Noise attenuation

Assessment criteria

Noise-sensitive areas/buildings within 800m radius of the development :	Yes
Noise impact assessment and, if applicable, noise attenuation measures :	Yes

Credit scoring

Credits scored :	1
Exemplary credits scored :	0

Credits awarded : 1

Comments :

Noise attenuation measures to comply with planning policy of -10db existing background noise level.

Innovation (Inn)

Inn 01 Innovation

Assessment criteria	
Number of 'approved' innovation credits achieved? :	0

Credit scoring	
Credits scored :	0
Exemplary credits scored :	0

Credits awarded : 0