

Sister Manchester, Plot C

Environmental Standards Statement and Energy and Carbon Statement

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date **15/05/2025**

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1 Executive Summary

This Environmental Standards Statement (ESS) and Energy and Carbon Statement have been prepared in support of the Application for Full Planning Permission and Listed Building Consent for works to the Holloway Wall and Listed Building Consent for works to the Viaduct, for Sister – Plot C Development by ID Manchester Limited and University of Manchester.

The proposals comprise the demolition of Barnes-Wallis, Wright Robinson, Manchester Meeting Place, Morton, Moffat Buildings and the construction of two office buildings (Use Class E). At the base of the building the buildings will be connected via an open shared lobby space, which shall comprise a variety of uses including social amenity spaces, as well as food and beverage establishments (Use Class E, Sui Generis – drinking establishment). The proposals will also include interventions to the Holloway Wall, incorporating it into the new commercial element. Additionally, the proposals will involve the change of use of the railway arches to retail and food and beverage uses (Use Class E and Sui Generis– drinking establishment). The proposals will also include the creation of a new public square, access and other associated works.

This Statement seeks to demonstrate how Manchester City Council's (MCC) circular economy policies within the Manchester's Core Strategy Development Plan Document (2012), Places for Everyone (2024); and the Addendum to the Manchester Core Strategy (2024), have informed the Proposed Development in embedding sustainability in the design. This Statement should be read along with the BREEAM pre-assessment appended to this report, and other relevant technical reports submitted as part of the planning application.

The topics covered in this report include: transport & connectivity; carbon and energy; biodiversity and nature; water and flood risk; air quality; waste and resource efficiency; and sustainable development.

In summary, the Development is actively targeting and achieving the required environmental standards in line with the planning policy and will align with the carbon reduction requirements of the Part L Building Regulations.

2 Introduction

2.1 Scope of the Document

This Statement has been prepared in support of the Application for Full Planning Permission and Listed Building Consent for works to the Hollaway Wall and Listed Building Consent for works to the Viaduct, for Sister – Plot C Development by ID Manchester Limited and University of Manchester.

This Statement seeks to demonstrate how Manchester City Council's (MCC) environmental sustainability policies will inform the proposed development.

The Statement comprises the following sections:

- **Planning Policy Review** to set the context for the development and identify current planning-related environmental sustainability targets
- **Environmental Standards Review** to outline how the development will respond to the Environmental Standards set out in Manchester's Core Strategy Development Plan Document (2012), Places for Everyone (adopted March 2024), and the Manchester City Council Core Strategy (2024 addendum). These each form part of the Manchester Local Plan
- **Energy and Carbon Statement** to summarise how the Development has followed the GMCA Net Zero Design Guidance to meet the requirements of the relevant policies.

It is recognised that sustainable development cuts across a number of issues and disciplines. Reference should be made to the accompanying planning documents for further technical details, namely:

- Allies & Morrison – Design & Access Statement
- Buro Happold - Air Quality Statement
- Buro Happold – Circular Economy Statement
- Civic Engineers – Operational Waste Strategy
- Civic Engineers - Flood Risk Assessment
- Civic Engineers - Transport Assessment
- Civic Engineers - Travel Plan
- ID Manchester Limited - Environmental Statement: Construction Chapter and Supporting Appendices.

2.2 Description of the Development

The proposals comprise the demolition of Barnes-Wallis, Wright Robinson, Manchester Meeting Place, Morton, Moffat Buildings and the construction of two office buildings (Use Class E). At the base of the building the buildings will be connected via an open shared lobby space, which shall comprise a variety of uses including social amenity spaces, as well as food and beverage establishments (Use Class E, Sui Generis – drinking establishment). The proposals will also include interventions to the Holloway Wall, incorporating it into the new commercial element. Additionally, the proposals will involve the change of use of the railway arches to retail and food and beverage uses (Use Class E and Sui Generis– drinking establishment). The proposals will also include the creation of a new public square, access and other associated works.

2.3 Site Description

The Site is in Manchester City Centre and is bound by the Manchester South Junction and Altrincham Railway (MSJ&AR) Viaduct to the north, London Road to the east, The Mill to the south and the Renold Building to the west.

The Site currently comprises the landscaped area known as the Bowling Green, the Barnes Wallis and Wright Robinson Building, Manchester Meeting Place and Morton Labs all associated with the former UMIST Campus of the University of Manchester. Although not listed these buildings are of heritage interest. The Site also contains the Grade II Holloway Wall and the MSJ&AR Viaduct. The Moffat Building is also contained within the Plot C boundary, this building is not considered to yield any heritage interest, however it is physically connected to the Holloway Wall.

The Site is located within the Whitworth Street Conservation Area, with the north aspect of the Plot C boundary (viaduct) forming the Conservation Area boundary. The Site therefore forms part of the designated area. The Site also includes a small parcel of land located to the north of the main site, accessed off Sackville Street. This parcel of land was previously used as a waste storage area and is enclosed by fencing and a gate.

The figures below shows the proposed site boundary (red line) and an indication of the site layout respectively.

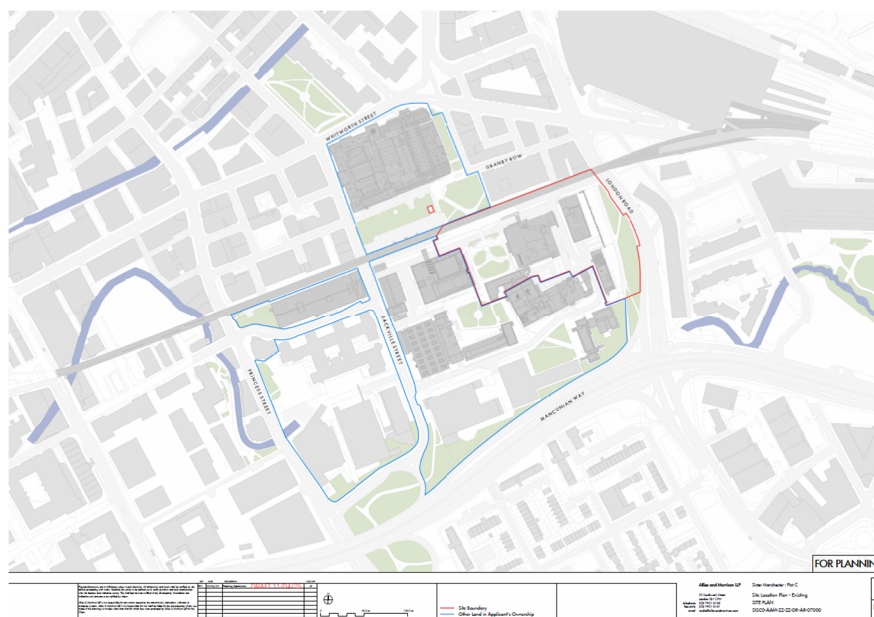


Figure 2—1 Development Proposed Red Line Boundary

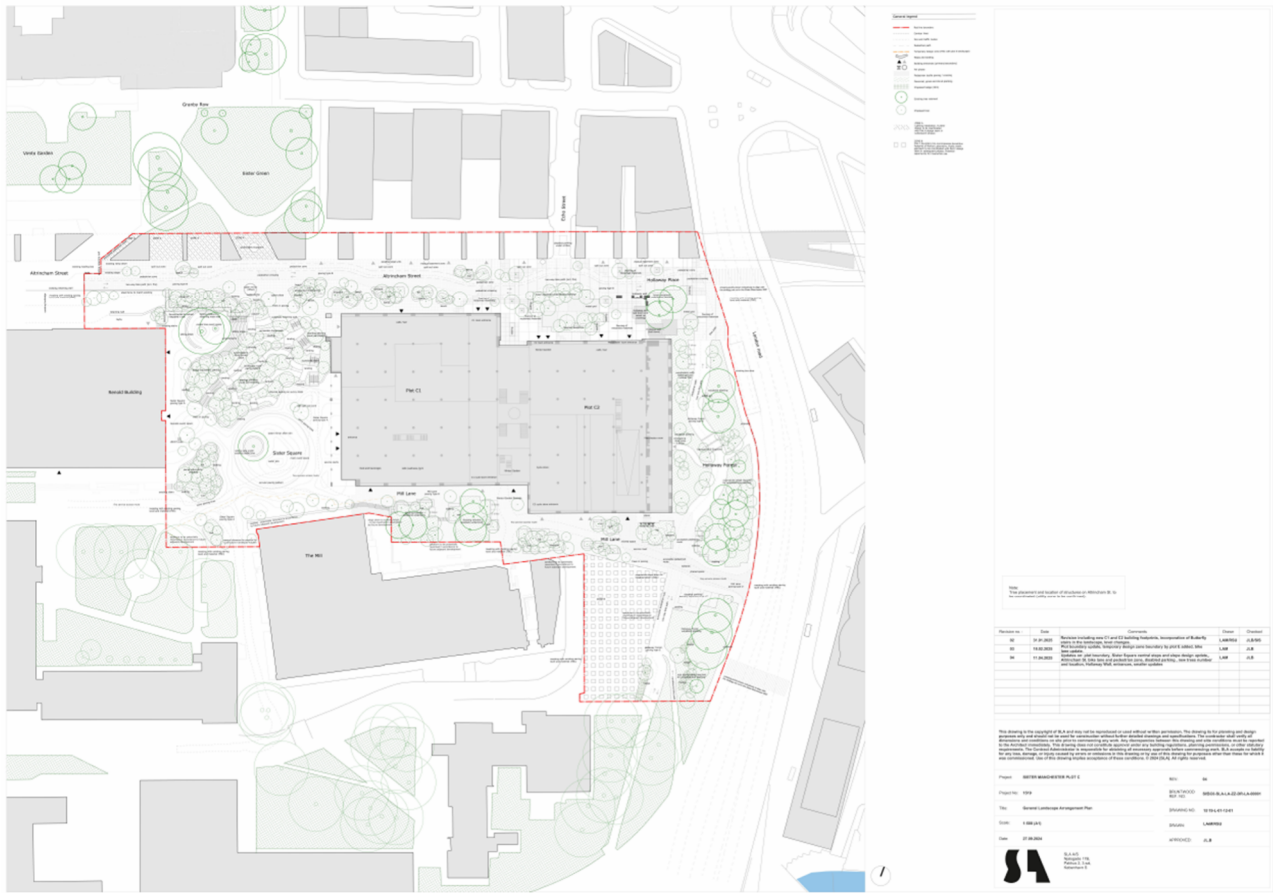


Figure 2—2 Proposed Site Layout

3 Planning Policy Context

3.1 Scope of the Policy Review

To better understand the sustainability drivers for this development and set the policy context, a summary of the key sustainable development policies, legislation and guidance at both the national and local level has been provided.

3.2 Legislation

3.2.1 Climate Change Act 2008

The Climate Change Act Parliamentary Bill (2008) sets out the UK Government's pathway to reduce greenhouse gas emissions by at least 80%, relative to 1990 levels, by 2050. This includes the requirements to set legally binding carbon budgets over five-year periods to act as intermediate milestones.

On 27th June 2019, a more ambitious target of net zero carbon by 2050 was adopted by the UK Government in response to public sentiment and the release of the Intergovernmental Panel on Climate Change (IPCC) Special Report on Global Warming of 1.5oC (October 2018).

3.2.2 Approved Document: Part L (2021) Building Regulations (2023 amendment)

The Conservation of Fuel and Power: Approved Document Part L (2021) Building Regulations (2023 amendment) sets the energy and carbon targets that must be achieved in new buildings other than dwellings. These have been set to address the upcoming progressive energy improvement policies which strive towards achieving a net zero carbon standard in the future.

This development will be designed in accordance with these building regulations.

3.3 National Policy & Guidance

3.3.1 A Green Future: Our 25 Year Plan to Improve the Environment (2018)

The HM Government's 'A Green Future: Our 25 Year Plan to Improve the Environment' (2018) sets out the Government's ambition to '...champion sustainable development, lead in environmental science, innovate to achieve clean growth and increase resource efficiency to provide benefits to both our environment and economy'.

The plan provides fresh impetus for the principles of sustainable development to be at the heart of decision-making, setting out clear objectives and common language for policy and decision makers to adopt.

Policies and actions are structured around six key areas:

- Chapter 1: Using and managing land sustainability
- Chapter 2: Recovering nature and enhancing the beauty of landscapes
- Chapter 3: Connecting people with the environment to improve health & wellbeing
- Chapter 4: Increasing resource efficiency and reducing pollution and waste
- Chapter 5: Securing clean, healthy, productive and biologically diverse seas and oceans
- Chapter 6: Protecting and improving our global environment.

3.3.2 National Planning Policy Framework (December 2024)

The National Planning Policy Framework (December 2024) and relevant planning practice guidance sets out the Government's planning policies for England. The presumption in favour of sustainable development is at the heart of the framework, cascading through to local plans and the approval process for planning applications. Key issues addressed are summarised below:

- Building a strong, competitive economy
- Ensuring the vitality of town centres
- Promoting healthy and safe communities
- Promoting sustainable transport
- Supporting high quality communications
- Achieving well-designed places
- Making effective use of land and protecting green belt land
- Meeting the challenge of climate change, flooding and coastal change
- Conserving and enhancing the natural and historic environment
- Facilitating the sustainable use of minerals.

3.4 Local Policy & Guidance

The table below provides a timeline of the relevant planning policy and guidance for Manchester City Council and how they interrelate.

Table 3—1 Planning Policy Timeline & Summary

Release	Policy Document	Status
1995	Unitary Development Plan (UDP) Served as the primary framework for making decisions about planning applications and future development	"Saved" policies only, not relevant to ESS
2007	Guide to Development in Manchester - Supplementary Planning Document and Planning Guidance (SPD) Provided updated guidance on design quality complementing the 1995 UDP	Live
2012	Manchester's Core Strategy Development Plan Document Replaces significant elements of the 1995 UDP setting out long term policies for Manchester's development	Live
2024	Places for Everyone (Pfe) Joint Development Plan Introduces new policies over and above the 2012 Core Strategy document, superseding some aspects of the Core Strategy	Live
2024	Addendum to Manchester Core Strategy 2024 Lists sections of the 2012 Manchester Core Strategy policies that were replaced by the Pfe and must be read alongside the Core Strategy	Live

3.4.1 Guide to Development in Manchester – Supplementary Planning Document (SPD) and Planning Guidance

The Supplementary Planning Document (SPD) for the Guide to Development in Manchester does not create new policy, but expands on and provides further detail on existing policies. Although the SPD refers to the former Unitary Development Plan (UDP) policies, the guidance is to be applied instead to the new policies described in the 2012 Core Strategy Development Plan and the 2024 Places for Everyone (Pfe). The principles and guidance on the Environmental Standards Statement remain current and complimentary to the Local Plan.

'Section 4 Environmental Standards' sets out the Council's commitment to making Manchester "the Greenest City in Britain". An Environmental Standards Statement is required to accompany all planning applications, demonstrating the required environmental standards are met:

- Energy Strategy
- Renewable Energy
- Environmental design
- Water management and weather resilience
- Waste management
- Construction management

- Biodiversity
- Waterways.

These will be addressed in the responses to the Core Strategy and Places for Everyone policies.

3.4.2 Core Strategy Development Plan Document (Adopted 11th July 2012)

The Manchester Local Plan guides development within Manchester. The Core Strategy is the key document in Manchester's Local Plan, covering a period of 15 years from 2012 to 2027. It sets out the long-term strategic policies for Manchester's future development, forming the framework for planning applications.

The key policies relevant to the Environmental Standards and Energy and Carbon Statement are as below. The 'Addendum to Manchester Core Strategy' (2024) describes where elements of these policies have been superseded by the Places for Everyone (PfE) 2024 plan.

- CC 5 Transport
- T 1 Sustainable Transport
- EN 4 Reducing CO2 Emissions by Enabling Low and Zero Carbon Development
- EN 5 Strategic Areas for low and zero carbon decentralised energy infrastructure
- EN 6 Target Framework for CO2 reductions from low or zero carbon energy supplies
- EN 8 Adaptation to Climate Change
- EN 9 Green Infrastructure
- EN 14 Flood Risk
- EN 16 Air Quality
- EN 17 Water Quality
- EN 19 Waste
- DM 1 Development Management.

3.4.3 Places for Everyone (2024)

The Places for Everyone (PfE) Joint Development Plan (2024) sets out how the regions should be developed between 2022 and 2039 and provides a strategic framework for local plans. It also sets out policies relevant to planning applications, which are listed below.

- JP-Strat2: City Centre
- JP-S1: Sustainable Development
- JP-S2: Carbon and Energy
- JP-S3: Heat and Energy Networks
- JP-S4: Flood Risk and the Water Environment
- JP-S5: Air Quality
- JP-S6: Resource Efficiency
- JP-G1: Landscape Character
- JP-G6: Urban Green Space
- JP-G7: Trees and Woodland
- JP-G8: A Net Enhancement of Biodiversity and Geodiversity
- JP-P1: Sustainable Places
- JP-C1: An Integrated Network
- JP-C8: Transport Requirements of New Development.

3.4.4 Policy Response Strategy

Due to the crossover between the many sustainability related policies in both the Core Strategy and the Places for Everyone documents, the response to the above policies will be grouped into topics as categorised below.

Table 3—2 Policy Consolidation

Transport & Connectivity	
Core Strategy	CC5 Transport
	T1 Sustainable Transport
Places for Everyone	JP-C1: An Integrated Network
	JP-C8: Transport Requirements of New Development
Carbon & Energy Strategy	
Core Strategy	EN4 Reducing CO2 Emissions by Enabling Low and Zero Carbon Development
	EN5 Strategic Areas for low and zero carbon decentralised energy infrastructure
	EN6 Target Framework for CO2 Reductions from Low or Zero Carbon Energy Supplies
Places for Everyone	JP-S2: Carbon and Energy
	JP-S3: Heat and Energy Networks
Biodiversity & Nature	
Core Strategy	EN8 Adaptation to Climate Change
	EN9 Green Infrastructure
	EN15 Biodiversity and Geological Conservation
Places for Everyone	JP-G1: Landscape Character
	JP-G6: Urban Green Space
	JP-G7: Trees and Woodland
	JP-G8: A Net Enhancement of Biodiversity and Geodiversity
Water Management, Weather Resilience, & Flood Risk	
Core Strategy	EN14 Flood Risk
	EN17 Water Quality
Places for Everyone	JP-S4: Flood Risk and the Water Environment
Air Quality	
Core Strategy	EN16 Air Quality
Places for Everyone	JP-S5: Air Quality
Waste & Resource Efficiency	
Core Strategy	EN19 Waste
Places for Everyone	JP-S6: Resource Efficiency
Sustainable Development	
Core Strategy	DM1 Development Management
Places for Everyone	JP-Strat2: City Centre
	JP-S1: Sustainable Development
	JP-P1 Sustainable Places

4 Environmental Standards Review

4.1 Policy Response

This section summarises how the proposed development has, as a minimum, responded to the environmental sustainability policies set out in the 'Manchester Core Strategy (2012)' and 'Places for Everyone 2024 Joint Development Plan' taking cognisance of the 'Addendum to the Manchester Core Strategy 2024'.

As environmental sustainability encompasses a wide range of issues and is addressed to some degree by all key disciplines, references have been made to accompanying planning submission documents for technical details.

4.2 Transport & Connectivity

Policy Summary

Core Strategy: CC5 Transport
Core Strategy: T1 Sustainable Transport
Places for Everyone: JP-C1: An Integrated Network
Places for Everyone: JP-C8: Transport Requirements of New Development

Site Location & Public Transport Provision

The site is well served by public transport, being located within 100m of Manchester Piccadilly Station and associated tram stop. There are several bus stops served by northbound and southbound services to the east of the site, the nearest being served by the X92, 192, 201, 202, 203 and 205 buses. These buses connect the site to many areas around Manchester.

Pedestrian & Cyclist Environment

The proposals for the site seek to improve the environment for pedestrians and cyclists by providing direct access to local pedestrian and cycle routes to improve active travel. The site will predominantly be for pedestrians and cyclists only, with priority design for pedestrians and their safety. There will be paths to keep cyclist speeds low and reduce spatial conflict between pedestrians and cyclists.

Core Strategy Policy CC5: Transport requires one cycle parking space per 200m² of development. Plot C1 and C2 of the scheme have a total floor area of 70,000m², requiring 350no. spaces. The proposals allow for 417no. cycle spaces, thus bettering the policy requirement. Changing rooms with showers, drying rooms and lockers will also be provided.

Car Parking

The site will be car free, except for 3no. disabled parking bays. This will ensure the environment surrounding the building is as clean as possible, with minimal emissions arising from transport. The impact of the car-free development on neighbouring streets is minimal.

Transport Hierarchy

The proposed site primarily serves pedestrians and facilitates cyclists. Public transport access is readily available and close to the site. Service vehicles can access the site only when essential, managed through bollards. Refuse collection will take place in the service tunnel along with scheduled deliveries. Private vehicles are restricted access with the exception for people with disabilities. This shows that the transport hierarchy has clearly been addressed.

Transport Assessment & Travel Plan

Please refer to Civic Engineers' Transport Assessment and Travel Plan submitted with this planning application.

Construction Traffic

The Construction Chapter and supporting appendices of the Environmental Statement have been prepared to minimise the impact that the construction traffic has on local transport networks, air quality and the acoustic environment. Please refer to these documents for detail on the proposed measures.

References

- Civic Engineers - Transport Assessment
- Civic Engineers - Travel Plan
- ID Manchester Limited - Environmental Statement: Construction Chapter and Supporting Appendices

4.3 Carbon and Energy

Policy Summary

Core Strategy: EN4 Reducing CO2 Emissions by Enabling Low and Zero Carbon Development
Core Strategy: EN5 Strategic Areas for low and zero carbon decentralised energy infrastructure
Core Strategy: EN6 Target Framework for CO2 Reductions from Low or Zero Carbon Energy Supplies
Places for Everyone: JP-S2: Carbon and Energy
Places for Everyone: JP-S3: Heat and Energy Networks

Please read this section along with Section 5, Energy and Carbon Statement

Low and Zero Carbon Energy Source and Solar PV

The proposed development is designed to be “all-electric”, with no reliance on gas or fossil fuel for the heating of the premises. The use of heat-pump heating and cooling will take advantage of the advancing decarbonisation of the electricity grid. In addition, in line with Policy JP-S2, 637.5m² roof mounted photovoltaic (PV) panels will be installed on a combination of the C1 and C2 roofs.

District Heat Networks and Decentralised Energy

A site wide heat network study was carried out to assess the viability for the Sister Manchester site. The work included evaluation of the conditions of the existing steam mains and steam boiler plant located in the Sackville Street building. The feasibility study has investigated the different scenarios such as refurbishment of the existing network, a new network with different temperatures and a variety of low carbon heat sources for the site. It has been concluded that a heat network approach for Sister Plot C is not economically or practically viable. However, the building has been designed with future connection should a district wide heat network become available. As described above, the development is designed to be “all-electric”.

Building Regulations and Part L Reduction

The development will comply with current Building Regulations Part L (2021). The Energy and Carbon Statement describes the measures to be implemented to achieve a betterment over the Target Emission Rate (TER), which shall include a fabric first approach, efficient building services, and the specification of a large solar photovoltaic (PV) array.

Operational Net Zero Approach and Offsetting

Please refer to Section 5 Energy and Carbon Statement which details how the energy hierarchy has been followed for the development. The proposed energy reduction measures result in a building with minimal operational carbon emissions.

Any remaining operational carbon emissions will be offset in agreement with the local authority, through a financial contribution to a carbon offset fund.

BREEAM Energy 01

The requirements to achieve the ‘Excellent’ standard against BREEAM Energy 01 will be achieved. Please refer to Section 5 Energy and Carbon Statement and Appendix A ‘BREEAM Pre-Assessment Tracker’.

Energy and Carbon Statement

Please refer to Section 5 Energy and Carbon Statement, which describes:

- Energy Baseline
- Energy demand and annual carbon emissions of completed development
- Carbon Emission reduction target
- Energy hierarchy
- Low carbon, renewable and decentralised energy opportunities
- Least cost technology option.

Embodied and Whole Life Carbon of Materials

The design will consider the application of materials with recycled content and the potential of specifying recycled aggregates during the procurement process. The project aims to use resources responsibly, minimise pollution, enhance structural longevity, and reduce waste during construction and operation. It will also incorporate 'design for disassembly' (DfD) principles into its end-of-life strategy, while striving for regenerative systems, wherever practical and feasible.

A material efficiency assessment has been created based on discussions during circular economy workshops, adhering to BREEAM Materials 06 material optimisation requirements. This assessment will be further refined once material reuse strategies are established, ensuring a sustainable and efficient approach to resource use.

A Whole Life Carbon assessment, and a Life Cycle Cost assessment (following BREEAM Management 02 requirements) will be carried out and updated throughout design stages.

Whole life carbon accounting is a fundamental part of the project design strategy driving both operational energy related emissions and embodied carbon associated with construction materials. The assessment will quantify the life cycle environmental impacts of construction materials of Sister Manchester using robust assessment tools and environmental data.

ID Manchester Limited is committed to an upfront embodied carbon target of not exceeding 800kgCO₂/m² for the proposed development.

Please refer to the 'Circular Economy Statement' which describes how the development will make use of building materials with low embodied carbon.

EV Charging

Vehicle parking is restricted to disabled bays only, please refer to the 'Transport and Connectivity' section of this report.

Nature Based Solutions to Reducing Carbon

Please refer to the 'Biodiversity & Nature' section of this report.

References

- Section 5 – Energy and Carbon Statement
- Appendix A – BREEAM Pre-Assessment Tracker
- Buro Happold – Circular Economy Statement.

4.4 Biodiversity and Nature

Policy Summary

Core Strategy: EN8 Adaptation to Climate Change
Core Strategy: EN9 Green Infrastructure
Core Strategy: EN15 Biodiversity and Geological Conservation
Places for Everyone: JP-G6: Urban Green Space
Places for Everyone: JP-G7: Trees and Woodland
Places for Everyone: JP-G8: A Net Enhancement of Biodiversity and Geodiversity

Adaptation to Climate Change

A Climate Change Resilience Risk Assessment has been conducted which identifies the baseline and projected conditions for the site. A series of mitigation measures are then described to protect the site against the anticipated effects. These include:

- Dense tree canopy to protect against strong winds
- High-performance building fabric to reduce heating and cooling demands associated with more extreme temperature variations
- Planting strategy to preserve sun and shade strategy for different weather conditions
- Drought and heat tolerant species will be planted to create a more resilient landscape
- Drainage is channelled through landscaping to offer irrigation in drier conditions. Landscaping features such as raingardens also assist drainage in wetter conditions.

The Flood Risk Assessment includes a 40-45% allowance of increased rainfall to account for climate change, demonstrating the site is well protected against more extreme weather events. Please refer to the 'Water and Flood Risk' section of this report for further information.

Minimise Flood Risk

Please refer to the 'Water and Flood Risk' section of this report.

Green Infrastructure

The Ecological Impact Appraisal, Landscape Report, and the Drainage Strategy Report confirm a combined approach to ensuring that the green infrastructure opportunities are maximised. At present, the site is brownfield and of low ecological value and features around 54no. trees. The proposals introduce a targeted 16.8% biodiversity net gain, greatly improving the quality of greenery on site. A raingarden, featuring the trees and soft landscaping, forms part of the surface water drainage strategy, which in its entirety leads to a 50% betterment in the brownfield runoff, accounting for 40% climate change. The landscaping strategy is also designed to encourage enjoyment outdoors with key links to nature – see 'High Quality Green Space' description below.

Passive Design & Overheating

A Passive Design Analysis will be produced in accordance with the BREEAM Ene 04 'Low Carbon Design' criteria which shall calculate the carbon emissions saved as a result of passive measures to include:

- Site location and microclimate
- Building form, orientation, fabric and thermal mass
- Daylight, ventilation and climate change adaptation measures.

The landscaping strategy has also been designed to alleviate overheating by providing shading through dense canopies. The scheme will comply with the BREEAM Health & Wellbeing criteria for thermal comfort, tested against relevant CIBSE criteria. Occupied spaces will be analysed using both current and future climate scenarios to demonstrate long term compliance. The building fabric performance will also ensure that heating and cooling demands are minimised.

Preserving Biodiversity

An Ecological Impact Assessment has been conducted in which the existing ecological features of the site were identified. The survey showed that, except for some scattered trees, there was negligible ecological value on site. The proposals for the trees were considered in line with the ecological hierarchy and therefore retained wherever possible. Of the 54no. trees on site, 26no. of these are to be retained and protected.

Biodiversity Net Gain and Management

As the existing site is large and of such low ecological value, there is significant opportunity to enhance its environmental credentials. The current proposals are for 60% of the soft landscaping to be made up of neutral grassland, 30% from native mixed scrub, and 10% from shrubs. In addition, 270no. new trees are predicted to be planted, which will improve nesting and roosting opportunities for birds and bats. This enhancement scheme results in a targeted habitat biodiversity net gain of 16.8%.

In accordance with the Environment Act 2021, a 30-year landscape maintenance plan is to be prepared, which is expected to be secured through a suitably worded planning condition, as described in the Ecological Impact Assessment. An indicative landscape maintenance strategy is outlined within the Landscape Report, which shall be further developed to reflect the needs of the final planting strategy.

High Quality Green Space

The site is in close walking proximity to a number of local green spaces which can be seen as an opportunity for key nature links. These include:

- Sackville Gardens to the north of the site which is managed by the local community and includes memorials
- Symphony Park is a relatively new public green space with seating and over 100 semi-mature trees
- Ardwick Green is a small urban park with a rich history and diverse plant life
- Mayfield Park includes over 120,000 plants and shrubs and 142 trees.

The site itself will create its own high quality green space as described within the Landscape Design Report. This includes:

- Holloway Place – a key link to Piccadilly Station and Holloway Forest, using upcycled materials
- Sister Square – heart of the masterplan, designed for day and night usage
- Holloway Forest – a biodiverse urban trail
- Mill Lane – Informal lane with day and night usage and inspired by historic red bricks and rainbeds
- Altrincham St – urban nature link to Sister Square along the historic arches.

Tree Protection and Planting

Of the 54no. trees identified on the site, 26no. of these are to be retained, as described within the Ecological Impact Assessment. Policy JP-G7 stipulates that for every one tree to be removed, two more trees must be planted in their place. The loss of 28no. trees means that 56no. new trees are required. The current proposals are for an estimated 270no. new trees, far exceeding the policy's minimum standards. It has also been confirmed that there are no Tree Preservation Orders (TPOs) on the site.

The proposed development is designed with a strong focus on enhancing biodiversity and adapting to climate change. By preserving existing trees, creating linked habitats, and implementing sustainable building practices, the project aims to achieve a net gain in biodiversity and increase climate resilience. These efforts align with Manchester's policies on biodiversity and climate adaptation, ensuring a greener and more sustainable future for the community.

References

- Civic Engineers – Drainage Strategy Report
- Civic Engineers - Flood Risk Assessment
- SLA – Plot C RIBA Stage 2 Report
- Tyler Grange Group – Ecological Impact Assessment.

4.5 Water Management, Weather Resilience, and Flood Risk

Policy Summary

Core Strategy: EN14 Flood Risk
Core Strategy: EN17 Water Quality
Places for Everyone: JP-S4: Flood Risk and the Water Environment

Flood Risk Assessment

A Flood Risk Assessment has been prepared by Civic Engineers. The site is in Flood Zone 1 which is a low risk site and therefore passes the Sequential Test as per the guidance in the Department for Levelling Up, Housing and Communities.

The flood risk from each of the sources is summarised below.

- Rivers and Sea – Very low risk
- Reservoir – Very low risk
- Groundwater – Low risk. To be confirmed by site investigation
- Surface Water – Low risk (whilst areas of higher risk are present, these affect only a small portion of the development and thus the overall risk is deemed to be low)
- Public Sewers – To be confirmed by UU, presumed low
- Please refer to the Flood Risk Assessment submitted with this planning application for further details.

Surface Water Strategy

The Drainage Strategy Report confirms that the existing site is currently comprised of 80% impermeable surfaces. The proposal for the site will include measures that will result in a 50% betterment in the surface water run off rates, in relation to existing brownfield runoff rate, accounting for 40% climate change allowance. The SUDS measures proposed are:

- Permeable paving and associated sub-base storage
- Raingardens, to be coordinated with landscape architect.

Surface water will likely be discharged into an existing culverted watercourse.

Raingardens are considered to offer multifunctional benefits, including filtering of pollutants, providing habitats and food for pollinators, and offering an aesthetic appeal to the SUDS strategy. Please refer to the Drainage Strategy Report for further details.

Construction Impact on Watercourses

The River Medlock runs alongside and under sections of the site. The Construction Chapter included in the Environmental Statement has been prepared to ensure that there are no adverse impacts on the watercourse during construction. Regular inspections will be carried out and remedial actions will be carried out immediately. Please refer to the Environmental Statement: Construction Chapter and supporting appendices for further details.

Remediate Contaminated Land

A preliminary risk assessment of ground contamination indicated a low to moderate risk to identified receptors. These are associated with the current and former uses of the Morton Laboratory site and potential made ground associated with the former development of the area. An intrusive site investigation also identified signs of potential hydrocarbon contamination. A remedial strategy will be developed, which can inform material management decisions in terms of material reuse and offsite disposal.

Water Consumption

The development will be assessed against the BREEAM Non-Domestic New Construction V6.1 standard, targeting an 'Excellent' rating. This level has a minimum requirement that the water consumption of the scheme is reduced compared to a target set by the BRE. This requires wash-hand basin taps and showers to be fitted with flow restrictors or be water-efficient, and WCs to be low volume or dual-flush. Other water-consuming white goods that are to be installed must also be specified to low water consuming standards.

References

- Civic Engineers – Drainage Strategy Report
- Civic Engineers – Flood Risk Assessment
- ID Manchester Limited - Environmental Statement: Construction Chapter and Supporting Appendices.

4.6 Air Quality

Policy Summary

Core Strategy: EN16 Air Quality
Places for Everyone: JP-S5: Air Quality

Air Quality

The proposed development site is within the Air Quality Management Area of Manchester, which has been declared as an AQMA primarily due to transport emissions. These account for 65% of the total NO₂ emissions within Greater Manchester. The proposed site will allow minimal vehicular access and as such, the impact of operational traffic on all human receptors will be negligible, no additional mitigation is recommended. Please refer to the Air Quality Assessment for further details.

Construction Management Plan

The Air Quality Assessment confirms that the effect of pollution arising from traffic generated by the construction of the Proposed Development on surrounding human receptors will be negligible. Construction traffic is expected to be short term and temporary and not considered to have any significant impact on air quality.

The Environmental Statement: Construction Chapter and supporting appendices have been prepared by ID Manchester Limited, setting out the procedures for limiting the emissions arising from construction traffic and temporary combustion plant. Dust mitigation measures will be in place, including:

- Construction traffic to follow specifically designated routes
- Wheel-wash facility
- Damp down or enclose stockpiles as appropriate
- Site stockpiles away from sensitive receptors
- Enclose activities which are deemed to generate high levels of dust where practicable
- Cutting and grinding employing dust mitigation measures where possible (i.e. wet cutting)
- Complete prohibition of burning of any materials on the site.
- Please refer to the Environmental Statement: Construction Chapter and Supporting Appendices for further detail.

Clean Air Plan

The development will support Greater Manchester's Clean Air Plan through the following measures:

- The building will be powered by an all-electric strategy with no direct emissions on site
- Vehicles will be restricted from accessing the site, other than for deliveries, emergencies and for those with disabilities. This minimises the emissions generated on site as far as reasonable

- Sustainable transport is encouraged through provision of cyclist amenities, and proximity to well-served bus stops
- The planting strategy will include trees, bushes and shrubs which can absorb CO2 emissions from the air
- Overall the residual effects on air quality are anticipated to be negligible during both the construction and operation of the development. Please refer to the Air Quality Assessment report for further details.

Sustainable Travel Modes

Please refer to the 'Transport and Connectivity' section of this report.

References

- ID Manchester Limited - Environmental Statement: Construction Chapter and Supporting Appendices
- Buro Happold - Air Quality Assessment.

4.7 Waste and Resource Efficiency

Policy Summary

Core Strategy: EN19 Waste
Places for Everyone: JP-S6: Resource Efficiency

Construction Waste Management Plan

The Construction Chapter and associated appendices of the Environmental Statement confirms that the Principal Contractor is to develop and implement a Site Waste Management Plan (SWMP) which describes the procedures for management of waste arising from the construction activities. The SWMP shall comply with the relevant regulatory standards. The BREEAM Waste 01 credits for construction resource efficiency are to be targeted for both minimising construction waste generated on site and diverting waste from landfill.

Operational Waste Strategy

An Operational Waste Strategy has been prepared which estimates the likely waste streams, by type and volume, associated with the development and their collection frequencies. This has determined the storage volume requirements which can be found within the report. All waste will be stored in 1,100l eurobins, except food waste. Food will be in 240L wheelie bins, as any larger than this would be too heavy for operatives to move. A strategy is also outlined for collection which includes access via a service tunnel and large servicing bays. All waste will be transferred to a Materials Recovery Facility. From there all recyclable content will be sent to recyclers; and food and general waste will be used in an Energy from Waste facility.

Material Efficiency

The Circular Economy report submitted with this planning application describes the strategy for minimising the use of raw materials. The development has explored a series of retention scenarios for the existing buildings, in line with the circularity principles, but ultimately ruled them out due to the buildings' age and deterioration. A refurbishment scheme would not achieve Manchester's and ID Manchester Limited's ambitions for a high quality, energy efficient, dense employment area Innovation District.

The new-build proposal aims to implement design for adaptability strategies and maximise its use including flexible spaces and disassembly principles to reduce the need of future deep retrofits or full re-developments. A series of basement areas are considered for their potential retention and integration within the proposed scheme. Those parts of the building that cannot be retained or whose materials are not selected for reuse will go through a careful demolition process with segregated waste streams that minimise the demolition waste sent to landfill.

Please refer to the Circular Economy Report for further details.

Reduce and Recycle Construction Waste

The design proposal envisions a concrete structural frame and precast façade with durability strategies at their core to minimise waste during the life-time of the building, and their potential reuse at project de-commissioning for a future development. The waste hierarchy has been followed in the design proposals to include:

- **Prevention** – durable strategies, regular design reviews, off-site pre-fabricated elements, designing for disassembly
- **Reuse** – reuse of materials to reduce the need for new materials, and minimising the demolition waste through reusing excavation waste
- **Recycling** – segregation of waste generated on site
- **Recovery** – non-recyclable materials to be sent to incineration plant with energy recovery dedicated to district heating
- **Disposal** – remaining materials sent to landfill only when all other options are exhausted.

Please refer to the Circular Economy Report for further details.

Minimise Water Use During Construction

The Main Contractor will be required to set targets and monitor and record data for the potable water consumption (m³) arising from the use of construction plant, equipment (mobile and fixed) and site accommodation in line with the BREEAM Management 03 criteria.

References

- ID Manchester Limited - Environmental Statement: Construction Chapter and Supporting Appendices
- Buro Happold - Circular Economy Statement
- Civic Engineers – Operational Waste Strategy.

4.8 Sustainable Development

Policy Summary

Core Strategy: DM1 Development Management
Places for Everyone: JP-Strat2: City Centre
Places for Everyone: JP-S1: Sustainable Development
Places for Everyone: JP-P1 Sustainable Places

Site Selection

The site is currently a vacated brownfield site, which until recently this has been part of The University of Manchester's North campus. A remedial strategy for ground contamination will be developed. Please refer to the 'Water & Flood Risk' section of this report.

Development design

The development design is considerate of its surroundings in that the form, scale and massing is appropriate to the area. Please refer to the Design & Access Statement.

High-density commercial development

Please refer to the Design & Access Statement.

Adaptable, Durable & Resilient

The project is designed to be resilient to a changing climate through material selection, site design, protection against hotter and cooler climates. Please refer to the 'Biodiversity & Nature' and 'Waste & Resource Efficiency' sections of this report.

Impacts on environment

The construction of the project will have minimal impact on the surroundings, with the protocol described within the Construction Chapter and supporting appendices of the Environmental Statement.

Transport Accessibility & Vehicular Access

Please refer to the 'Transport & Connectivity' section of this report.

Safety

The development shall comply with the security credits within the Health & Wellbeing section of the BREEAM assessment. This will involve a Security Needs Assessment which will identify the risks specific to the building and measures to protect against these. The scheme design incorporates security features including open landscaping to enable surveillance, secure cycle storage, and durable materials to protect against intentional damage. Please refer to Appendix A – BREEAM Pre-Assessment.

Healthy Design

The development shall comply with the thermal comfort, acoustic and healthy surroundings credits within the Health & Wellbeing section of the BREEAM assessment. This shall ensure that the scheme is a comfortable and enjoyable environment for occupants. Please refer to Appendix A – BREEAM Pre-Assessment.

Adequate space

Please refer to the Design & Access Statement

Operational Waste

Please refer to the Operational Waste Strategy.

Biodiversity & Green Infrastructure

Please refer to the 'Biodiversity & Nature' section of this report.

Flood Risk & Drainage

Please refer to the 'Water & Flood Risk' section of this report.

BREEAM

The project will target a BREEAM score of 'Excellent' under the V6.1 New Construction scheme. This demonstrates a holistic approach to sustainability, as a broad range of measures will be implemented throughout the design and construction process. The certification of the scheme shall demonstrate that sustainability measures are maintained. Please refer to Appendix A – BREEAM Pre-Assessment Tracker for further details.

5 Energy and Carbon Statement

Applicable Policy Summary

Core Strategy: EN4 Reducing CO2 Emissions by Enabling Low and Zero Carbon Development
Core Strategy: EN5 Strategic Areas for low and zero carbon decentralised energy infrastructure
Core Strategy: EN6 Target Framework for CO2 Reductions from Low or Zero Carbon Energy Supplies
Places for Everyone: JP-S2: Carbon and Energy
Places for Everyone: JP-S3: Heat and Energy Networks

5.1 Executive Summary

This Energy and Carbon Statement has been prepared in response to Policy JP-S2: Carbon and Energy, and JP-S3: Heat and Energy Networks, of the 'Places for Everyone Joint Development Plan' and Policies EN4 and EN6 of Manchester Local Development Framework Core Strategy Development Plan and applies to the Sister Plot C office development which forms part of a larger regeneration masterplan of the former University of Manchester North Campus. Please refer to Section 4.3 of the report for the details of the above policies, and Section 2 for the Description of the Development.

The focus has been to develop an office building which is as energy efficient as possible by following the principles set out in the energy hierarchy to ultimately reduce the carbon emissions associated with operational energy of the development. Passive design measures have been considered to reduce overall energy demand, including the use of high performing building fabric, optimising glazing design and the inclusion of external shading. High efficiency building services shall also be specified to minimise energy consumption once the passive measures have been taken into account. Available LZC technologies have also be appraised, with the most suitable and feasible technology identified (photovoltaics) to provide further operational CO2 emission reductions.

Sister Plot C has been subject to a dynamic thermal model in order to assess the energy performance of the building and to quantify the CO2 emissions and how the building performs against the various energy performance metrics. The results indicate that, by following the principles of the energy hierarchy, the proposed development achieves compliance with Policy EN 4, EN 6 and PfE Policy JP-S2 and JP-S3. The modelling results also indicate that the proposed development is on course to pass Part L2 2021 of the Building Regulations (2023 amendments), and achieve the required credits under BREEAM ENE01.

5.1.1 Energy Hierarchy

The Development is following the Energy Hierarchy as described below:

Table A—1 Energy Hierarchy

Energy Hierarchy steps	Proposed development’s response
Minimise energy demand	A fabric-first approach has been adopted to maximise the energy demand. U-values of the proposed development are better than the notional building.
Maximise energy efficiency	Highly efficient air-source heat pumps for heating and cooling, low specific fan powers, demand control ventilation and LED lighting with daylighting dimming control have been proposed.
Use renewable energy	637.5m ² roof mounted photovoltaic (PV) panels have been proposed on the roof of C2 tower. This array will supply both C1 and C2 towers. In design development the optimised provision and location of PV to C1 and C2 will be determined. This will include the option of a PV array on C1 and C2.
Use low carbon energy	The proposed development is designed to be “all-electric”, with no reliance on gas or fossils fuel for the heating or cooling of the premises. The use of primarily heat-pump heating and cooling will take advantage of the advancing decarbonisation of the electricity grid.
Utilise other energy sources	Although a heat network feasibility study was undertaken, it was concluded that for Sister Plot C a heat network is not viable. However, the building has been designed with the ability for a future connection should a district heat network become available.

5.1.2 Energy and Carbon Proforma

Please see the figure below for the Energy and Carbon Proforma for the Development

Energy and Carbon Proforma
Non-residential
Major development (+1,000m²)
Version 1.0

GMCA GREATER
MANCHESTER
COMBINED
AUTHORITY

Project Name:
Application ref:
Date:

		Ref. name	Sister Plot C					
		Area (m ² GIA)						
		Target values	Building 1	Building 2	Building 3	Building 4	Building 5	+
Minimise energy demand	Space heating demand (kWh/m ² GIA/yr)	≤ 15	3.6					
	Space cooling demand (kWh/m ² GIA/yr)	≤ 15	15.5					
	Calculation methodology used to calculate space heating demand and confirmation that this covers all homes/blocks	Predictive energy model	DSM Part L modelling					
	Form factor per building	≤ 2	0.44					
	Average external wall U-value (W/m ² K)	≤ 0.15	0.15					
	Average window U-value (W/m ² K)	≤ 1 (triple)	1.2					
	Air permeability rate (m ³ /h/m ² @ 50 Pa)	≤ 1	3					
Maximise energy efficiency	BREEAM Ene 01 rating	Excellent	Excellent					
	Energy use intensity (kWh/m ² GIA/yr)	-	79.2					
	Calculation methodology used to calculate energy use intensity and confirmation that this covers all homes/blocks	Predictive energy model	DSM Part L modelling including					
Use renewable energy	PV footprint area (% of ground floor space)	-	12%					
	Annual renewable energy generation (kWh/m ² building footprint/yr)	-	22.2					
	Renewable energy balance (%)	-	2.10%					
	Total energy used (kWh/yr)	-	5,546,000.00					
	Total energy generated on-site (kWh/yr)	-	118,000					
Use low carbon energy	Fossil fuel free (yes/no)	Yes	Yes					
	Heat source	Electric	Yes					
	Low Carbon Heat Appraisal completed	Yes	Yes					
	Heat network suitability	-	No					
	Exemption requested	-	Yes					
	Efficiency of heating system (SCOP)	≥ 3.5	3.3					
	Carbon content of heat (gCO ₂ /kWh)	≤ 100	47					
Reduce overheating risk	Has CIBSE TM52 been used to calculate overheating and does the building pass?	Yes	No					
	What percentage of spaces are cooled? (% of GIA)	-	65					
	Has a CIBSE TM52 assessment been carried out using DSY2 and DSY3 weather files? Have any additional passive measures been included as a result?	Yes	No					
Minimise embodied carbon	Upfront embodied carbon (kgCO ₂ e/m ² GIA)	-						
	List top three materials with the highest upfront embodied carbon emissions (kgCO ₂ e/m ² GIA): Material 1	-	Concrete					
	Material 2	-	Steel					
	Material 3		Aluminium					
	Lifecycle embodied carbon (kgCO ₂ e/m ² GIA) - for large major developments only	-						
Offsets	Offset contribution (£)	-						

Figure 3 - Screenshot of the Energy and Carbon Proforma for the Development

5.2 Building Fabric and Ventilation, Maximising Energy Efficiency, and Low Carbon Heating

The design aims to minimise the energy demand through a combination of passive design measures. The building U-values and air permeability are proposed to be better than the Part L notional specification (as shown in the table below). The local shading (façade depth and overhang in the south elevation) have been modelled within the windows' construction.

Table A—1 Building Fabric Performance

Building Fabric	Units	Proposed building	Notional building
External wall	W/m ² K	0.15	0.18
Ground floor	W/m ² K	0.12	0.15
Roof	W/m ² K	0.12	0.15
Glazing U-value (including framing)	W/m ² K	1.2 (10% frame)	1.4
Glazing g-value	-	0.37 (VLT 71%)	0.29 (VLT 60%)
Building Air Tightness	m ³ /m ² h at 50 Pa	3.0	3.0

The proposed services strategy includes the utilisation of air-source heat pumps to provide heating, cooling and domestic hot water, taking advantage of the decarbonised electricity grid. Furthermore, the proposals include the installation of 637.5 m² of photovoltaic panels.

The primary considerations for energy efficiency within Sister Plot C include:

- The use of air source heat pumps, to provide space heating and cooling in the fully fitted spaces
- The use of CO₂ air-source heat pump to provide domestic hot water in the landlord areas
- The use of point-of-use electric water heaters to provide domestic hot water in the tenant office spaces for tea point connections or kitchenette water usage
- High efficacy LED lighting in all areas
- Demand-controlled ventilation based on CO₂ sensors
- Demand-controlled lighting with presence/absence detection in all communal, circulation and shared spaces. Daylighting dimming control has been applied across the office perimeter zones
- High efficiency heat recovery equipment on all ventilation systems
- The following tables illustrate the efficiencies of the currently proposed plant equipment

Table A—2 Proposed Heating and cooling plant efficiencies

Heating/Cooling System	Heating SCOP	Cooling SEER
Air-source heat pump	3.3	5.25
Variable refrigerant flow	3.0	5.25
DX	-	5.25

Table A—3 Proposed efficiencies of the ventilation systems

Ventilation System	SFP (W/l/s)	Heat recovery efficiency (%)
Air handling unit	1.6	75
Mechanical ventilation with heat recovery	1.2	75
Fan coils	0.2	-

Table A—4 Proposed DHW systems

DHW System	SCOP	Storage volume (litres)	Storage (kWh/l day) losses	Secondary circulation loop length (m)	Secondary circulation losses (W/m)
CO ₂ heat pump (offices)	2.7	4000*	0.0047	1000*	8
Electric water heaters	1	-	0.05	n/a	n/a
CO ₂ heat pump (shell and core)	2.7	500**	0.0047	300**	8

*Modelled only for C1 tower

**Assumed as the detailed design will be part of tenant fit-out.

Table A—5 Proposed lighting parameters

Space	Controls	Lux level (lux)	Lighting efficacy (lumens/ watt)	Display lighting efficacy (lumens/ watt)
Plant	manual	200	100	-
Circulation	presence	100	100	-
Entrance reception	presence	200	100	80
Office/Meeting room	daylight + absence	400	100	-
Toilets/showers	presence	200	100	-
Store	presence	100	100	-
Comms	manual	200	100	-

5.2.1 Energy and Carbon Emissions – Analysis results

Compliance methodology

A Part L2A model has been created using approved software package IES VE 2024 by an experienced Energy Assessor. In terms of Part L2A assessment methodology, testing compliance translates into comparing Actual and Notional building carbon emissions represented by calculating the Building Emission Rating (BER) and Target Emission Rating (TER). To achieve minimum compliance, the BER for the proposed building must be lower than its relevant TER in line with Part L of Building Regulations. The CO₂ emission factors and primary energy factors for the electricity used from the building and the grid-displaced electricity by generation from PV systems, are defined in Table 30 and 31 of the NCM modelling guide respectively.

Table 30 CO₂ emission and primary energy factors for grid-supplied electricity and grid-displaced electricity EXCEPT that generated by PV systems

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
kgCO ₂ /kWh	0.163	0.160	0.153	0.143	0.132	0.120	0.111	0.112	0.122	0.136	0.151	0.163
kWh _{PE} /kWh	1.602	1.593	1.568	1.530	1.487	1.441	1.410	1.413	1.449	1.504	1.558	1.604

Table 31 CO₂ emission and primary energy factors for grid-displaced electricity by generation from PV systems

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
kgCO ₂ /kWh	0.196	0.190	0.175	0.153	0.129	0.106	0.092	0.093	0.110	0.138	0.169	0.197
kWh _{PE} /kWh	1.715	1.697	1.645	1.567	1.478	1.389	1.330	1.336	1.405	1.513	1.623	1.718

Figure A—1 CO₂ emission and primary energy factors in the NCM modelling guide

The energy assessment has been split into fully fitted office spaces and shell and core spaces. For the offices assessment, tower C1 and the entire lower and upper ground floors have been modelled. To calculate the results including tower C2, a factor has been applied based on the total gross internal area. The flexible tenancy spaces located in the basement, lower and upper ground levels have been assessed separately as they are shell and core spaces.

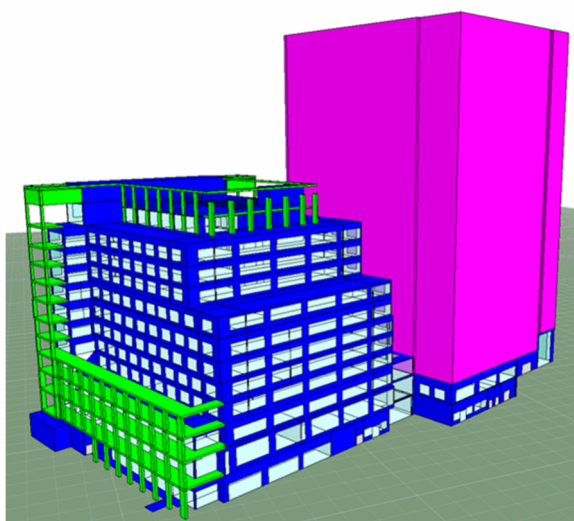


Figure A—2 Sister Plot C IES model

Fully fitted office areas

The following table and graph show the calculated modelling results for the fully fitted office areas and how the proposed development performs against the various energy and CO₂ emissions targets. This includes both regulated and unregulated carbon emissions. Please refer to the BRUKL document at the end of this document for details.

Table A—1 Energy modelling results for fully fitted offices

Part L2 2021	Result	Comments
TER (kgCO ₂ /m ² annum):	10.4	The building achieves a reduction in carbon emissions associated with regulated energy when compared to the Building Regulations notional building. This also in part demonstrates compliance with Part L2 of the Building Regulations and therefore planning policy.
BER (kgCO ₂ /m ² annum):	8.9	
Notional Building Regulated Energy Consumption (kWh/m ² annum):	77.2	
Actual Building Regulated Energy Consumption (kWh/m ² annum):	74.1	
Actual building unregulated carbon emissions (tonnes CO ₂ per annum)	373.5	

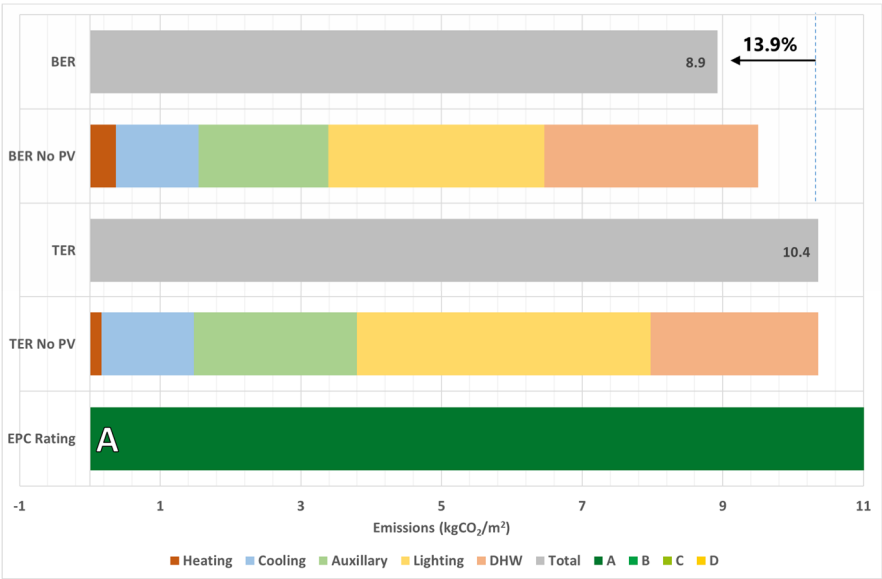


Figure A—3 Carbon emissions breakdown for the fully fitted office spaces

Shell and core areas

The following table and graph show the calculated thermal modelling results for the shell and core areas and how these perform against the various energy and CO₂ emissions targets. This includes both regulated and unregulated carbon emissions. Please refer to the BRUKL document at the end of this document for details.

Table A—2 Energy modelling results for Shell and Core Areas

Part L2 2021	Result	Comments
TER (kgCO ₂ /m ² annum):	12.0	The shell and core spaces achieve a reduction in carbon emissions associated with regulated energy when compared
BER (kgCO ₂ /m ² annum):	11.0	

Notional Building Regulated Energy Consumption (kWh/m ² annum):	89.9	to the Building Regulations notional building. This also in part demonstrates compliance with Part L2 of the Building Regulations and therefore planning policy.
Actual Building Regulated Energy Consumption (kWh/m ² annum):	81.5	
Actual building unregulated carbon emissions (tonnes CO ₂ per annum)	49.6	

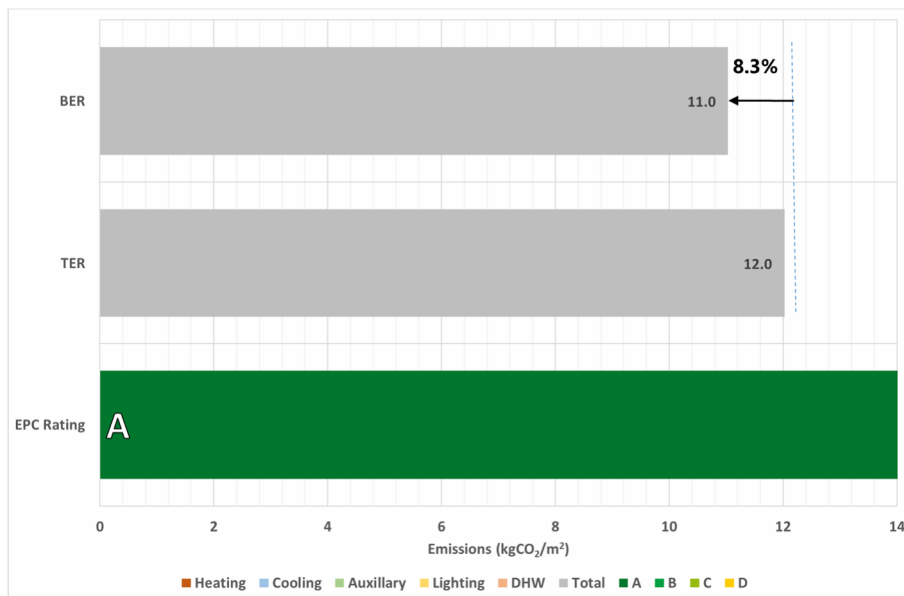


Figure A—4 Carbon emissions for the shell and core spaces

Railway arches

The proposals will involve the change of use of the railway arches located in the Deansgate-Castlefield Viaduct (Altrincham street), to retail and food and beverage uses. The re-activation of the arches will involve the installation of new mechanical and electrical equipment as well as a new façade. It is understood that currently some of the arches are open, whereas few others are bricked up as they were used as a storage space, not conditioned.

The redevelopment of the arches will be in accordance with the Building Regulations and will meet the minimum requirements of Part L for the new façade elements and the specification of the mechanical and electrical services to be installed.

5.2.2 Post occupancy evaluation measures

Sister Plot C is targeting a NABERS Design for Performance (DfP) rating of 5 stars with a stretch target of 5.5 stars. The building shall be subject to a full DfP analysis by RIBA Stage 4, and an operational energy assessment (including a base case model and suitable off-axis scenarios) shall be undertaken at each RIBA design stage to monitor progress towards achieving the desired DfP rating.

It should be noted that the DfP model for the UK relates to base build energy consumption only. In the first year this energy model is used check that the meters are correctly collecting data, that the controls are set up correctly and the systems are performing as designed. The energy performance in use is then assessed on a system by system basis,

identifying any short comings through design or operation. Ongoing monitoring against this performance in-use target ensures that opportunities to reduce energy consumption are embedded in the operation of the building.

5.3 Renewable Energy Generation

The proposed new buildings are designed to be “all-electric”, with no reliance on gas or fossil fuel for the heating of the premises. The use of heat-pump heating will take advantage of the advancing decarbonisation of the electricity grid.

5.3.1 LZC Technology Appraisal

A Low and Zero Carbon (LZC) feasibility study has been undertaken for the proposed development. The feasibility study has been undertaken to assess each potential LZC technology and understand how feasible it would be to implement the technologies across the site, and to discount any unsuitable options at an early stage. A summary of the LZC technology appraisal is shown in the table below:

Table A—1 LZC Technology Summary

Technology	Functionality	Cost Effectiveness	Potential CO ₂ Savings	Potential Suitability
Solar Thermal – generation of hot water from the sun	Energy generation would be modest, however solar collectors and hot water storage could be coordinated close to each other to reduce circulation losses. Hot water demand is not likely to be consistent throughout the day however so its effectiveness would be limited.	Generally a lower capital cost compared to other LZC technologies	Low – this will depend on whether it displaces an electric or gas based systems, and the demand for hot water. Either way, it is likely to have a modest impact on carbon emissions.	No – the lack of steady hot water demand and modest energy generation mean the roof space required for solar collectors would be better used for an alternative technology such as PV.
Photovoltaics – generation of electricity from the sun	The proposed development has south facing roof areas where PV could be located. Once installed, maintenance is minimal and reliability is high. A wide range of installation options are available.	Electricity bill reductions will depend on the size of the systems installed.	Low/Medium – however depends on the size of the system used. The larger the system, the lower the net carbon emissions.	Yes – this technology is feasible as it can be physically coordinated, is reliable and can offer good carbon emission reductions.
Combined Heat & Power (CHP) – generation of electricity on site and use of heat by product	Considered as a low carbon rather than a zero carbon technology, unless it is fuelled on a renewable fuel. Requires a predictable and relatively constant load, however this cannot be guaranteed in this case.	Payback could be low for a fully utilised system, but where it cannot run for long periods and is poorly sized it can lead to ‘heat dumping’ in summer.	Medium - the overall system can have a big effect on emissions. Although the heating side is generally less efficient than say a gas system, the electricity generated is then carbon ‘free’. However, if the CHP is only sized for the base load, the	No - the lack of a guaranteed constant load and the potential need to ‘dump’ excess heat from what is a low heat loss building would make CHP plant impractical and unviable. CO ₂ Emissions from gas CHP will be increase to higher than that of a gas boiler over

Technology	Functionality	Cost Effectiveness	Potential CO ₂ Savings	Potential Suitability
			benefits can be greatly reduced as it may not command a large part of the peak load.	the lifetime of the building due to the decarbonisation of the electricity grid.
Ground Source Heat Pumps (GSHPs) – generation of heat from the ground	Can be a very efficient way of heating a building, using the ground as a heat source. An efficient system can produce 3 to 4 units of heat for every unit of electricity used. Closed loop horizontal or vertical pipework systems required within the ground to utilise the ground as a heat source.	A medium sized system with an overall COP of 3 could be expected to achieve a payback of about 20 years. The ground works are the most expensive part of the system, while the heat pumps can be of a comparable price to conventional boilers.	Medium/High – high COPs are dependent on relatively low supply temperatures.	No - there is insufficient accessible ground space around the building to install a closed loop system. Also, given the city centre location of the site, the ground is unlikely to be free from obstructions, such as sewers and other services.
Air Source Heat Pumps (ASHPs) – generation of heat from external air	COPs are inferior to that of GSHPs due to varying air temperatures. Also generate low grade heat typically used to serve LTHW systems. ASHPs work best when serving a steady base load and at a constant output. Both buildings have suitable external roof space to locate ASHPs.	Capital cost is lower when compared to GSHP installations with similar capacities. A medium sized system with an overall COP of 2.5 could be expected to achieve a reasonable payback period.	Medium/High – depends on the size of system and COPs that can be achieved.	Yes – this technology would be feasible as there is suitable plant space and can offer reasonable carbon savings.
Wind – generation of electricity from wind	Best performance in open, non-urban locations. Can be installed on or integrated into a building.	Generally the small scale units generate only modest levels of power, which lead to extremely high payback periods.	Low/Medium – Large sized turbines in non-urban or off-shore locations will be more effective.	No - given that the project is in an urban area, it is expected that obstacles will be present and wind patterns will be poor.
Biomass – generation of heat from burning biological material	Considered a zero carbon technology because it uses the closed loop of the carbon cycle. Can replace gas boilers, however requires a large fuel storage facility.	More expensive than conventional gas fired boilers.	Medium/High – this can have a significant impact on the carbon emission of the heating system, but since electricity commands the larger share of a buildings' overall emissions, the impact will be somewhat limited.	No – there is no suitable location to site a silo and sourcing a consistent and reliable supply in an urban area is likely to be difficult. It will also affect negatively the local air quality.

5.3.2 PV installation

The proposed development includes the renewable energy from 637.5m² roof mounted photovoltaic (PV). The proposed PV array was modelled with the following parameters:

Table A—1 PV Panels Specification

PV panel area	637.5	m ²
PV panel efficiency	22	%
Inverter efficiency	96	%
Degradation factor	99	%
Shading factor	5	%
Tilt	35	degrees
Orientation	158 (SE)	Clockwise from North

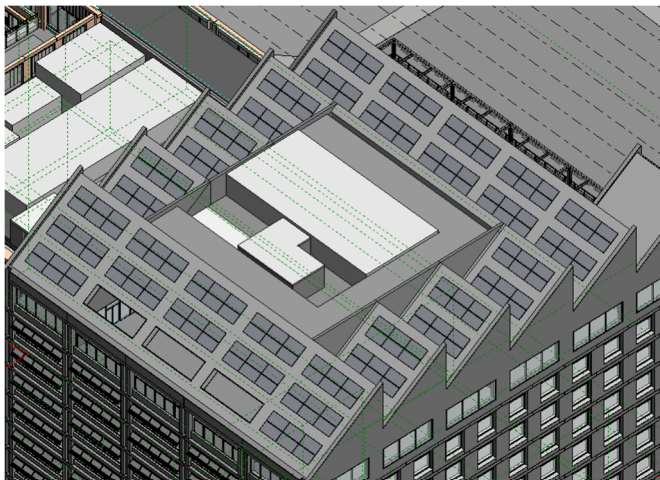


Figure A—1 Roof layout showing the PV at the top of C2 tower

Furthermore, the proposed services strategy includes the utilisation of air-source heat pumps to provide heating, cooling and domestic hot water, taking advantage of the decarbonised electricity grid

5.3.3 BREEAM Ene01 Reduction of energy use and carbon emissions

Plot C is targeting an overall BREEAM rating of 'Excellent' against the New Construction V6.1 scheme. The specific energy performance metric required within the JP-S2: Carbon And Energy policy is that the buildings will be assessed against BREEAM 'Ene 01 – reduction of energy use and carbon emissions' category, scoring the minimum credits required for the 'Excellent' rating. Up to 9no. credits are available based on the energy performance of the building. In order to achieve 'Excellent', a minimum of 4no. credits must be achieved, corresponding to an Energy Performance Ratio (EPRnc) of 0.4. The calculation of the EPRnc considers three metrics of the modelled building performance when determining the number of credits achieved for this issue.

The three metrics are:

- The building's heating and cooling energy demand
- The building's primary energy consumption
- The total resulting CO₂-eq emissions.

Each of these metrics are calculated as part of the Part L assessment and are displayed on the BRUKL Output Document. The BRUKL Output Documents produced at RIBA Stage 2 have been assessed to give an indicative EPRnc and 5no. achievable credits ('Excellent') for the proposed development, therefore meeting and exceeding the requirements within the JP-S2 policy.

Energy performance - Building score	
Heating and cooling demand energy performance ratio (EPRdem)	0.22
Primary consumption energy performance ratio (EPRpc)	0.073
CO ₂ -eq energy performance ratio (EPRco2-eq)	0.253
Overall building energy performance ratio (EPRnc)	0.547
Total BREEAM credits achieved	5.0

Figure A—1 BREEAM Ene 01 calculation of number of credits achieved

5.4 Connection to Heat Network

Please refer to section 'District Heat Networks and Decentralised Energy' of the ESS report.

5.5 Overheating Risk

Passive design measures, such as the local shading from the window reveals and solar control glazing, have been incorporated into the design to mitigate solar gains. The development will be comfort cooled which will mitigate the overheating risk and provide comfortable conditions for the occupants. Due to the deep floor plans, noisy city centre location, and the need to filter the supply air to achieve suitable air quality, the option for natural ventilation has been discounted.

Approximately 65% of spaces are mechanically cooled.

5.6 Materials

Please refer to section 'Embodied and Whole Carbon of materials' of the ESS report.

5.7 Offsets

Following the implementation of the energy hierarchy described above, the residual regulated carbon emissions are 264.1 tonnes of CO₂ per year. Any remaining operational carbon emissions will be offset in agreement with the local authority, through a financial contribution to a carbon offset fund.

Appendix A BREEAM Pre-Assessment Tracker

Project name

Sister, Manchester - Plot C

Project Type

Office - Shell and Core

BRE Registration Reference

BREEAM-0123-6249

Assessment stage

Design Stage (Interim)

Date

10/04/2025

Tracker Revision

02

BREEAM SCORE SUMMARY

MINIMUM REQUIRED	70.0%	Excellent
Targeted Baseline	78.0%	Excellent
Targeted High Risk	82.5%	Excellent
Potential	96.4%	Outstanding
Achieved	0.0%	Unclassified

0%10%20%30%40%50%60%70%80%90%100%110%

Achieved

Targeted Baseline

Targeted High Risk

Potential

Not Targeted

Pass

Good

Very Good

Excellent

Outstanding

78.02%

4.5%

13.9%

13.6%

BREEAM Credits	RIBA Stage	Available Credits	% Score Value	Targeted Baseline	Targeted High Risk	Potential	Not Targeted	Ownership	Comments
MANAGEMENT									
Man 01 Project Brief and Design	Credit Aim: Encouraging an integrated design process and considering BREEAM performance targets early to influence decision-making and optimise building performance, while avoiding unnecessary costs.								
Project delivery planning	Stage 2	1	0.61%	1				IDM	Collate information from project delivery stakeholder consultations (e.g. minutes, responsibility matrix) and demonstrate the impact on the design brief.
Stakeholder consultation (interested parties)	Stage 2 Stage 4	1	0.61%	1				Deloitte	Collate information from third party stakeholder consultations with compliant content and demonstrating the impact on the design brief.
Prerequisite - BREEAM AP (Concept and Developed Design)	Stage 1/2	Achieved ?		yes				IDM	Project team, including the client, formally agree strategic performance targets
BREEAM AP (Concept Design)	Stage 2	1	0.61%	1				Buro Happold	RIBA Stage 2 BREEAM AP appointment.
BREEAM AP (Developed Design)	Stage 2 Stage 3 Stage 4	1	0.61%	1				Buro Happold	Monitor progress against the performance targets. Provide feedback to the project team as appropriate during the design stages
Man 02 Life Cycle Cost and Service Life Planning	Credit Aim: Promoting the business case for sustainable buildings through the enhanced understanding of capital cost and improving design, specification, maintenance and operation, by encouraging the use of life cycle costing.								
Elemental LCC	Stage 2	2	1.22%	2				Arcadis	Elemental life cycle cost assessment carried out in RIBA Stage 2, in line with PD 156865: 2008
Component level LCC options appraisal	Stage 4	1	0.61%	1				Arcadis	Component life cycle cost assessment in line with PD 156865: 2008
Capital cost reporting		1	0.61%	1				IDM	Report predicted capital cost for the building in pounds per square metre of gross internal floor area (£k/ m²)

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BREEAM Credits	RIBA Stage	Available Credits	% Score Value	Targeted Baseline	Targeted High Risk	Potential	Not Targeted	Ownership	Comments
Man 03 Responsible Construction Practices	Credit Aim: Encouraging construction sites to be managed in an environmentally and socially considerate and responsible manner and monitoring to encourage continuous improvements and utility consumption reduction.								
Prerequisite - Legally harvested and traded timber		Achieved ?		Yes				Principal Contractor	All timber and timber based products used on the project is "Legally harvested and traded timber"
Environmental management		1	0.61%	1				Principal Contractor	Contractor's ISO 14001 PPG6 - Best Practice Policies
Prerequisite - BREEAM AP (site)		Achieved ?		Yes				Principal Contractor	Client and contractor formally agree performance target
BREEAM AP (site)	Stage 5 Stage 6	1	0.61%	1				Principal Contractor	Sustainability Champion appointed to monitor progress against the agreed BREEAM performance targets at Stages 5-6
Responsible construction management		2	1.22%	2				Principal Contractor	Achieve and implement all responsible construction management measures.
Prerequisite - Monitoring of construction site impacts		Achieved ?		Yes				Principal Contractor	Appoint responsible person for on site monitoring of energy, water and transport.
Utility consumption (energy and water)		1	0.61%	1				Principal Contractor	Energy and water monitoring data to be collected throughout construction
Transport of construction materials and waste		1	0.61%	1				Principal Contractor	Transport fuel consumption related to construction materials (to and from site) and waste data to be collected throughout construction
Exemplary - Responsible construction management		1	1.00%	1				Principal Contractor	Achieve and implement all responsible construction management measures.
Man 04 Commissioning and Handover	Credit Aim: Encouraging a well-managed handover and commissioning process, which will ensure building services and fabric defects are identified and rectified and ensuring that the building responds to the needs of the occupants.								
Commissioning - testing schedule and responsibilities		1	0.61%	1				Principal Contractor	Schedule to be put in place for commissioning and recommissioning activities. A team member is to be appointed with responsibility for monitoring this. Contractor responsible for allowing commissioning budget and time in their programme.
Commissioning - design and preparation	Stage 3 Stage 4	1	0.61%	1				Principal Contractor	Specialist commissioning manager to be appointed (Likely to be confirmed at Stage 4) to contribute to design reviews and give advice on commissionability of services.
Testing and inspecting building fabric		1	0.61%	1				Principal Contractor	Air tightness testing and thermographic survey with subsequent remediation works.
Handover		1	0.61%	1				Principal Contractor	Development of technical and non technical Building User Guides (BUG) and training schedule for users or facilities managers.

BREEAM Credits	RIBA Stage	Available Credits	% Score Value	Targeted Baseline	Targeted High Risk	Potential	Not Targeted	Ownership	Comments
HEALTH & WELLBEING									
Hea 01 Visual comfort	Credit Aim: Providing occupants with the conditions that facilitate good visual comfort by designing out the potential for glare, achieving good practice daylight factors and having an adequate view out and designing internal and external lighting systems to provide appropriate illuminance (lux) levels, thereby giving a more comfortable environment for occupants Internal lighting is zoned to allow for occupant control.								
Daylighting		2	1.45%			2		A&M	Daylighting analysis to confirm compliance
View Out		1	0.73%			1		A&M	If facade glazing is >35% depth of internal space can be >14m
External lighting levels		1	0.73%	1				Lighting Designer / Buro Happold	External lighting illuminance levels to be designed in accordance with CIBSE and BS standards
Exemplary - Daylighting		1	1.00%				1	n/a	Daylighting analysis to confirm compliance with exemplary criteria
Hea 02 Indoor air quality	Credit Aim: Facilitating good indoor air quality by considering indoor air pollution early in the design process so that a mitigation strategy can be put in place, managing harmful emissions from construction products by specifying finishes and products that have been tested in accordance with the appropriate standards and specifying an appropriate ventilation strategy that maintains good indoor air quality.								
Prerequisite - Indoor air quality plan		Achieved ?		Yes				tbc	Site-specific indoor air quality plan
Ventilation		1	0.73%	1				Buro Happold	Air intakes and exhausts at least 10m of horizontal distance apart. Carbon dioxide (CO ₂) or air quality sensors specified. HVAC systems incorporate suitable filtration in line with BS EN 16798-3:2017
Hea 04 Thermal Comfort	Credit Aim: Thermal modelling informs the building design to provide a comfortable thermal environment that considers current climatic conditions, and projected climate change scenario conditions and giving occupants control over their environment through appropriate temperature control strategies and thermal zoning.								
Thermal modelling		1	0.73%	1				Buro Happold	Thermal comfort modelling (compliance to CIBSE Guide A for mechanical, TM52 for natural).
Design for future thermal comfort		1	0.73%	1				Buro Happold	As above using future weather data (medium emissions scenario 2030 for mechanical, 2050 for natural)
Hea 05 Acoustic performance	Credit Aim: Enabling occupants to experience best practice acoustic performance levels appropriate to the functional activities in occupied spaces.								
Acoustic performance - Indoor ambient noise level		1	0.73%	1				SOLA	SQA to define bespoke requirements for Indoor Ambient Noise Levels. The building meets the appropriate acoustic performance standards and testing requirements.
Hea 06 Security	Credit Aim: Designing the building to consider and take into account security needs to ensure occupants safety and wellbeing.								
Security of site and building	Stage 2	1	0.73%	1				Crimewave	Confirm appointment of security specialist. Security Needs Assessment required at Stage 2. Can be achieved through Secured by Design compliance.
Exemplary - Security of site and building		1	1.00%				1	n/a	SABRE security assessment and certification scheme is followed on site
Hea 07 Safe and healthy surroundings	Credit Aim: Providing external site areas that are safe for occupant use and enhancing the wellbeing of building users by giving access to an outdoor space.								
Safe access		1	0.73%			1		SLA, A&M, Civic & BH	Dedicated pedestrian and cyclist paths and delivery access routes.
Outside space		1	0.73%	1				A&M, SLA	Provision of outside amenity area (landscape, seating etc.)

BREEAM Credits	RIBA Stage	Available Credits	% Score Value	Targeted Baseline	Targeted High Risk	Potential	Not Targeted	Ownership	Comments
ENERGY									
Ene 01 Reduction of energy and CO ₂ emissions	Credit Aim: Encouraging the design of energy efficient buildings with energy performance above national building regulations and encouraging the accurate modelling of operational energy consumption								
Energy performance		9	6.00%	4		2	3	Buro Happold	Part L compliance energy modelling Minimum to achieve 4 credits for Excellent, with an Energy Performance Ratio of at least 0.4 (combined improvement over notional for: Heating and cooling demand, Primary energy and Total emissions)
Pre-Requisite - Criterion 2 of Ene 04 Passive design measure		Achieved ?		Yes				Buro Happold	
Prediction of operational energy consumption		4	2.67%	4				Buro Happold	Operational energy modelling required
Exemplary - Beyond zero net regulated carbon & Carbon Negative		3	3.00%				3	n/a	Building achieves an EPR NC ≥ 0.9 and zero net regulated CO ₂ -eq emissions
Exemplary - Post-occupancy stage		2	2.00%	2				Buro Happold	Post-occupancy stage report on the actual energy consumption
Ene 02 Energy monitoring	Credit Aim: Helping to identify and reduce high energy demands where possible by accurate measurement of the energy consumption of the building by end use.								
Sub-metering of end-use categories		1	0.67%	1				Buro Happold	Install energy metering systems so that at least 90% of the estimated annual energy consumption of each fuel
Sub-metering of high energy load and tenancy areas		1	0.67%	1				Buro Happold	Monitor a significant majority of the energy supply
Ene 03 External lighting	Credit Aim: Reducing the building's energy consumption through the specification of energy efficient external lighting.								
External lighting specification		1	0.67%	1				Buro Happold	Average initial luminous efficacy of not less than 70 luminaire lumens per circuit Watt and Automatic controls
Ene 04 Low Carbon Design	Credit Aim: Reducing the building's energy consumption through the adoption of passive design solutions, free cooling and low or zero carbon (LZC) energy sources.								
Passive design analysis	Stage 2	1	0.67%	1				Buro Happold	Passive design analysis at RIBA Stage 2.
Free cooling		1	0.67%				1	n/a	Free cooling analysis, building is naturally ventilated or used any combination of the free cooling strategies
Low and zero carbon technologies	Stage 2	1	0.67%	1				Buro Happold	LZC feasibility study at RIBA Stage 2.
Ene 06 Energy efficient transportation systems	Credit Aim: Reducing the building's energy consumption by specifying the optimum number and size of energy efficient transportation systems.								
Energy consumption		1	0.67%	1				LECS UK	Transportation analysis and lift/escalator energy consumption analysis.
Energy efficient features - Lifts		1	0.67%	1				LECS UK	Lift energy efficient features.

BREEAM Credits	RIBA Stage	Available Credits	% Score Value	Targeted Baseline	Targeted High Risk	Potential	Not Targeted	Ownership	Comments
TRANSPORT									
Tra 01 Transport assessment and travel plan	Credit Aim: Recognising developments in proximity to good public transport networks, thereby helping to reduce transport-related pollution and congestion.								
Transport assessment and Travel plan	Stage 2	2	1.92%	2				Civic Engineers	Travel plan and site-specific travel assessment/statement required during the feasibility and design stages.
Tra 02 Sustainable transport measures	Credit Aim: Recognising developments in close proximity of, and accessible to, local amenities which are likely to be frequently required and used by building occupants.								
Prerequisite - Achieve Tra 01		Achieved ?		Yes				Civic Engineers	
Transport options implementation		10	9.58%	8	1		1	Civic Transport and A&M	1. AI>8, 1 point (GMAL is 8) 2. AI increase, 3 points 3. PT information, 1 point 4. EV charging, 1 point 5. Car sharing measures, 1 point, 6. Consultation, 2 points 7. Cycle storage, 1 point 8. Cycle facilities, 1 point 9. Existing amenities, 1 point 10. Enhanced Amenities, 2 points 11. Site-specific measure, 3 points
WATER									
Wat 01 Water Consumption	Credit Aim: Reducing the demand for potable water through the provision of efficient sanitary fittings, rainwater collection and water recycling systems.								
Water consumption		5	3.89%	3		1	1	A&M / Buro Happold	Use of water efficient components and Greywater/Rainwater systems - WC - 4/3 Litre Flush - Hand Basins - 3 Litre per min - Shower - 6 Litre per min - Kitchen / tea point taps - 5 Litre per min
Exemplary - Water consumption		1	1.00%				1	n/a / n/a	Greywater/Rainwater meeting 100% of WC or urinal flushing demand required to achieve maximum credits
Wat 02 Water monitoring	Credit Aim: Specification of water meters to allow for management and monitoring of water use in the building. This encourages reductions in water use by identifying areas of high usage and investigating potential causes.								
Water monitoring		1	0.78%	1				Buro Happold	Metering of mains water supply plus sub-metering of areas consuming more than 10% of the total water (sub metering by floorplate)
Wat 03 Water Leak Detection	Credit Aim: Reducing the unintended water consumption due to leaks by installing leak detection systems and flow control devices.								
Leak detection system		1	0.78%	1				Buro Happold	Leak detection system to be specified.
Flow control devices		1	0.78%	1				Buro Happold	Flow control devices to be specified to the water supply to the WCs (even if sanitary fittings are not specified).
Wat 04 Water Efficient Equipment	Credit Aim: Reducing water consumption for non-domestic scale, non-sanitary water uses by specifying efficient systems and improving the design efficiency of any water-using processes.								
Water efficient equipment		1	0.78%	1				SLA / Buro Happold	Unregulated water demands / irrigation systems to be identified and reduced.

BREEAM Credits	RIBA Stage	Available Credits	% Score Value	Targeted Baseline	Targeted High Risk	Potential	Not Targeted	Ownership	Comments
MATERIALS									
Mat 01 Building Life Cycle Assessment (LCA)	Credit Aim: Reducing buildings' environmental life cycle impacts through conducting Life Cycle Assessment and integrating its outcomes in the design decision-making process.								
Superstructure	Stage 2 Stage 4	6	7.50%	4		2		Civic / BH	LCA analysis for the environmental impact of superstructure materials required
Substructure and hard landscaping options appraisal	Stage 2	1	1.25%				1	n/a	LCA analysis for the environmental impact of substructure and landscaping materials required
Exemplary - Core building services	Stage 2	1	1.00%				1	n/a	LCA analysis for the environmental impact of MEP equipment required
Exemplary - LCA and LCC alignment	Stage 2 Stage 4	1	1.00%	1				Civic / BH	Alignment of the design options within the LCA analyses with LCC analyses in Man02
Exemplary - Third party verification	Stage 2 Stage 4	1	1.00%	1				tbc	LCA analyses to be completed by a recognised third party.
Mat 02 Environment Product Declarations (EPD)	Credit Aim: To encourage availability of robust and comparable data on the impacts of construction products by rewarding the specification of products with environmental products declarations.								
Specification of products with a recognised environmental product declaration (EPD)		1	1.25%			1		n/a / n/a / n/a	Materials with EPDs to be specified, achieving at least 20 EPD points using the BREEAM tool.
Mat 03 Responsible sourcing of materials	Credit Aim: Recognising and encouraging responsible sourcing of construction products. This includes the source of products and the intermediary companies processing and transporting the product to site.								
Prerequisite - Legally harvested and traded timber		Achieved ?		Yes				Principal Contractor	To be included in contractor requirements.
Enabling sustainable procurement	Stage 2	1	1.25%	1				IDM / Principal Contractor	Sustainable procurement plan required at Stage 2 and required to be used by the design team in specifying materials
Measuring responsible sourcing		3	3.75%			2	1	n/a / n/a / n/a	Design team/contractor to specify and source materials with responsible sourcing certification (i.e. BES 6001, FSC) for the Superstructure, Internal finishes, Substructure and hard landscaping
Exemplary - Measuring responsible sourcing		1	1.00%				1	n/a	Requires all core building services to be BES 6001 or equivalent
Mat 05 Designing for durability and resilience	Credit Aim: Increasing the lifespan of the building through designing for durability and protection from degradation and specifying appropriate construction products.								
Protecting vulnerable parts of the building from damage		1	1.25%	1				A&M	Protection measures within the design to reduce damage to the building's fabric or materials
Protecting exposed parts of the building from material degradation								A&M	Elements designed to limit degradation due to environmental factors.
Mat 06 Material Efficiency	Credit Aim: Encouraging the reduction of environmental impacts through optimising the use of materials during all stages of the project.								
Material Efficiency	Stages 1-6	1	1.25%	1				A&M / Buro Happold / Civic Engineers	Report on opportunities and methods to optimise the use of materials

BREEAM Credits	RIBA Stage	Available Credits	% Score Value	Targeted Baseline	Targeted High Risk	Potential	Not Targeted	Ownership	Comments
WASTE									
Wst 01 Construction waste management	Credit Aim: Improving resource efficiency through developing a pre-demolition audit and a Resource Management Plan, maximising the recovery of material during demolition and diverting non-hazardous waste from landfill.								
Pre-demolition audit	Stage 2	1	0.64%				1	n/a	Pre-demolition audit of any existing buildings, structures or hard surfaces being considered for demolition
Construction resource efficiency		3	1.91%	1	1		1	Principal Contractor	Waste reduction to be included in contractor requirements. Limit construction waste generation to between 6.5 and 11.1 tonnes of waste per 100m² GIA excl. demolition & excavation waste
Diversion of resources from landfill		1	0.64%	1				Principal Contractor	Diversion from landfill to be included in contractor requirements.
Exemplary - Construction resource efficiency and diversion from landfill		1	1.00%				1	n/a	Credit not targeted. ≤1.9 Tonnes of waste generated per 100m² GIA excluding demolition and excavation waste
Wst 02 Recycled and sustainably sourced aggregates	Credit Aim: Encouraging the use of recycled or secondary aggregate or aggregate types with lower environmental impact to reduce waste and optimise material efficiency.								
Prerequisite - Pre-demolition audit		Achieved ?					No	n/a	as above for Wst 01
Project sustainable aggregate points		1	0.64%				1	n/a	Evaluation of aggregate types/suppliers to determine travel distances and number of points achievable
Exemplary - Project sustainable aggregate points		1	1.00%				1	n/a	Sourcing aggregates from recycled/secondary and local sources, to achieve Project Sustainable Aggregate Points score meets or exceeds the exemplary level Performa (6)
Wst 03 Operational waste	Credit Aim: Encouraging the diversion of operational waste form landfill through the provision of space and facilities allowing the segregation and storage of recyclable waste.								
Operational Waste		1	0.64%	1				A&M	Operational recyclable and general waste requirements of building to be provided by waste consultant and included in design by Architect.
Wst 04 Speculative finishes	Credit Aim: To encourage the specification and fitting of floor and ceiling finishes selected by the building occupant and therefore avoid unnecessary waste of materials.								
Speculative floor and ceiling finishes		1	0.64%	1				A&M/ SciTech	TBC if finishes are provided and for what area
Wst 05 Adaptation to climate change	Credit Aim: To encourage the specification and fitting of floor and ceiling finishes selected by the building occupant and therefore avoid unnecessary waste of materials.								
Resilience of structure, fabric, building services and renewables installation	Stage 2	1	0.64%	1				A&M / Buro Happold / Civic Engineers	Conduct a climate change adaptation strategy appraisal, develop recommendations and implement into the design
Exemplary - Responding to climate change		1	1.00%				1	n/a	Dependant of Hea04, Ene01 (6 credits), Ene04, Wat01 (3 credits), Mat05, Pol03 (3 credits).
Wst 06 Design for disassembly and adaptability	Credit Aim: To encourage the specification and fitting of floor and ceiling finishes selected by the building occupant and therefore avoid unnecessary waste of materials.								
Design for disassembly and functional adaptability - recommendations	Stage 2	1	0.64%	1				A&M / Buro Happold / Civic Engineers	Functional adaptability strategy required at RIBA Stage 2 looking at feasibility, accessibility, versatility, adaptability, convertibility, expandability, refurbishment potential
Design for disassembly and functional adaptability - implementation	Stage 4	1	0.64%	1				A&M / Buro Happold / Civic Engineers	Adaptability and disassembly guide communicating the implementation of the strategy required at RIBA Stage 4

BREEAM Credits	RIBA Stage	Available Credits	% Score Value	Targeted Baseline	Targeted High Risk	Potential	Not Targeted	Ownership	Comments
LAND USE AND ECOLOGY									
LE 01 Site selection	Credit Aim: Recognising the reuse of previously developed and contaminated land where appropriate remediation has taken place.								
Previously occupied land		1	1.15%	1				A&M	Evidence (drawings and reports) showing at least 75% of the proposed development is on previously occupied land.
Contaminated land		1	1.15%			1		n/a	Site investigation report for land contamination required along with remediation measures for the principal contractor.
LE 02 Ecological risks and opportunities	Credit Aim: Identifying and understanding the ecological risks and opportunities associated with the site to inform the determination of the strategic outcome for the site.								
Prerequisite - Statutory Obligations		Achieved ?		Yes				IDM / Principal Contractor	Assuming route 2 for assessment (more detailed) as assumed that there will be some statutory requirements and regulations for the site ecology
Survey and evaluation	Stage 1	1	1.15%	1				Tyler Grange	Survey and evaluation by ecologist required at RIBA Stage 1 but could happen later if credit aim is met.
Determining the ecological outcomes for the site	Stage 2	1	1.15%	1				Tyler Grange / IDM	Project team liaison with stakeholders (local government, local community groups) at RIBA Stage 2 to identify and consider the ecological outcome of the site
Exemplary - Wider site sustainability		1	1.00%				1	n/a / n/a	Achieve Hea 07, Pol 03, Pol 05, look at wider sustainability related activities and potential ecosystem service benefits
LE 03 Managing impacts on ecology	Credit Aim: Recognition of steps taken to avoid impacts on existing site ecology as far as possible.								
Prerequisite – Identification and understanding the risks and opportunities for the site		Achieved ?		Yes				Tyler Grange	Survey and evaluation by ecologist required at RIBA Stage 1 but could happen later if credit aim is met. (LE02)
Planning and measures on-site	Stage 2	1	1.15%	1				Tyler Grange / Principal Contractor	Define and allocate roles and responsibilities at RIBA Stage 2 to support and implement measures - Managing negative impact
Managing negative impacts		2	2.31%	2				Tyler Grange / Principal Contractor	Impacts from site preparation and construction: 2 credits if no ecological loss 1 credit if loss has been limited as far as possible
LE 04 Ecological change and enhancement	Credit Aim: Recognition of steps taken to enhance site ecology.								
Prerequisite - Managing negative impacts on ecology		Achieved ?		Yes				IDM / Principal Contractor	Contractor confirms compliance is monitoring against relevant UK and EU legislation and achieve LE 03 credit 1
Ecological enhancement - Route 2		1	1.15%	1				Tyler Grange	Implementation of measures for ecological enhancement, first on site and then if not possible, off site.
Change and enhancement of ecology - Route 2		3	3.46%	2	1			Tyler Grange / SLA	Credits awarded based on the calculation of the change in ecological value (1 credit 75-94%, 2 credits 95-104%, 3 credits 105-109%)
Exemplary - Change in ecological value		1	1.00%		1			Tyler Grange / SLA	Significant net gain of ecological value (110% or above)

BREEAM Credits	RIBA Stage	Available Credits	% Score Value	Targeted Baseline	Targeted High Risk	Potential	Not Targeted	Ownership	Comments
LE 05 Long term ecology management and maintenance	Credit Aim: Encouraging the long term maintenance and management of ecology on site to ensure both new and existing ecological features continue to thrive.								
Prerequisite - Statutory obligations, planning and site implementation		Achieved ?		Yes				IDM / Principal Contractor	Contractor confirms compliance is monitoring against relevant UK and EU legislation and achieve LE 04 credit 1
Management and maintenance throughout the project		1	1.15%	1				Tyler Grange / Principal Contractor	Project team liaison with stakeholder for monitoring. Review and maintain ecology strategy throughout project development Include Ecology and Biodiversity in the building owner information
Landscape and ecology management plan		1	1.15%	1				Tyler Grange / IDM	Provision of a compliant landscape and ecology management plan.
POLLUTION									
Pol 01 Impact of refrigerants	Credit Aim: Rewarding buildings that reduce the impact of refrigerant gas emissions.								
Prerequisite - Ammonia refrigerants		Achieved ?		Yes				Buro Happold	Prerequisite: Electric compressors meet BS EN 378:2016 and if ammonia refrigerants are present they comply with the Institute of Refrigeration Ammonia Refrigeration Systems code of practice
Impact of refrigerant		2	1.50%	1		1		Buro Happold	Direct effect life cycle CO2 emissions from refrigerants to be assessed by MEP
Leak detection		1	0.75%	1				Buro Happold	Compliant refrigerant leak detection system to be specified.
Pol 02 Local air quality	Credit Aim: Recognising buildings which limit their impact on local air quality, by consideration of the combustion plant and fuel used on site.								
Local air quality		2	1.50%	2				Buro Happold	All-electric strategy or MEP to specify local systems with low NOX and PM emission rates
Pol 03 Flood and surface water management	Credit Aim: Rewarding buildings and their sites that limit on-site and off-site local flooding and hence the damage this can cause.								
Prerequisite - Appropriate consultant		Achieved ?		Yes				Civic Engineers	Appointment of a suitably qualified professional to carry out a flood risk assessment
Flood Resilience		2	1.50%	1			1	Civic Engineers	Site located in area of high flood risk from surface water as per flood maps
Prerequisite - Surface water run-off		Achieved ?		Yes				Civic Engineers	Appointment of a suitably qualified professional to carry out drainage and surface water runoff calculations
Surface water run-off - Rate		1	0.75%	1				Civic Engineers	30% improvement in peak rate runoff post-development required.
Surface water run-off - Volume		1	0.75%	1				Civic Engineers	No increase in volume runoff post-development or limiting peak rate runoff to 1-year rate, Qbar or 2l/s/ha
Minimising watercourse pollution		1	0.75%			1		n/a	No discharge for rainfall up to 5mm and design of SuDS for watercourse pollution prevention

BREEAM Credits	RIBA Stage	Available Credits	% Score Value	Targeted Baseline	Targeted High Risk	Potential	Not Targeted	Ownership	Comments
Pol 04 Reduction of night time light pollution	Credit Aim: Avoiding or reducing the impact of night time light pollution, through careful design and specification of light sources.								
Reduction of night time light pollution		1	0.75%	1				Buro Happold	External lighting automatically switch off 23:00-7:00 and meets ILP guidance requirements.
Pol 05 Reduction of noise pollution	Credit Aim: Avoiding or reducing the impact of external noise from the building.								
Reduction of noise pollution		1	0.75%		1			SOLA	Testing pre development. Noise levels at sensitive receptors within 800m to be at least 5dB lower than background noise through day and night.
INNOVATION									
Inn 01 Innovation	Credit Aim: To support innovation within the construction industry through the recognition of sustainability related benefits which are not rewarded by standard BREEAM issues.								
Exemplary level of performance in existing BREEAM issues		10	10.00%	5	1		4	See Relevant Issues Above	For information on the methodology for exemplary level credits refer to the Methodology section of the relevant BREEAM issues above.
Approved Innovations								n/a	Innovation applications can be submitted to BRE Global by a licensed BREEAM Assessor using the formal Approved Innovation Application Form

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