

Environmental Standards Statement

Echo Street, Manchester

April 2023



Turley
Sustainability

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Client

iQ Student Accommodation

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1. Introduction

1.1 Introduction

This Environmental Standards Statement (ESS) has been prepared by Turley on behalf of iQ Student Accommodation ('iQ' or 'the applicant') to support a full planning application for the development of purpose-built student accommodation (PBSA) at Echo Street Manchester.

This Statement provides detail of the various measures incorporated into the development proposals to ensure sustainability performance in accordance with local and national planning policy. It should be read alongside supporting documents such as the Design and Access Statement, Planning Statement, and Circular Economy Statement.

1.2 Site Context

The Application Site, known as Echo Street, is located on vacant land in Manchester City Centre following the demolition of the existing building on-site under planning permission ref. 18267/FO/2017 and subsequent amendments.

The site is roughly rectangular in shape and is bounded by Granby Row, Echo Street, the Manchester, South Junction and Altrincham railway viaduct and an area of open space known as Vimto Gardens.

The extent of the application site is shown on the Location Plan submitted with the planning application, illustrated in **Figure 1** overleaf.

1.3 Proposed Development

The Proposed Development comprises up to 1,224 PBSA bedspaces, in a mix of studios and clusters. The ground floor and mezzanine level of the Proposed Development will also facilitate commercial/leisure/community uses.

The planning description for the proposed development is as follows:

"Development of purpose-built student accommodation (sui generis) comprising 3 interlinked towers with intermediary link buildings, associated amenity space and external landscaping."

1.4 Document Structure

Chapter 2 of this report provides an overview of relevant national and local legislation, planning policy and guidance.

Chapter 3 provides detail of the sustainability and energy strategy of the proposed development, in line with local Planning Policy.

Chapter 4 provides details of the BREEAM strategy, credits targeted and how the criteria will be met.

Please note the terms "carbon", "carbon dioxide (CO₂)" and "greenhouse gases (GHGs)" are used interchangeably in this Statement depending on the terminology of referenced documents etc.

Figure 1: Proposed Site Plan with Planning Application Boundary (Source: Sheppard Robson)



2. Policy Context

This chapter provides an overview of the relevant sustainability planning policy and guidance from a national and local perspective.

2.1 National Policy

This section sets out a summary of current national guidance and policy in relation to sustainable development.

2.2 National Policy

2.2.1 National Planning Policy Framework

The National Planning Policy Framework¹ (NPPF) provides a framework for the development of locally prepared plans and the government's planning policies for England and how these are expected to be applied.

Paragraph 7 of the NPPF states that: 'the purpose of the planning system is to contribute to the achievement of sustainable development'.

In order to deliver sustainable development, the planning system must perform three distinct objectives, aligned to the three pillars of sustainability, which must not be taken in isolation and should be pursued jointly:



An **economic** objective to help build a strong, responsive and competitive economy, by ensuring that sufficient land of the right type 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 supporting 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 well-designed beautiful and safe places, 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 contributing to protecting and enhancing our natural, built and historic environment; including, making effective use of land, improving biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy.

These objectives are key to the development of plans and the NPPF sets out a number of key themes for consideration which guide the preparation of local plans and policies, ensuring the delivery of sustainable development.

The NPPF recognises the role planning has to play in support of the UK's pursuit of the United Nations Sustainable Development Goals (UNSDGs) which address social progress, economic wellbeing and environmental protection². Example UNSDGs are presented in **Figure 2**.

¹ [UK Government | NPPF](#)

² [UN Sustainable Development Goals](#)

Figure 2: Example UN Sustainable Development Goals



2.2.2 Planning Practice Guidance

Planning Practice Guidance (PPG) provides further advice on various planning issues associated with development, including those linked to sustainability and renewable energy and underpins the policies within the NPPF.

PPG is a material consideration in planning decisions and should generally be followed unless there are clear reasons not to. It sets out how local authorities should include policies that protect the local environment and strategies to mitigate and adapt to climate change and supports developments that are functional and adaptable for the future.

2.2.3 National Design Guide

The National Design Guide³ was last updated in January 2021 and is based on the national planning policy practice guidance and objective for good design as set out in the NPPF. The Guide introduces ten characteristics of well-designed places which work together to create developments Character

and Community, while positively addressing environmental issues affecting climate.

2.2.4 Building Regulations

Part L, Conservation of Fuel and Power⁴ - Whilst not planning policy, the Building Regulations (and specifically Approved Document Part L: Conservation of Fuel and Power) set out the requirements for energy and carbon performance in new buildings.

Periodic updates to these national regulations will drive energy efficiency and carbon reduction improvements. The government has stated that developers will continue to have flexibility in how they meet carbon reduction targets; but that the emphasis is on using a “fabric first” approach.

On 15th June 2022, the Building Regulations were updated as an interim step towards part of the roadmap to the ‘full’ Future Homes and Buildings Standard, which comes into effect in 2025. The regulations aim to deliver buildings that are of a higher quality, with lower energy bills and reduce GHG emissions by around 30% for new homes and 27% for non-domestic buildings.

Part S, Infrastructure for Charging Electric Vehicles⁵

- New approved document Part S sets out guidance for electric vehicle (EV) charging infrastructure and specifies that EV charge points must be provided for each dwelling (or where the total number of parking spaces is less than each dwelling, all spaces should be provided with an active EV charging point). Any remaining spaces must have cable routes for charge points to be installed.

Part O, Overheating⁶ - Part O sets out new requirements for mitigating overheating, specifying that residential developments must limit unwanted solar gains in the summer and provide means to remove heat.

2.3 Local Planning Policy

³ National Design Guide

⁴ Approved Document L, Conservation of fuel and power, Volume 2: Buildings other than dwellings (publishing.service.gov.uk)

⁵ Approved Document S: Infrastructure for the charging of electric vehicles (publishing.service.gov.uk)

⁶ Overheating: Approved Document O - GOV.UK (www.gov.uk)

Current and emerging Manchester City Council planning policy relating to sustainable development, energy and climate change is summarised below.

2.3.1 Manchester Core Strategy Development Plan Document (2012)

Manchester's Core Strategy (2012)⁷, is the key document in the Manchester Local Plan. It sets out the long-term strategic policies for Manchester's future development and forms the framework against which planning applications are assessed. The following Core Strategy policies are of greatest relevance to sustainable development and the focus of this Statement.

Policy EN4 – Reducing CO₂ emissions by enabling low and zero Carbon Development – Development should be designed in accordance with the energy hierarchy to reduce energy demand through active and passive design measures meeting residual requirements using zero carbon, renewable energy technologies. Developments are encouraged to consider the following principles:

- Located and designed in a manner that allows advantage to be taken of opportunities for low and zero carbon energy supplies where possible.
- Where possible new development and retrofit projects will be used as a mechanism to help improve the energy efficiency and where possible provide low and zero carbon energy to existing buildings.
- Where appropriate, new development and retrofit projects are encouraged to connect to and/or make commitments to low or zero carbon energy schemes and/or to incorporate provision to enable future connection to any existing/potential decentralised energy networks.

Policy EN6 – Target framework for CO₂ reductions from low or zero carbon energy supplies – Applications for development over 10 dwellings or 1,000m² floor area are expected to meet sustainability targets which vary depending on the scale of the development, where feasible.

Development that meets the criteria above is required to be accompanied by an Energy Statement which sets out the projected regulated energy demand and associated carbon emissions and how the following targets will be met. Development below the above thresholds is expected to meet the targets but does not need to have an accompanying Energy Statement.

For the purpose of this policy, development is split into three target categories:

Target 1 – Network development areas: Locations where the proximity of new buildings, the mix of use and density of development provides the right conditions to support district heating.

Target 2 – Electricity intense areas: Locations where the predominant building type has all electric fit out, such as retail units and leisure complexes.

Target 3 – Micro-generation areas: Locations where lower densities and fragmented mix of uses tend to mean that only building scale solutions are practical.

The CO₂ emissions reductions targets for the above development locations are set out in **Table 1** overleaf. An Energy Statement is required to be submitted, and developers are permitted to use green infrastructure elements to contribute to the carbon reduction requirements provided adequate evidence is provided.

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https://secure.manchester.gov.uk/downloads/download/5672/core_strategy

Table 1: Manchester Core Strategy: CO₂ emissions reduction targets

Target	CO ₂ Reduction
1	CHP/district heating or connection or where not feasible 15% increase on Part L 2010
2	10% increase on Part L 2010
3	15% increase on Part L 2010

Policy EN8 – Adaptation to Climate Change – All new development is expected to be adaptable to climate change and developments should have consideration of adaptation measures including:

- Minimising flood risk through sustainable drainage systems.
- Reducing the urban heat island effect through green infrastructure.
- Minimising overheating through passive design.
- The opportunity to provide linked and diverse green space to enhance natural habitats which will assist species adaptation.

Policy DM1 – Development Management – All new development should have regard to a range of sustainability issues including site location, accessibility, waste management, biodiversity and flood risk, as well as incorporating sustainable construction techniques which includes the application of BREEAM.

Policy CC5 – Transport – Developers should work to ensure that all users are able to access development by sustainable means, especially taking account of times when developments are likely to be busiest.

Policy EN9 – Green Infrastructure – New development is expected to maintain existing green infrastructure in terms of its quantity, quality and multiple function. Developers are also encouraged to enhance existing green infrastructure where possible.

Policy EN 14 - Flood Risk – Development should be directed away from sites at the greatest risk of flooding, and towards sites with little or no risk of flooding.

Policy EN 15 – Biodiversity and Geological Conservation – developers will be expected to identify and implement reasonable opportunities to enhance, restore or create new biodiversity, either on-site or adjacent to the site, contributing to linkages between valuable or potentially valuable habitat areas where appropriate.

Policy EN 17 – Water Quality – development should avoid adverse impact on water quality, including during the construction phase, and minimise surface run-off.

Policy EN 19 – Waste – requires all developers to demonstrate the proposal’s consistency with the principles of the waste hierarchy.

2.3.2 Guide to Development in Manchester Supplementary Planning Document (SPD) (2007)

This Guide to Development Supplementary Planning Document (SPD) (2007)⁸ provides guidance to develop and enhance environments within Manchester which are visually attractive, have a unique and positive sense of place and where properly caters for the functions which it accommodates, both now and in the future.

Chapter 4 of the SPD sets out Manchester City Council’s expectations on the content of Environmental Standards Statements.

⁸

https://secure.manchester.gov.uk/site/scripts/download_info.php?downloadID=644&fileID=1424

2.3.3 Places for Everyone

Until December 2020, a joint Development Plan Document (DPD) of the ten Greater Manchester local authorities was being prepared, known as the Greater Manchester Spatial Framework (GMSF). However, progression of the GMSF ceased following the decision by Stockport Council to withdraw.

Instead, a joint committee formed by the nine other boroughs has been formed to prepare 'Places for Everyone' (PfE), a joint development plan for jobs, new homes and sustainable growth across these boroughs.

Places for Everyone: Publication Plan⁹ was published in July 2021, with a period for representations taking place between 9th August and 3rd October 2021. The Greater Manchester Combined Authority (GMCA) submitted the plan to the Secretary of State for examination on 14th February 2022. The Examination is currently ongoing. Within this Publication Plan, a number of ambitious sustainability policies are set out which account for climate mitigation and adaptation, social value, economic growth and the natural environment. This includes the following:

- A requirement for new commercial development to achieve at least BREEAM 'Excellent' standard for the Ene 01 Reduction of Energy Use and Carbon emissions credit issue, rising to 'Outstanding' from 2038; and
- Development should achieve a net gain in biodiversity of at least 10%.

In January 2023, the 'Schedule of Proposed Main Modifications to the PfE Plan'¹⁰ was published. Key changes include the approach to net zero development between the periods of 2022-2028 onwards, as follows:

- From 2028, development should work towards being net zero carbon, as defined in the UKGBC

Framework. This can be broken down into the following:

- i. 2022-2025 – applies to emissions in 'operation';
- ii. 2025-2028 – in addition to (i) and unregulated emissions; and
- iii. 2028 onwards – in addition to (i) and (ii), emissions 'in construction' should be considered.
- iv. Any residual carbon emissions should be offset by following the energy hierarchy. The above policies take into account the changes to the Building Regulations adopted in June 2022.

The policies within PfE are not considered further within this statement, due to its current stage of examination. However, the aspiration of Greater Manchester to become net zero carbon by 2038 is supported by the applicant.

2.3.4 Local Plan Issues Consultation

Manchester City Council Local Plan Issues Consultation (February 2020)¹¹ explains how the new Local Plan will contribute to a zero-carbon city by providing the spatial expression in support of the Council's intention to move towards a zero carbon Manchester by 2038 at the latest. The Issues Consultation covers a range of issues that will have a direct bearing on successfully meeting the zero carbon challenge by 2038.

2.3.5 Manchester Climate Change Framework 2020-25

The Manchester Climate Change Framework 2020-25 (February 2020)¹² builds on the Draft Manchester Zero Carbon Framework 2020-38 (published February 2019) and Manchester City Council's declaration of a climate emergency in July 2019.

The Framework sets the following objectives to be met by 2025:

⁹ [Places for Everyone \(greatermanchester-ca.gov.uk\)](https://greatermanchester-ca.gov.uk/places-for-everyone-publication-plan/)

¹⁰ [Schedule of Proposed Main Modifications Issue-Three_ISSUED.pdf \(hwa.uk.com\)](https://hwa.uk.com/schedule-of-proposed-main-modifications-issue-three-issued.pdf)

¹¹ https://manchester-consult.objective.co.uk/portal/planning/issues_and_options_2020/lpi?pointId=5581804

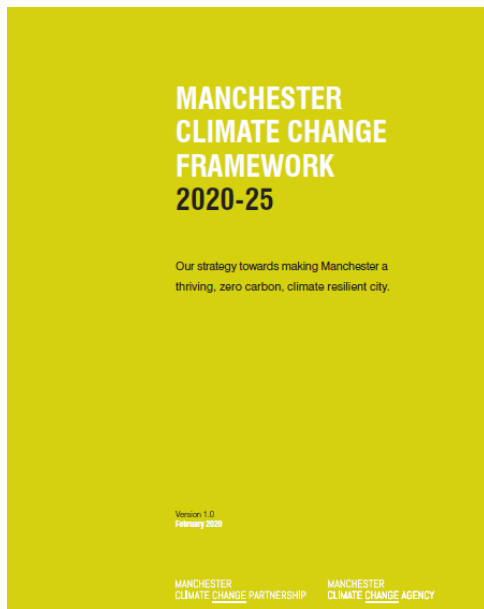
¹² [Manchester Climate Change Framework \(2020\)](https://manchester-consult.objective.co.uk/portal/planning/issues_and_options_2020/lpi?pointId=5581804)

Objective 1: Staying within our carbon budgets – including reducing CO₂ emission from our homes, workplaces and ground transport by at least 50% during 2020-25.

Objective 2: Climate adaptation and resilience – adapting the city's buildings, infrastructure and natural environment to the changing climate.

Objective 3: Health and wellbeing – improving the health and wellbeing of everyone in Manchester through actions that also contribute to our climate change mitigation and adaption objectives.

Objective 4: Inclusive, zero carbon and climate resilient economy – ensuring Manchester establishes an inclusive, zero carbon and climate resilient economy where everyone can benefit.



The framework was updated in October 2022¹³ to present the findings of detailed modelling undertaken to assess the city's carbon budget, provide an overview of progress against the framework so far, and recommend actions for the transition to a zero carbon and climate resilient city. Key recommendations include:

- Ensure new buildings are constructed to high standards of low carbon performance covering operational and embodied energy.
- Produce goods and services more sustainably, moving to a circular economy, alongside becoming more sustainable consumers.
- Reduce waste, including unnecessary food waste, and manage unavoidable waste as sustainably as possible, maximising reusing and recycling.

2.3.6 Validation Requirements

Manchester City Council's Validation Checklist (2018)¹⁴ requires applications for major new development to be accompanied by an Environmental Standards Statement to address the sustainability of the development proposals, in particular, Policies EN4 and EN6 of the Core Strategy.

The Statement must also confirm the proposals for the provision of onsite renewable energy to provide 20% of final site energy demand and CO₂ reduction.

2.4 Planning Policy Summary

There are several consistent themes across national and local sustainability policy which are relevant to the Echo Street proposals. It is clear from the declaration of climate emergency and ambitious target to achieve carbon neutrality by 2038, that MCC and GMCA expect new development to contribute to a carbon neutral future.

Ensuring the development is resilient to a changing climate is a further key requirement at both national and local levels, particularly in relation to increased risk of floods and summertime overheating.

Chapter 3 details the approach proposed to address these policy requirements.

¹³ [Manchester Climate Change Framework October 2022 Update](#)

¹⁴ [Manchester City Council Validation Checklist \(2018\)](#)

3. Sustainability and Energy Strategy

3.1 Introduction

This chapter summarises the various sustainability, energy and climate change measures that are proposed for the Echo Street development. It follows the topic headings of Chapter 4 ‘Environmental Standards’ of the Guide to Development in Manchester SPD (2007) as follows:

- Energy efficiency (incorporating renewable energy).
- Environmental design.
- Water management & weather resilience.
- Waste management.
- Construction management.
- Waterways.

3.2 Energy Efficiency

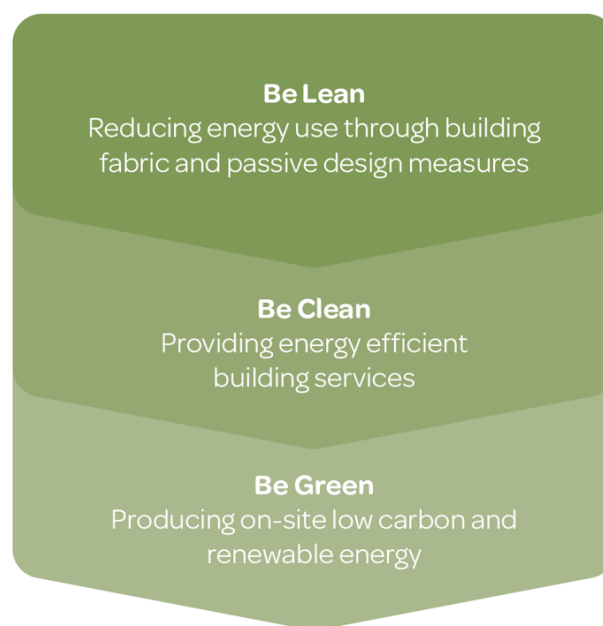
Minimising GHG emissions is key to mitigating the effects of development on climate change.

A key aspect of the recently introduced and future regulations is the continuing decarbonisation of the national electricity network. The phasing out of coal fired power stations and increasing generation of energy from renewable sources is rapidly reducing the carbon intensity of the electricity network.

Through decarbonisation of the national electricity grid and introduction of the new SAP10 carbon factors, electric heating systems deliver a higher carbon saving than gas alternatives.

Taking these considerations into account the development aims to reduce energy consumption and carbon emissions in accordance with the energy hierarchy (**Figure 3**) and current carbon factors.

Figure 3: The Energy Hierarchy



Energy modelling against Part L 2021 has been carried out in order to determine the most suitable and efficient building services strategy. The following sections set out the proposed measures incorporated within the design to deliver an energy efficient, low carbon development, as set out in the Energy Statement and Overheating Report by Waterman Group.

3.2.1 Be Lean – Reducing Energy Use

Central to the delivery of low carbon and energy efficient buildings is the ‘fabric first’ principle which recognises the most effective way of minimising carbon emissions is to reduce the demand for heat and power through a well-insulated, energy efficient building fabric and services.

Reducing the primary energy demand of a building through the use of an efficient fabric and services is widely regarded as best practice and is therefore

the first and most important step to reducing carbon emissions.

This 'fabric first' approach has a number of distinct benefits including:

- Carbon savings delivered are 'locked-in' for the lifetime of the building (60 years or more) rather than the much shorter lifespan (around 25 years) of a renewable energy technology.
- Virtually no maintenance and/or replacement costs to maintain carbon reductions through improved fabric.
- No reliance on an occupier's behaviour to deliver carbon reductions. Achieving carbon savings from renewable energy technologies require education, awareness and often, behavioural changes from occupants.

The following measures implemented within the design of Echo Street reduce energy use and carbon emissions:

- High performance thermal fabric and efficient building services design;
- Highly efficient controls; and
- Targeting air permeability of $3\text{m}^3/\text{h}/\text{m}^2$ at 50Pa, representing an improvement of 70% over the baseline Part L 2021 requirements.

3.2.2 Be Clean – Efficient Energy

The next stage of the energy hierarchy is the provision of energy efficiently, i.e., from a decentralised energy system such as a Heat Network.

District Heating Networks (DHN) comprise a centralised heat generator, typically a gas fired Combined Heat and Power (CHP) engine. CHP systems generate electricity and waste heat which can be fed into a network of insulated pipes which deliver low carbon heat to buildings to provide heating and hot water via individual heat transfer units.

Waterman Group has conducted a study on the area surrounding the site to establish the availability of District Heating Networks. There is currently no existing district heating network near the site that

would allow a feasible connection, and no proposed local heating network shown on the Manchester City Council website.

As summarised earlier, the continued decarbonisation of the national electricity network means that the carbon emission benefits of traditional CHP systems will diminish during their life cycle. Furthermore, an all-electric building services strategy as proposed will not adversely affect the local air quality in Manchester, as there will be no on-site combustion.

CHP and DHN are therefore not considered further as carbon emissions associated with electricity are expected to continue to reduce as the grid decarbonises, leading to greater savings in carbon emissions over the lifetime of the development.

3.2.3 Be Green – Low Carbon Renewable Energy

The final stage of the energy hierarchy is the generation of on-site low carbon renewable energy.

As part of the Energy Statement, a study on low carbon renewable energy technologies has been completed to determine suitability and feasibility for use within the development. Air Source Heat Pumps and Solar PV have been determined the most suitable technologies, for reasons outlined below.

Solar Photovoltaics (PV) systems generate zero carbon electricity from sunlight and are well suited to most developments, particularly where the electricity load is high and consistent during daylight hours. Furthermore, they require minimal maintenance once installed. At the proposed development, solar PV is proposed at roof level.

Air Source Heat Pumps extract low grade heat from the air and raise the heat to a higher temperature for space heating. They require less space than ground source heat pumps and less maintenance than combustion-based heating systems.

Unlike burning oil, gas, LPG or biomass, a heat pump produces no carbon emissions on site (and no carbon emissions at all, if a renewable source of electricity is used to power them). Heat pumps can

also provide cooling in summer, as well as heating in winter.

At the proposed development, the communal areas at ground floor level are to be served by an ASHP simultaneous heating and cooling VRV system. This results in a highly energy efficient system, as heat from the external air is recovered during the winter months. During the warmer months, the units provide cooling to areas to mitigate the risk of overheating due to the internal heat gains within the space.

3.2.4 Energy Strategy Summary

Table 2 demonstrates the anticipated energy performance of the development, and carbon reduction achieved, as modelled by Waterman.

Table 2: Carbon Emissions and Savings (Source: Energy Statement, Waterman Group)

Carbon dioxide emissions (tonnes CO ₂ /annum)	
	Total
Part L 2021 Target Emission Rate (TER) tonnesCO ₂ /year	255,631
Part L 2021 Building Emission Rate (BER) tonnesCO ₂ /year	249,398
CO ₂ Improvement (%)	2.4%

As shown within **Table 2**, Echo Street achieves a 2.4% reduction in carbon emissions against Part L 2021 requirements through building fabric improvements and implementation of renewable technologies. The results set out in the Energy Statement demonstrate that onsite renewable energy has been provided to meet at least 20% of the final site energy demand, in line with Policies EN4 and EN6 of the Core Strategy and the requirements of the Validation Checklist. Through a combination of ASHP to provide domestic hot water, and rooftop solar PV, the proposed development provides 33% of site energy demand through renewable and low carbon technologies.

The BRUKL output document highlighting this has been included within **Appendix 2**.

The proposed energy strategy is further future-proofed by being ‘all electric’ and will benefit from the significant further decarbonisation of the UK electricity grid that is forecast by Government. The combination of an all-electric building services strategy and the use of ASHPs and solar PV will deliver a zero-carbon building in operation with the decarbonisation of the national grid. Therefore, the development will contribute to Manchester City Council’s ambition to become carbon neutral by 2038, and exceed Part L 2021 requirements.

In addition to the low carbon energy strategy, the location of the site provides an opportunity to maximise sustainable travel options including walking / cycling and public transport in preference to the private car. This approach will deliver further carbon emission reductions whilst promoting the health and wellbeing of building occupants through active travel.

3.3 Environmental Design

Echo Street has been registered under BREEAM New Construction 2018 and is targeting a minimum ‘Very Good’ rating with an ambition for ‘Excellent’. This commitment supports Manchester’s declaration of a climate emergency and journey to net zero carbon.

Chapter 4 of this Statement reports the proposed BREEAM strategy as established via a pre-assessment and team workshops that have been undertaken to demonstrate that an ‘Excellent’ target is on track.

3.4 Water Management & Weather Resilience

Water management and weather resilience issues in new development are becoming increasingly important as a result of climate change, with effects such as increased winter rainfall, decreased summer rainfall and increased summer temperatures already being experienced.

The Met Office's latest UK Climate Projections (UKCP18)¹⁵ include significant changes to climatic conditions in Manchester by the 2050s, including increased summer and annual temperatures, increased winter rainfall (storm events) and reduced summer rainfall.

3.4.1 Flood Risk & Drainage

A Flood Risk Assessment and Detailed Drainage Strategy has been prepared by Curtins, which sets out that the existing site lies entirely within Flood Zone 1, indicating that the risk of flooding from rivers and the sea is low (less than 0.1% each year). The site lies within an area which is also at very low to low risk of flooding from surface water, and at low risk from reservoir flooding.

As the site is less than 1 hectare in Flood Zone 1, a Flood Risk Assessment (FRA) is not required to support the planning application. However, a combined FRA and Drainage Strategy has been prepared to achieve the relevant BREEAM credits for the development.

The surface water drainage strategy for the proposed development will align with current best practice in that it has been designed to accommodate the 1 in 100-year storm rainfall event plus an allowance for climate change to the requirements of the site. Surface water drainage will be provided in the form of blue/green roofs which are provided on all roof areas. Permeable surfacing within the ground floor external courtyard will provide treatment and run-off betterment beyond that of the existing site.

This strategy will ensure the development is adapted to manage the increased rainfall likely due to Climate Change, in line with **Policy EN8** of the Core Strategy.

3.4.2 Potable Water Efficiency

Potable water is an increasingly important natural resource and with the majority of the UK classed as being in an area of moderate or severe water stress

the conservation of water is becoming a more significant sustainability metric.

To ensure water efficiency, Echo Street will be designed to achieve a 25% reduction in mains water consumption against the BRE defined baseline, which equates to achieving two credits under BREEAM issue Wat 01 Water Consumption (see **Section 4.2.5**). Water saving measures will be incorporated into the design of the development to achieve these credits and will be confirmed at detailed design.

These measures will help ensure the development reduces demand on local potable water supplies and therefore promote resilience to potential water constraints such as summer droughts.

3.4.3 Building Overheating Risk

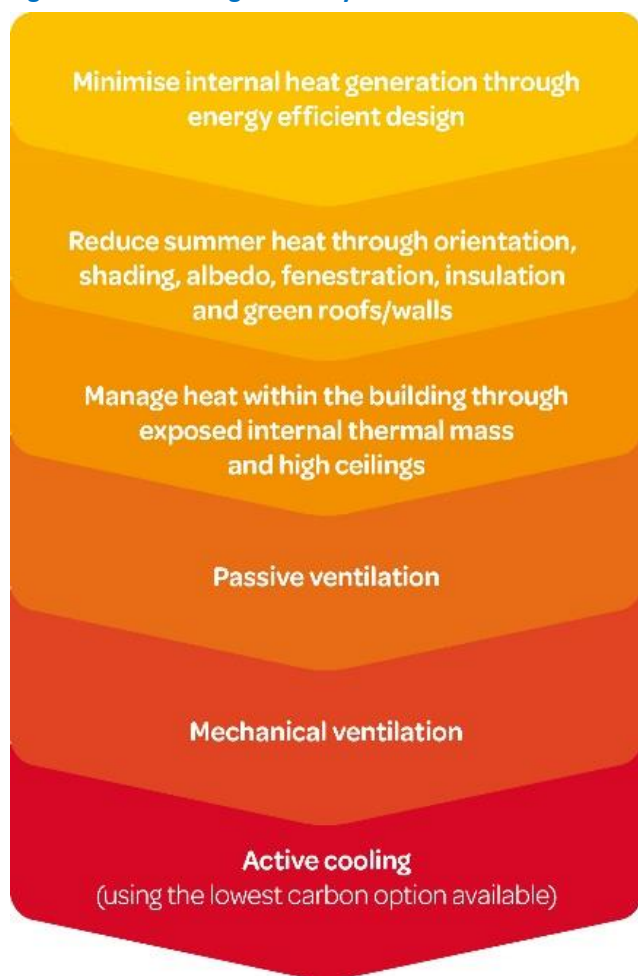
With increasing summer temperatures there is an increasing risk of overheating in buildings which could adversely affect building occupants and users.

The proposed development will be designed in accordance with the cooling hierarchy, as shown in **Figure 4**, which aims to reduce any potential overheating in buildings without contributing to climate change. Incorporating the cooling hierarchy into the design process means buildings will be better equipped to manage their cooling needs and to adapt to and mitigate climate change.

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<https://www.metoffice.gov.uk/pub/data/weather/uk/ukcp18/science-reports/UKCP18-Overview-report.pdf>

Figure 4: The Cooling Hierarchy



As set out in the Energy Statement and Overheating Report by Waterman Group, overheating has been limited through use of a highly efficient building envelope which utilises solar control glazing with a low G value of 0.40 to maximise daylight while minimising solar gain. The glazed areas have been optimised to give the desired balance between good daylighting and minimising solar gains.

An overheating analysis in line with CIBSE TM59 and BREEAM Hea 04 Thermal Comfort credit requirements for both current and future climatic scenarios will be undertaken by Waterman during detailed design.

3.5 Waste Management

Regarding operational waste, sufficient storage for recyclable and non-recyclable waste will be provided in accordance with Manchester City Council's Waste Storage & Collection Guidance for New Developments GD04 (Version 6, September 2017)¹⁶. This guidance provides minimum standards for the storage and collection of refuse and for recycling facilities in new domestic and commercial development.

Waste storage facilities provided at Echo Street will reflect the various waste streams that are generated and collected by the local waste authority. By making it clear and convenient for building users to separate waste at source, a reduction of waste sent to landfill will be encouraged.

3.6 Construction Management

A Construction Management Plan (CEMP) has been prepared by Cumming which summarises the procedures which will be implemented to manage the construction operations on site, ensuring that all standards and protocols are adhered to and ensuring the development stages are managed in the most safe and efficient manner possible.

The proposed development will ensure that construction is undertaken in a way which minimises waste and impact on the surrounding area. Care will be taken not to cause the primary environmental nuisances, vibration, noise and dust pollution. The following measures will be taken to reduce any negative effects on the environment:

- Coordinated delivery times and efficient traffic management to prevent queues of traffic accessing the site;
- Ensuring all contaminants kept on site are safely stored with the necessary procedures put in place for leaks and spillages;
- Implementation of a waste management system on site;

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https://www.manchester.gov.uk/downloads/download/6048/waste_management_strategy

- Conduction of an ecology survey to investigate the presence of ecological or invasive species and review of accompanying report;
- Ensuring all plant has sound reduction measures (mufflers, baffles or silencers);
- Utilising construction techniques which minimise the production of noise;
- Utilisation, where possible, of prefabricated components; and
- Strict adherence to the site working hours.

In addition, the development will be registered with the Considerate Constructors Scheme and achieve certification against the Code of Considerate Practice.

The Circular Economy Statement issued separately outlines how the development on Echo Street has implemented circular economy principles, through commitments made and measures taken throughout design and construction. The report includes details with respect to material and waste minimisation, use of sustainable materials, and protection of natural resource.

3.7 Biodiversity

Penny Anderson Associates Limited ('PA') has undertaken an Ecological Impact Assessment and Extended Phase 1 Habitat Survey for the proposed development.

The proposed site comprises hardstanding and bare ground with small patches of short perennial vegetation and introduced shrub. The wider surrounding land use is primarily urban development comprising roads, offices and residential buildings.

The site is assessed as being of low value for protected and notable species, and no impacts are predicted in relation to any statutory and non-statutory site due to distance to, and lack of, habitat connectivity.

To mitigate the impact of the proposed development on biodiversity, it is recommended that vegetation clearance is conducted outside of the bird nesting season (1st March to 31st August inclusive).

New habitats will be provided at the operational stage of the development, which have been designed to provide a significant ecological enhancement which has been quantified using the Defra Metric Version 3.1. Habitats at the post-development stage will comprise of:

- Brown roofs and biodiverse green roofs to contribute towards green infrastructure; and
- Raised planters.

The proposed development will also incorporate the following additional measures to enhance ecology:

- 9no. integrated starling boxes;
- 9no. integrated house sparrow terraces;
- 9no. integrated black redstart nest cavities;
- 12no. integrated bat boxes suitable for common pipistrelle roosting;
- 12no. integrated bee bricks; and
- 12no. free standing or wall fixed bug hotels.

A BNG assessment has been completed using the Defra Metric Version 3.1 which demonstrates a significant net gain of at least 100%.

Overall, the proposed development would have no significant adverse ecological effects and will result in a large net gain in biodiversity value, aligning with **Policy EN9** and **EN15** of the Manchester Local Plan.

3.8 Waterways

No above ground watercourses have been identified on the proposed site or in the immediate vicinity of the proposed site. The nearest watercourse, the River Medlock is approximately 0.2km from the site.

Appropriate pollution prevention measures will be set out in a Construction Environmental Management Plan to prevent environmental disruption to the river.

4. BREEAM Strategy

This Chapter introduces BREEAM and sets out the strategy proposed to achieve a 'Very Good' rating as a minimum, with an ambition for an 'Excellent' rating.

4.1 BREEAM

BREEAM is the world's leading sustainability assessment tool for new buildings. The scheme is operated by the Building Research Establishment (BRE) and includes a range of criteria against which the sustainability performance of new buildings is assessed.



Since its launch in 1990, BREEAM has been used to certify over 560,000 assessments of buildings across 82 countries. BREEAM has a number of schemes which can be applied to new buildings, refurbishments and existing buildings.

4.2 BREEAM Strategy

Manchester City Council's Guide to Development SPD sets out a requirement for the achievement of a BREEAM 'Very Good' rating on all new non-domestic development.

Turley Sustainability (BREEAM Accredited Professional and Licenced Assessor) has undertaken a Pre-assessment of the development (see **Appendix 1**) using the New Construction 2018 'Multi-residential' methodology. The development is targeting a minimum 'Very Good' rating with an ambition for 'Excellent'. The Pre-assessment sets out how a minimum Very Good rating could be achieved by the development.

It should be noted that the route to BREEAM compliance, as set out in the Pre-assessment, may be subject to change during ongoing detailed design and construction.

A summary of credits targeted within each category, and the value that meeting the criteria brings to the development, is discussed in the following sections. A full breakdown of each credit targeted is provided within **Appendix 1**.

4.2.1 Management

The management category encourages the adoption of sustainable management practices in connection with design, construction, commissioning, handover and aftercare.

The credits within this category are awarded to project and design teams who consider and incorporate sustainability measures, involving key stakeholders from project brief through to occupation.

Sustainability practices targeted include seasonal commissioning, consideration of construction site impacts including use of natural resources and continued support from a BREEAM AP.

4.2.2 Health and Wellbeing

The Health and Wellbeing category of the BREEAM schemes has been aligned with the 'WELL' Standard,

bringing the comfort of building occupiers to the forefront of the design.

The visual comfort and thermal comfort of the internal environment is key in the building design to ensure a high quality, productive working and living environment. Furthermore, security of the site will be prioritised within the design through implementation of the recommendations made in the Crime Impact Statement.

The occupants of Echo Street will have ample access to outside space, gym, cinema, and games room, to enhance socialisation and contribute towards their health and wellbeing.

4.2.3 Energy

The Energy category encourages the specification and design of energy efficient solutions, systems and equipment. The credit requirements support the reduction of carbon emissions throughout the operational phase of the development through specification of thermally efficient building fabric, energy efficient heating systems, and low energy internal and external lighting and controls as discussed within **Section 3.2**.

The proposed building services strategy for the development will be all-electric, using Air Source Heat Pumps in the form of a VRV system to provide simultaneous heating and cooling, as part of a highly efficient energy system. Solar PV will also be provided at roof level.

4.2.4 Transport

A Transport Assessment has been undertaken by Vectos to assess the effect of the development on local transport infrastructure. A Travel Plan has also been produced to recommend sustainable transport measures to reduce private car travel to and from site.

Credits are awarded on the basis of number of transport options available to the site pre-development and as a result of the development.

Public Transport

Echo Street is located in an excellent area for public transport, benefitting from Manchester Piccadilly Railway Station, which is just 200m from the site. Manchester Piccadilly Railway Station facilitates access to local and regional destinations including Liverpool, Leeds, Sheffield, Newcastle and York, and national destinations including London Euston, Birmingham, Bristol and Scotland. Furthermore, the site is located 700m to the east of Manchester Oxford Road Railway Station which provides further links to national and regional destinations.

The Manchester Piccadilly Metrolink Stop is located around 200m from the site. This station is easily accessible by foot via the existing footway network in the vicinity of the site and crossing facilities at the A6/B6469 crossroads junction. With the extensive network that the Metrolink covers, it is considered that it will offer an excellent option for travel to the site.



The site also benefits from a number of local bus services and is therefore in an excellent location to maximise the potential for trips by sustainable modes of transport.

The site is well located to encourage trips by walking and cycling. There are a number of traffic-free routes in the immediate vicinity of the site. Furthermore, the Oxford Road cycle lane corridor leading to the universities, is an on-road route with physical segregation, and runs to the south-west of the site, easily accessible via Grosvenor Street, Downing Street and the A6 London Road.

Local Services and Amenities

The site is well-located to reduce the need to travel as it is close to a wide range of amenities in the city centre, including a Costa Coffee, supermarkets, Boots Pharmacy, ATM, Vimto Park green space, a gym, and a GP Surgery, all of which are within 500m of the site. The development will also be providing facilities and amenities on site for building occupiers, including a gym, cinema, and games room, which will help reduce the need for students to travel off site.

Sustainable Transport Measures

As part of the development proposals, a number of measures will be implemented to improve site accessibility and connectivity. These are listed below:

- Widening of the footway along the southern side of Granby Road.
- Raised table arrangements will be provided on Granby Road to act as a traffic calming measure and aid pedestrian movement across the street, promoting pedestrian safety and movement to and from the site.
- Provision of 313 long-stay cycle spaces will be provided within the site in the form of two cycle stores within the basement, and 8 short-stay cycle spaces will be provided externally in the form of 4 Sheffield stands, enhancing the convenience of cycle use and helping promote this sustainable form of transport.
- Provision of welcome packs and community noticeboard to provide updates to public transport information, including bus and rail timetables and ticket price lists, as well as upcoming scheduled disruptions to services.

The development is considered to be located in a highly accessible location for walking, cycling, bus, Metrolink and rail, and when combined with sustainable transport measures, is able to maximise the credits achieved in the Transport section.

4.2.5 Water

The aim of the Water category is to reduce the consumption of internal and external potable water over the lifetime of the building and minimising losses through leakage.

In line with BREEAM New Construction 2018 Wat 01 Water Consumption credit issue, water usage of sanitary fittings will be limited to reduce water consumption by 25% against the baseline target. This improvement will be achieved through specifying:

- Reduced flush WCs;
- Restricted shower flow rates;
- Restricted and/or automatic shut off taps; and
- Water efficient kitchen equipment.

The detailed design will confirm the final measures incorporated to reduce internal water usage.

Water usage will also be monitored through water meters and a leak detection system.

4.2.6 Materials

The Materials category encourages development to take a 'whole life cycle' approach to construction products, considering impacts of the supply chain from raw material, to end-of-life. The project team will endeavour to reduce carbon, informed by a Life Cycle Assessment options appraisal. This would identify carbon 'hotspots' and any measures which could reduce these emissions, particularly those associated with construction and materials.

To reduce material wastage associated with maintenance and replacement, protection measures will be incorporated into the detailed design to protect from damage that may arise from building occupants and visitors, such as protecting internal areas from trolley movement, pedestrian traffic or external areas from parking and/or delivery vehicles.

The design team will also consider the effect of environmental factors such as water ingress, solar

radiation and temperature variation on the building.

Manufacturers with responsible sourcing accreditation, for example, BES6001, ISO14001, FSC and CARES certification will be prioritised during construction.

4.2.7 Waste

The Waste category encourages the reduction of waste associated with construction methods through measures implemented during the design and on-site management. The category also rewards design measures encouraging the building users to recycle waste during building operation.

The proposed development will minimise demolition, strip out, construction and operational waste where feasible, in line with the measures set out within the waste sections (3.5 and 3.6) of this report and the Circular Economy Statement which accompanies the application.

Additionally, the design is flexible and adaptable to climate change, change in use and refurbishment to reduce the environmental impacts of excess material usage and waste in the future.

4.2.8 Land Use and Ecology

The aim of the Land Use and Ecology category is to encourage sustainable land use, habitat protection and creation and improvement of long-term biodiversity.

As discussed within **Section 3.7**, an Ecological Impact Assessment and Extended Phase 1 Habitat Survey has been undertaken by Penny Anderson Associates, confirming that the site comprises hardstanding and bare ground, and is assessed as being of low value for protected and notable species. No impacts are predicted in relation to any statutory and non-statutory site due to distance and lack of habitat connectivity.

The Survey also provided a number of enhancement measures to deliver a BNG of at least 100%, therefore maximising the credits achievable within this section.

4.2.9 Pollution

The aim of the Pollution category is to address the prevention and control of pollution and surface water run-off associated with the building's location and use.

Pollution issues covered within the credit requirements include light, noise, flooding and emissions to air, land and water.

Echo Street has specified an all-electric building services strategy to limit any adverse impact on local air quality and pollution.

Furthermore, pollution impacts associated with light and noise will be reduced and managed appropriately.

An FRA has been undertaken which classifies the site as within Flood Zone 1 and is therefore at low risk of flooding from rivers and the sea (less than 0.1% each year) as set out in **Section 3.4.1**. Mitigation measures are being incorporated into the design to ensure surface water run-off is appropriately managed, such as through the use of permeable surfacing and blue/green roofs.

4.3 Summary

The above sections summarise the credits targeted by the proposed development to achieve a minimum 'Very Good' rating with an ambition for 'Excellent'.

It should be noted that this Environmental Standards Statement does not guarantee the award of these credits and may not reflect the final route to achieve the targeted rating. Credits may be removed and replaced with others which may be more viable over the course of the design and construction.

5. Conclusion

This Environmental Standards Statement demonstrates how the proposed new PBSA development at the Echo Street site responds positively to national and local sustainable policy requirements.

Social and Economic Benefits

The development aims to provide a range of social and economic benefits to Manchester City Centre, through:

- Support to the local community through increased jobs during construction.
- Incorporation of sustainable transport measures to encourage active travel in the form of walking and cycling, through provision of cycle storage and facilities and public realm improvements to enhance pedestrian safety.
- Provision of a Travel Plan to provide residents with sustainable and safe transport options.
- Provision of a healthy and comfortable indoor and outdoor environment in line with the requirements of BREEAM Health and Wellbeing.
- Provision of numerous facilities available to residents including gym, cinema, and games room.

Environmental Protection and Enhancement

Through a range of design measures the development aims to protect and enhance the local environment, including:

- Reuse of a brownfield site to protect greenfield land.
- Provision of green infrastructure in the form of biodiverse green and brown roofs to provide multi-functional benefits including creation of habitats, climate resilience and recreation.
- BNG of at least 100% delivered directly on site.
- Provision of measures through construction and operation of the site to reduce pollution, minimise waste and encourage recycling.

Mitigating and Adapting to Climate Change

In recognition of climate emergency, the development will incorporate a range of measures to reduce carbon emissions, mitigate the effects of climate change, and to ensure the long-term resilience of the development to the effects of climate change. Measures include:

- Targeting a BREEAM 'Very Good' rating as a minimum with an ambition for 'Excellent'.
- Retention of the existing building substructure and minimisation of new build materials where possible to reduce the embodied carbon emissions associated with new development.
- Reduced carbon emissions through the use of energy hierarchy, using a fabric first approach to design to reduce energy demand, helping mitigate the effects of climate change.
- Specification of an all-electric building services strategy with ASHPs and solar PV to meet 33% of site energy demand, which in future, will deliver a zero-carbon building in operation with the decarbonisation of the national grid,

contributing to Manchester's net zero carbon ambitions and exceeding Part L 2021 requirements.

- Targeting two credits under BREEAM Wat 01 by reducing flow rates, flush volumes, and specifying water efficient kitchen equipment.

- Implementation of circular economy principles throughout design, construction and operation. Please see the Circular Economy Statement which accompanies the planning application for further detail.

iQ Student Accommodation is committed to the delivery of sustainable, purpose-built student accommodation which provides visual improvement to a key city centre site and contributes to Manchester's net zero carbon aim of 2038 through circular economy, minimisation of embodied carbon and implementation of an all-electric building services strategy with on-site energy generation.

Appendix 1 – BREEAM Pre-assessment



BREEAM New Construction 2018 (Multi-residential - Fully Fitted)

Echo Street PBSA

11/04/2023

PLANNING



Key

Mandatory Credit for Very Good

Credit not targeted

TARGET (>55%)	64.23%	Very Good			
Credit Summary BREEAM 2018: Multi-residential - Fully Fitted			Credit Ref.	Credits Available	Very Good Target
MANAGEMENT					
Credit Value 0.52%	Project Brief and Design	Project Delivery Planning	Man 01	1	0
		Stakeholder Consultation		1	1
		BREEAM Advisory Professional		1	1
				1	1
	Life Cycle Costing (LCC) and Service Life Planning	Elemental Life Cycle Cost	Man 02	2	0
		Component Life Cycle Cost		1	0
		Capital Cost Reporting		1	1
	Responsible Construction Practices	Legally harvested and traded timber - Pre-requisite	Man 03	-	Y
		Environmental Management		1	1
		Sustainability Champion		1	1
		Responsible Construction Management		2	2
		Monitoring of Construction Site Impacts		2	2
	Commissioning and Handover	Commissioning and Testing Schedule and Responsibilities (Credit mandatory for Very Good)	Man 04	1	1
		Commissioning Building Services		1	1
		Testing and Inspecting Building Fabric		1	0
		Handover (Credit mandatory for Very Good		1	1

	Aftercare	Aftercare Support	Man 05	1	0
		Commissioning - Implementation		1	0
		Post Occupancy Evaluation		1	0
Section Credit Total				21	13
Weighted Section Total				11%	6.81%
HEALTH & WELLBEING					
Credit Value Credit Value 0.74%	Visual Comfort	Glare control	Hea 01	1	1
		Daylight factors		2	0
		View Out		1	0
		Internal & External Lighting Levels		1	1
	Indoor Air Quality	Indoor Air Quality Pre-Requisite	Hea 02	-	-
		Ventilation		1	0
		VOC Emissions from Construction Products		2	0
		Post Construction Indoor Air Quality Management		1	0
	Thermal Comfort	Thermal modelling	Hea 04	1	1
		Adaptability for Projected Climate Change Scenario		1	1
		Thermal Zoning and Controls		1	1
	Acoustic Performance	Sound Insulation	Hea 05	2	0
		Indoor Ambient Noise Levels		1	0
		Room Acoustics		1	0
	Security		Hea 06	1	1
	Safe and Healthy Surroundings	Safe access	Hea 07	1	0
		Outside Space		1	0
Section Credit Total				19	6
Weighted Section Total				14%	4.42%

ENERGY					
Credit Value 0.73%	Reduction of Energy Use and CO2 Emissions	Energy Performance Ratio	Ene 01	9	3
		Prediction of Operational Energy Consumption		4	0
	Energy Monitoring	Sub-metering End-Use Categories (Credit mandatory for Very Good)	Ene 02	1	1
	External Lighting		Ene 03	1	1
	Low Carbon Design	Passive Design Analysis (PDA)	Ene 04	1	1
		Low and Zero Carbon Feasibility Study		1	0
		Free Cooling		1	1
	Energy Efficient Transportation Systems	Energy Consumption	Ene 06	1	1
		Energy Efficient Features		1	1
	Energy Efficient Equipment		Ene 08	2	0
Section Credit Total				22	9
Weighted Section Total				16%	6.55%
TRANSPORT					
Credit Value 0.83%	Transport Assessment and Travel Plan		Tra 01	2	2
	Sustainable Transport Measures		Tra 02	10	10
Section Credit Total				12	12
Weighted Section Total				10.0%	10.00%
WATER					
Credit Value 0.78%	Water Consumption (1 credit mandatory for Very Good)		Wat 01	5	2
	Water Monitoring (Mandatory for Very good)		Wat 02	1	1
	Water Leak Detection & Prevention	Leak Detection System	Wat 03	1	1
		Flow Control Devices		1	1
	Water Efficient Equipment (Reduction in unregulated water demand)		Wat 04	1	1
Section Credit Total				9	6
Weighted Section Total				7%	4.67%

MATERIALS					
Credit Value 1.07%	Environmental Impacts from Construction Products - Building Life Cycle Assessment (LCA)		Mat 01	7	7
	Environmental Impacts from Construction Products - Environmental Product Declarations (EPD)		Mat 02	1	0
	Responsible Sourcing of Construction Products	Pre-requisite - Legal and Sustainable Timber	Mat 03	-	Y
		Enabling Sustainable Procurement		1	1
		Measuring Responsible Sourcing		3	2
	Designing for Durability and Resilience		Mat 05	1	1
	Material Efficiency		Mat 06	1	0
Section Credit Total				14	11
Weighted Section Total				15.0%	11.79%
WASTE					
0.67% Credit Value	Construction Waste Management	Construction Resource Efficiency	Wst 01	3	1
		Diversion of Resources from Landfill		1	1
	Use of Recycled and Sustainably Sourced Aggregates		Wst 02	1	0
	Operational Waste		Wst 03	1	0
	Adaptation to Climate Change		Wst 05	1	1
	Design for Disassembly and Adaptability		Wst 06	2	2
	Section Credit Total				9
Weighted Section Total				6%	3.33%

LAND USE & ECOLOGY						
Credit Value 1.00%	Site Selection	Previously Developed Land	LE 01	1	1	
		Contaminated Land		1	0	
	Ecological Risks and Opportunities		LE 02	2	2	
	Managing Negative Impacts on Ecology	Prerequisite - Ecological risks and Opportunities	LE 03	-	Y	
		Planning and Measures On-site		1	1	
		Managing Negative Impacts		2	2	
	Ecological Change and Enhancement	Prerequisite - Managing Negative Impacts on Ecology	LE 04	-	Y	
		Ecological Enhancement		1	1	
		Change and Enhancement of Ecology		3	2	
	Long Term Ecological Management and Maintenance	Management and Maintenance throughout the Project		1	1	
		Landscape and Ecology Management Plan		1	1	
	Section Credit Total				13	11
	Weighted Section Total				13%	11.00%
POLLUTION						
Credit Value 0.67%	Impact of Refrigerants	Prerequisite	Pol 01	-	-	
		Impact of Refrigerants		2	0	
		Leak Detection		1	0	
	Local Air Quality		Pol 02	2	2	
	Surface Water Run Off	Flood Resilience	Pol 03	2	2	
		Surface Water Run-Off - Rate		1	1	
		Surface Water Run-Off - Volume		1	0	
		Minimising Watercourse Pollution		1	0	
	Reduction of Night Time Light Pollution		Pol 04	1	1	
	Reduction of Noise Pollution		Pol 05	1	1	
	Section Credit Total				12	7
Weighted Section Total				8%	4.67%	

INNOVATION			
Credit Value 1.00%	Man 03 Responsible Construction Practices	1	0
	Hea 01 Visual Comfort	1	0
	Hea 06 Security	1	0
	Ene 01 Beyond Zero Net Regulated Carbon	5	0
	Ene 01 Post Occupancy Stage	0	0
	Wat 01 Water Consumption	1	0
	Mat 01 Life Cycle Impacts	3	1
	Mat 03 Responsible Sourcing of Materials	1	0
	Wst 01 Construction Waste Management	1	0
	Wst 02 Recycled Aggregates	1	0
	Wst 05 Adaptation to climate change	1	0
	LE 02 Ecological Risks and Opportunities	1	0
	LE 04 Ecological Change and Enhancement	1	0
Section Credit Total		10	1
Weighted Section Total		10%	1%
		TARGET SCORE	64.23%
		TARGET RATING	Very Good

Appendix 2 – BRUKL Output Document

Technical Data Sheet (Actual vs. Notional Building)

Building Global Parameters

	Actual	Notional
Floor area [m ²]	37149.4	37149.4
External area [m ²]	25099.3	25099.3
Weather	MAN	MAN
Infiltration [m ³ /hm ² @ 50Pa]	3	3
Average conductance [W/K]	12738.7	13668.4
Average U-value [W/m ² K]	0.51	0.54
Alpha value* [%]	21.63	10

* 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
 Storage or Distribution
 Hotels
 Residential Institutions: Hospitals and Care Homes
 Residential Institutions: Residential Schools

100 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	9.61	6.14
Cooling	0.09	0.23
Auxiliary	3.04	3.77
Lighting	4.97	7.27
Hot water	6.41	6.56
Equipment*	23.3	23.3
TOTAL **	24.11	23.96

* 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	1.52	0.46
Wind turbines	0	0
CHP generators	0	0
Solar thermal systems	0	0
<i>Displaced electricity</i>	<i>1.52</i>	<i>0.46</i>

Energy & CO₂ Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m ²]	38.38	39.51
Primary energy [kWh _{PE} /m ²]	33.98	35.09
Total emissions [kg/m ²]	3.24	3.3

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