HOARE LEA

2 Waterhouse Square.
London.
Prudential Assurance Company Limited.

SUSTAINABILITY
SUSTAINABILITY STATEMENT

REVISION 06 – 01 AUGUST 2023

Audit sheet.

Rev.	Date	Description of change / purpose of issue	Prepared	Reviewed	Authorised
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Contents.

Executive Summary.

This report has been prepared by Hoare Lea on behalf of CO-RE, (hereafter referred to as 'the applicant') in support of the planning application for the proposed development of 2 Waterhouse Square (hereafter referred to as the 'proposed development') located within the London Borough of Camden.

The overall objective of the proposed development is to sustainably reconfigure the existing building to meet current industry standards, and provide a high quality workplace environment.

This report should be read in conjunction with the full planning submission reports.

Development Description.

Refurbishment and extension of the existing building at 2 Waterhouse Square comprising the delivery of Class E (commercial) floorspace and a flexible commercial (Class E) and bar (sui generis) unit, external alterations, reconfiguration of entrances and servicing arrangements, new hard and soft landscaping, provision of cycle parking and other ancillary works.

Table 1: Area Schedule

	Gross Internal Area (m^2)
Existing area	29,226
Proposed area	29,853

Figure 1 - Development Image

Planning Policy Requirements.

The proposed development has been informed by planning policy drivers outlined below. As a minor application these are not required to be adhered to for the scheme, however the proposed development has aspired to meeting and improving on these requirements where possible aligning with the applicant's aspiration for a sustainable office development.

National drivers; Approved Document Part L of the Building Regulations

Part L of the Building Regulations is the mechanism by which government is driving reductions in the regulated CO_2 emissions from buildings. The assessment of the Proposed development against policy targets has been carried out using Building Regulations Part L (2021).

Calculations demonstrating the energy requirements and associated CO_2 emissions for the development have been carried out using Building Regulations approved software IES VE.

Regional drivers; Greater London Authority (GLA) Policy

The energy strategy adopted for the proposed development follows the Mayor's energy hierarchy of 'Be Lean, Be Clean, Be Green, Be Seen' as detailed in the Greater London Authority (GLA) London Plan (2021) and referenced in the Camden Local Plan (2017).

Local drivers & Planning Policy Requirements; The London Borough of Camden

The Camden Local Plan sets out the Council's planning policies and provides guidance that helps create the conditions for harnessing the benefits of economic growth, reducing inequality and securing sustainable neighbourhoods.

The development's response to each of the key energy and sustainability policies detailed in Camden's Local Plan have been detailed in Section 2.3.

Energy Strategy Summary.

Be lean measures have been optimised for the proposed development including a façade upgrade to optimise building envelope performance minimising unwanted infiltration, heat gains, and heat losses. Natural daylighting has been achieved through glazing provision whilst balanced with minimising unwanted solar gain during summer months. The existing listed façade will benefit from a window upgrade to reduce infiltration and improve thermal performance where a full façade upgrade is not possible due to listed building requirements.

Mechanical ventilation incorporating high efficiency heat recovery ventilation will be used throughout and controlled to optimise for energy consumption. Low energy lighting and associated smart controls will be provided throughout.

The Citigen heat network lies within a 1km from the site, however connection is not proposed due to this network currently being fed by fossil fuel generators. This is in contradiction to the proposed development aspiration to be fossil fuel free in line with becoming a net zero carbon site by 2050. Instead, the proposed development will be fed from a local heat network fed from combined air source heat pumps serving three buildings on the wider Waterhouse Square site. This will enable heat recovery between the buildings on site, recovering heat from cooling operation to feed domestic hot water demand.

The development will also be provided with a PV array to generate on site renewable energy.

In addition to Part L compliance modelling the proposed development will be assessed against the NABERS Design for Performance scheme to predict operational energy at design stage and to then verify this after a year of operation. This will ensure the design intent is achieved in operation and ongoing monitoring of energy consumption will be implemented to track and optimise building consumption in use.

The estimated regulated CO_2 emissions reductions achieved at each stage of the energy hierarchy are summarised in the table and figure below.

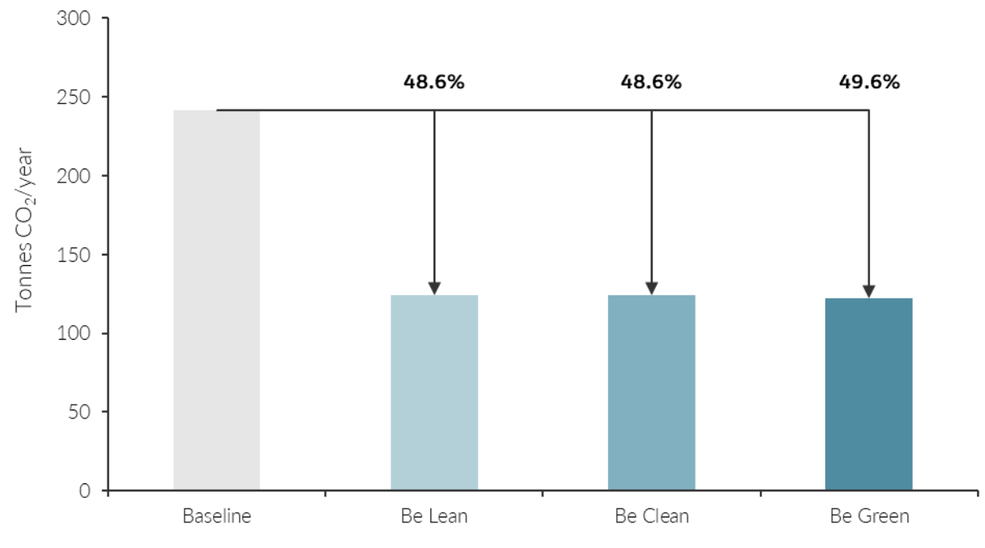


Figure 2 – Chart of regulated carbon dioxide emissions at each stage of the Energy Hierarchy.

Table 2 - Regulated carbon dioxide emissions as each stage of the Energy Hierarchy.

	Carbon Emissions (tCO_2/year)	
	Regulated	
Baseline: Part L 2021 Building Regulations Compliant	242	
After energy demand reduction (Be Lean)	124	
After heat network / CHP (Be Clean)	124	
After renewable energy (Be Green)	122	
	Carbon Emissions Savings	
	(tCO_2/year)	(%)
Savings from energy demand reduction	117	48.6%
Savings from heat network / CHP	0	0.0%
Savings from renewable energy	2	1.0%
Cumulative on-site savings	120	49.6%

Sustainability Strategy Summary.

This section summarises the Sustainability Strategy for the Proposed Development which has been informed by national, regional and local policies – that is, Building Regulations Part L, the Greater London Authority (GLA) London Plan (2021), the London supplementary planning guidance (SPG) on Sustainable Design and Construction (2014), Camden Local Plan (2017) and attention has been paid to the emerging policy of the Draft City Plan 2040 (expected to be adopted in 2024). The Five Capitals Model is being applied to summarise the multi-faceted sustainability benefits that the Proposed Development potentially brings to the Application Site, local community, surrounding businesses, and future building users.

Social – community identity

The Proposed Development is aspiring to create a rejuvenated community that echoes the local heritage and townscape. The Proposed Development has undertaken a consultation process to capture the views of existing occupiers at the estate and stakeholders.

The Proposed Development will enhance the local community by providing additional office spaces and employment opportunities in a central, vibrant location. The Main Contractor will be required to register with the Considerate Constructors Scheme and achieve a good practice score.

Human – healthy place

The Proposed Development aspires to create healthy and safe workplaces which enhance wellbeing through designing the building to enable good levels of internal daylight levels, thermal comfort, access to external amenity areas, safety and security. Measures to encourage physical exercise such as the provision of additional cycling facilities have been implemented.

The building servicing strategy will not contribute to increased levels of emission, therefore maintaining a healthy level of air quality to the local area. Additional security measures will be put in place, and external lighting will be designed to minimise night-time light pollution and provide safe access to the Proposed Development.

Natural – enhancing the environment

The Proposed Development aims to enhance the commercial offering in the city and maintain its status of an attractive destination for businesses. The Proposed Development will introduce additional planting where possible to improve the public realm on access level.

The Proposed Development will have an intrinsically low embodied carbon through re-use of the existing structure, extending the building's lifespan for the next generation of workers within the City.

Where new materials are to be specified and used (extension), minimising the embodied carbon of these materials is key target for the project. This will be achieved through maximising the % of recycled content within material specifications and selection of low carbon alternatives wherever possible.

The Proposed Development is pursuing a BREEAM 'Excellent' rating under the BREEAM Bespoke scheme.

Physical – designed for performance

As part of the Proposed Development delivering high quality, sustainable design and construction, the Proposed Development will be resilient and promote sustainable living. A Travel Plan will be developed; which will set out targets and measures for promoting sustainable transport by the occupants – including walking, cycling and public transport.

In addition to the GLA energy hierarchy testing energy in terms of building regulations compliance, the development is also seeking to adopt the NABERS design for performance methodology. Whereby predicted energy consumption at design stage will be monitored once the building is in use.

Economic Capital – local prosperity

To deliver whole life value from the Proposed Development and promote economic sustainability, as well as boosting the local economy, the Proposed Development will create opportunities for local employment and skills development through the extension of the existing building.

1. Introduction.

This report has been prepared on behalf of the applicant for the planning submission of the 2 Waterhouse Square development to inform of the energy and sustainability strategy that has been adopted. The report should be read in conjunction with the full planning submission documents, in particular the Design and Access Statement.

1.1 Development Description.

The development comprises the refurbishment and extension of the existing building at 2 Waterhouse Square comprising the delivery of Class E (commercial) floorspace and a flexible commercial (Class E) and bar (sui generis) unit, external alterations, reconfiguration of entrances and servicing arrangements, new hard and soft landscaping, provision of cycle parking and other ancillary works.

1.2 Site Context.

The Site is located to the north of Holborn (A40) bound by Brooke Street to the west, Leather Lane to the east, Beauchamp Street to the north and High Holborn to the South.

The Site forms part of the Grade II* listed 'Prudential Assurance Building, 142 Holborn Bars', as identified within the Historic England list description. The Site is also located within the Hatton Garden Conservation Area. The site makes a positive contribution to both conservation areas with the 19th century buildings fronting Holborn creating a strong visual relationship along Holborn streetscape.

In contrast to other parts of the former Prudential Assurance Building, the Site consists largely of a substantial, late 1980s to early 1990s office building. This was attached to the rear of the former Prudential building which was developed over the period between 1885 and 1932.

The Site has an excellent Public Transport Accessibility Level ('PTAL') with the highest rating of PTAL 6b. Chancery Lane underground station is located less than 100m to the west of the site at the junction with Gray's Inn Road. Farringdon underground and overground station is located within 500m of the Site, serving the Central, Circle, Hammersmith & City and Metropolitan line. There are also a number of nearby bus routes and networks that surround the site.

1.3 Our Approach.

1.3.1 Sustainability

To ensure the long-term success of 2 Waterhouse Square, the development must realise real-term social, economic, and environmental benefits to all stakeholders and thereby generate value and wealth in the communities that the development will serve.

The development brief is based on sustainable design and construction principles as informed by planning requirements and industry best practice.

To capture the multi-faceted sustainability benefits and values that the proposed development can bring to the site, local community, surrounding businesses, and future building users, five defined factors – the people, the building, the social network, the natural environment, and the economic aspects – inform our proposed sustainability framework. These are summarised below:

- Natural: Positive impact – integrity is maintained through design and operation through enhancement of ecological assets and responsible resource management.
- Human: Happy and Healthy - putting people at the heart of the design process and ensuring that the physical and mental wellbeing of occupants and visitors is catered for.
- Social: Connecting People – creating a destination for people to work and interact, enhancing existing communities and fostering new connections.
- Physical: Fit for the future – buildings that are robust and equipped to navigate future environmental challenges.

Key Sustainable Features

The following list details the key sustainable features to be incorporated into the proposed development.

- The scheme will target to achieve BREEAM 'Excellent' rating.
- Removal of gas provision and adopting an all-electric services solution.
- A strategy to reduce, reuse and recycle materials in alignment with the principles of circular economy throughout design, construction and operation will be applied, minimising waste generation and the use of virgin materials.
- A waste strategy to be designed in line with the Waste Hierarchy, requiring an avoidance of waste in the first instance followed by reducing the volume that requires disposal after it has been generated. It gives an order of preference for waste management options to minimise the volume for disposal; and
- Landscaping enhancements will be considered and incorporated where practical.

1.3.2 Energy Strategy

The Energy Strategy has been developed using a 'fabric first' approach through the 'be Lean', 'be Clean', 'be Green', 'be Seen' energy hierarchy.

Definitions:

The following definitions should be understood throughout this report:

- Energy demand: the 'room-side' amount of energy which must be input to a space to achieve comfortable conditions. In the context of space heating, this is the amount of heat which is emitted by a radiator, or other heat delivery mechanism.
- Energy requirement: the 'system-side' requirement for energy (fuel). In the context of a space heating system, this is the amount of energy used to generate useful heat (i.e. the energy demand).
- Regulated CO_2 emissions: the CO_2 emissions emitted as a result of the combustion of fuel, or 'consumption' of electricity from the grid, associated with regulated sources (those controlled by Part L of the Building Regulations).

Limitations:

The appraisals within this statement are based on Part L calculation methodology and should not be understood as a predictive assessment of likely future energy requirements or otherwise. Occupants may operate their systems differently, and / or the weather may be different from the assumptions made by Part L approved calculation methods, leading to differing energy requirements.

2. Policy and Drivers

The strategy will respond first and foremost to the Universal Challenges of the Climate Emergency, Biodiversity Crisis facing humanity, and Health and Wellbeing. National and local policy will shape the baseline of performance, with the UN Sustainable Development Goals alongside best practice principles of masterplan design, delivery, and operation shaping the eventual strategy.

2.1 Global Challenges.

People the world over face three universal challenges to which any sustainable development must respond effectively to be successful.

These are as follows:

Climate change

Last year, the Intergovernmental Panel on Climate Change (IPCC) confirmed via publication that, in order to mitigate the most devastating impacts of climate change, the world must demonstrate net zero carbon emissions by 2050. Reflecting this urgent call for action, the Committee on Climate Change published *Net Zero – The UK's contribution to stopping global warming*, identifying a route for the UK to achieve the net zero target. The UK government then joined a number of other nations in declaring a Climate Emergency and the target was ratified into law, meaning the UK has a legally binding obligation to reduce its emissions to zero by 2050 at the latest.

The built environment contributes around 40% (UKGBC) of our national greenhouse gas emissions footprint, so any new development must minimise its footprint on day 1 and demonstrate a realistic route to achieving net zero carbon in future in order to align with our commitments to national decarbonisation.

Biodiversity

As a consequence of the warming climate, deforestation and habitat destruction, pollution and other human processes, the world is experiencing a biodiversity crisis. It is estimated that human action is causing the rate of extinction to be around 1,000 times what could be considered a natural background rate and future projections estimate that 30% to 50% of all current species could be extinct by the middle of the century.

Whilst the situation in the UK is less severe than in some parts of the world, the need to provide homes and amenities for an ever-growing population is putting strain on our local ecosystems. Sustainable development must therefore mitigate its impact on local habitats, plants, and wildlife and contribute to a net gain in local biodiversity.

Health and wellbeing

Less of a crisis and more of a revolution, the understanding of the importance of health and wellbeing to happiness, productivity, community, and prosperity has become increasingly well-founded in recent years. Where someone lives and works is the primary influence on whether they are healthy and well and through the design of new development, people can be motivated to embrace active, healthy lifestyles and facilitated to be sociable, community-driven, and content.

2.2 National Policy

Building Regulations: Approved Document Part L

Approved Document Part L (2021, England edition), here forward referred to as ADL 2021, is the Building Regulation relating to the conservation of fuel and power in buildings. ADL 2021 has two parts, Part L1 relates to dwellings and Part L2 relates to buildings other than dwellings. The development will be assessed under ADL 2021 Part 2.

Part L of the Building Regulations is the mechanism by which government is driving reductions in the regulated CO_2 emissions from refurbished, change of use and new buildings. For new buildings ADL 2021 has four performance metrics as follows:

- Primary energy target
- CO_2 emissions target
- Fabric Energy Efficiency (FEE) target
- Minimum standards for fabric and fixed building services

Electricity grid decarbonisation

Recent progress in the energy sector has seen emissions associated with electricity consumption reduce drastically

The CO_2 factor for grid-supplied electricity in Building Regulations Part L (2013) was 0.519kgCO_2/kWh; as shown in Figure 3, this is a fair reflection of the performance of the grid at that time. However, in response to legally binding targets established in line with the Paris Agreement, significant progress has been made in decarbonising the electricity grid over the past 9 years.

The new ADL 2021 includes a significant reduction in the carbon factors for electricity, reducing from an annual average of 0.519 kgCO_2/kWh to 0.136kgCO_2/kWh (a 75% reduction). Previously, a constant carbon factor for electricity throughout the year was utilised. Due to fluctuations in the national electricity grid fuel mix throughout the year, the carbon emissions and primary energy factors in ADL 2021 vary on a monthly basis.

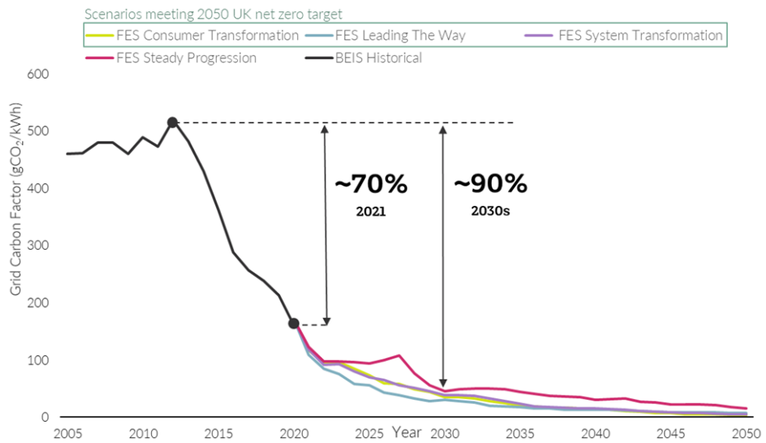


Figure 3: Historic and future projected carbon factor for the National Grid (8% transmission and distribution losses are included

2.3 Development Response to the Camden Local Plan (2017)

The following section provides both a summary of the key energy and sustainability policies as detailed in Camden's Local Plan (2017), and demonstrates how the applicant has addressed each policy within the design of the 2 Waterhouse Square development.

Policy	Development Response
CC1 Climate Change Mitigation	
The Council will require all development to minimise the effects of climate change and encourage all developments to meet the highest feasible environmental standards that are financially viable during construction and occupation.	
We will: - promote zero carbon development and require all development to reduce carbon dioxide emissions through following the steps in the energy hierarchy; - require all major development to demonstrate how London Plan targets for carbon dioxide emissions have been met; - ensure that the location of development and mix of land uses minimise the need to travel by car and help to support decentralised energy networks; - support and encourage sensitive energy efficiency improvements to existing buildings; - require all proposals that involve substantial demolition to demonstrate that it is not possible to retain and improve the existing building; and - expect all developments to optimise resource efficiency.	Follow the energy hierarchy in application of energy saving measures and adopt GLA Carbon reduction targets Decentralised energy network has been adopted for the 2 Waterhouse Square Campus, with building 2 connecting into this local network.
For decentralised energy networks, we will promote decentralised energy by: - working with local organisations and developers to implement decentralised energy networks in the parts of Camden most likely to support them; - protecting existing decentralised energy networks (e.g. at Gower Street, Bloomsbury, King's Cross, Gospel Oak and Somers Town) and safeguarding potential network routes; and - requiring all major developments to assess the feasibility of connecting to an existing decentralised energy network, or where this is not possible establishing a new network.	Whilst the Citigen district network is within the vicinity of the site it is not proposed to connect to this network at this time given the use of fossil fuel heat generation which is in contradiction to the sites aspirations for Net Zero Carbon. Connection on the on site network into a future all electric district heat network will be enabled.
To ensure that the Council can monitor the effectiveness of renewable and low carbon technologies, major developments will be required to install appropriate monitoring equipment.	Comprehensive metering strategy will be adopted for the development in line with the more onerous requirements of NABERS UK DfP.
CC2 Adapting to Climate Change	
The Council will require development to be resilient to climate change. All development should adopt appropriate climate change adaptation measures such as: - the protection of existing green spaces and promoting new appropriate green infrastructure; - not increasing, and wherever possible reducing, surface water runoff through increasing permeable surfaces and use of Sustainable Drainage Systems; - incorporating bio-diverse roofs, combination green and blue roofs and green walls where appropriate; and - measures to reduce the impact of urban and dwelling overheating, including application of the cooling hierarchy.	To account for the impact of extreme weather conditions arising from climate change over the lifespan of the building, the development is pursuing the BREEAM credit Wst 05 Adaptation to climate change. This ensures that the development will undertake a climate change adaptation strategy to identify any potential risks for the project. The mitigation measures will then be incorporated into the developed design.
Any development involving 5 or more residential units or 500 sqm or more of any additional floorspace is required to demonstrate the above in a Sustainability Statement.	A sustainability statement will be produced for the planning submission.
<u>Sustainable design and construction measures</u> The Council will promote and measure sustainable design and construction by: - ensuring development schemes demonstrate how adaptation measures and sustainable development principles have been incorporated into the design and proposed implementation; - encourage new build residential development to use the Home Quality Mark and Passivhaus design standards; - encouraging conversions and extensions of 500 sqm of residential floorspace or above or five or more dwellings to achieve "excellent" in BREEAM domestic refurbishment; and - expecting non-domestic developments of 500 sqm of floorspace or above to achieve "excellent" in BREEAM assessments and encouraging zero carbon in new development from 2019.	A BREEAM Pre-assessment targeting Excellent has been undertaken by Hoare Lea for the supporting planning application. The targeted score identified at Stage 2 was 78.58%, which is equivalent to a BREEAM 'Excellent' rating. Please refer to Section 2.6.1 for further information. Circular economy principles are also being embedded into this development at the design stage. This includes designing for longevity, flexibility and adaptability. As well as designing out waste and using systems elements or materials that can be reused or recycled.
CC3 Water and Flooding	
The Council will seek to ensure that development does not increase flood risk and reduces the risk of flooding where possible. We will require development to: - incorporate water efficiency measures;. - avoid harm to the water environment and improve water quality; - consider the impact of development in areas at risk of flooding (including drainage); - incorporate flood resilient measures in areas prone to flooding;	In accordance with the BREEAM Stage 2 Pre-assessment, 4 credits have been targeted for Pol 03. This addresses flood risk management and surface water run-off. General water monitoring and leak detection systems will also be incorporated into the project's employers' requirements documentation, to be implemented into the design.

Policy	Development Response
- utilise Sustainable Drainage Systems (SuDS) in line with the drainage hierarchy to achieve a greenfield run-off rate where feasible; and - not locate vulnerable development in flood-prone areas.	
Where an assessment of flood risk is required, developments should consider surface water flooding in detail and groundwater flooding where applicable. The Council will protect the borough's existing drinking water and foul water infrastructure, including the reservoirs at Barrow Hill, Hampstead Heath, Highgate and Kidderpore.	
C1 Health and Wellbeing	
The Council will improve and promote strong, vibrant and healthy communities through ensuring a high-quality environment with local services to support health, social and cultural wellbeing and reduce inequalities.	
Measures that will help contribute to healthier communities and reduce health inequalities must be incorporated in a development where appropriate. The Council will require: - development to positively contribute to creating high quality, active, safe and accessible places; and - proposals for major development schemes to include a Health Impact Assessment (HIA).	There will be a local needs strategy in place for this development to ensure alignment to the applicants wider ESG Strategy. Aiming to demonstrate a net positive socio-economic impact through construction and operation of the development. The development will consider a human centric approach to design looking into features such as: maximising natural daylight, ensuring adequate views out of the surrounding environment, ensuring appropriate thermal comfortability is maintained and finally adopting appropriate acoustic measures.
We will: - contribute towards the health priorities of the Health and Wellbeing Board and partners to help reduce health inequalities across the borough; - support the provision of new or improved health facilities, in line with Camden's Clinical Commissioning Group and NHS England requirements; and - protect existing health facilities in line with Policy C2 Community facilities	
A2 Open Space	
The Council will protect, enhance and improve access to Camden's parks, open spaces and other green infrastructure.	
In order to protect the Council's open spaces, we will: - protect all designated public and private open spaces as shown on the Policies Map and in the accompanying schedule unless equivalent or better provision of open space in terms of quality and quantity is provided within the local catchment area	Not applicable to this development.

Policy	Development Response
A3 Biodiversity	
The Council will protect and enhance sites of nature conservation and biodiversity. We will: - designate and protect nature conservation sites and safeguard protected and priority habitats and species; - grant permission for development unless it would directly or indirectly result in the loss or harm to a designated nature conservation site or adversely affect the status or population of priority habitats and species; - seek the protection of other features with nature conservation value, including gardens, wherever possible - assess developments against their ability to realise benefits for biodiversity through the layout, design and materials used in the built structure and landscaping elements of a proposed development, proportionate to the scale of development proposed; - secure improvements to green corridors, particularly where a development scheme is adjacent to an existing corridor; - seek to improve opportunities to experience nature, in particular where such opportunities are lacking; - require the demolition and construction phase of development, including the movement of works vehicles, to be planned to avoid disturbance to habitats and species and ecologically sensitive areas, and the spread of invasive species; - secure management plans, where appropriate, to ensure that nature conservation objectives are met; and - work with The Royal Parks, The City of London Corporation, the London Wildlife Trust, friends of park groups and local nature conservation groups to protect and improve open spaces and nature conservation in Camden	To align with the applicants broader ESG strategy, both biodiversity net gain and urban greening factor are targeted for the development: - The minimum requirement for biodiversity net gain is 10% and there is an aspirational target of 20%. - Urban greening factor has a minimum ESG requirement at 0.3. - The development also targets the 4 available BREEAM credits for land use & ecology. At this stage, this includes the appointment for an ecologist before stage 3. The ecologist will undertake a baseline survey of the site, then identify and provide recommendations for the protection of existing ecological elements and how the development could increase it's overall ecological value. Further specifics for the nature and biodiversity of the site will be confirmed by the ecologist once appointed.
<u>Trees and vegetation</u> The Council will protect, and seek to secure additional, trees and vegetation. We will: - resist the loss of trees and vegetation of significant amenity, historic, cultural or ecological value including proposals which may threaten the continued wellbeing of such trees and vegetation; - require trees and vegetation which are to be retained to be satisfactorily protected during the demolition and construction phase of development in line with	

Policy	Development Response
BS5837:2012 'Trees in relation to Design, Demolition and Construction' and positively integrated as part of the site layout; - expect replacement trees or vegetation to be provided where the loss of significant trees or vegetation or harm to the wellbeing of these trees and vegetation has been justified in the context of the proposed development; - expect developments to incorporate additional trees and vegetation wherever possible	
CC5 Waste	
The Council will seek to make Camden a low waste borough. We will: - aim to reduce the amount of waste produced in the borough and increase recycling and the reuse of materials to meet the London Plan targets of 50% of household waste recycled/composted by 2020 and aspiring to achieve 60% by 2031; - deal with North London's waste by working with our partner boroughs in North London to produce a Waste Plan, which will ensure that sufficient land is allocated to manage the amount of waste apportioned to the area in the London Plan; - safeguard Camden's existing waste site at Regis Road unless a suitable compensatory waste site is provided that replaces the maximum throughput achievable at the existing site; and make sure that developments include facilities for the storage and collection of waste and recycling	In accordance with the BREEAM Pre-assessment, a target waste resource efficiency rate of ≤5.29 m^3 per m^2 GIA, or ≤2.6 tonnes per 100m^2 GIA has been outlined. Additionally, the development has also outlined targets for diversion from landfill and recycling rates, which align with the GLA and the client's ESG targets. A project-specific Operational Waste strategy will be developed for the proposed development, which will consider the flow of waste from the source, through to the storage and collection.
CC4 Air quality	
The Council will ensure that the impact of development on air quality is mitigated and ensure that exposure to poor air quality is reduced in the borough.	Local air quality will be improved as part of the refurbishment by the removal of the existing gas fired boilers and replacement with an "all electric" solution. Additionally, internal air quality will be improved by installing appropriate filtration. The contractor will be responsible for assessing the risk of dust and emissions impacts and ensuring, where appropriate, mitigation measures are implemented.
The Council will take into account the impact of air quality when assessing development proposals, through the consideration of both the exposure of occupants to air pollution and the effect of the development on air quality. Consideration must be taken to the actions identified in the Council's Air Quality Action Plan.	
Air Quality Assessments (AQAs) are required where development is likely to expose residents to high levels of air pollution. Where the AQA shows that a development would cause harm to air quality, the Council will not grant planning permission unless measures are adopted to mitigate the impact.	

Policy	Development Response
Similarly, developments that introduce sensitive receptors (i.e. housing, schools) in locations of poor air quality will not be acceptable unless designed to mitigate the impact.	
Development that involves significant demolition, construction or earthworks will also be required to assess the risk of dust and emissions impacts in an AQA and include appropriate mitigation measures to be secured in a Construction Management Plan.	
A4 Noise and vibration	
The Council will seek to ensure that noise and vibration is controlled and managed. Development should have regard to Camden's Noise and Vibration Thresholds (Appendix 3). We will not grant planning permission for: - development likely to generate unacceptable noise and vibration impacts; - development sensitive to noise in locations which experience high levels of noise, unless appropriate attenuation measures can be provided and will not harm the continued operation of existing uses.	Noise emission limits for items of fixed building services plant will be established at the nearest noise-sensitive receivers in line with the council's Noise Thresholds. Allowance will be made within the design proposals for the inclusion of these noise control measures
We will only grant permission for noise generating development, including any plant and machinery, if it can be operated without causing harm to amenity. We will also seek to minimise the impact on local amenity from deliveries and from the demolition and construction phases of development.	
8.37 Sustainable drainage and Biodiversity	
To support a sustainable approach to drainage, all development should install green roofs, permeable landscaping, green walls and combination green and blue roofs, where appropriate. Further information on these systems can be found in our supplementary planning document Camden Planning Guidance on sustainability.	As per the response for 'A3 Biodiversity'.
T1 Prioritising walking, cycling and public transport	
The Council will promote sustainable transport by prioritising walking, cycling and public transport in the borough.	To prioritise walking, cycling and public transport, the development and local area has a number of sustainable transport options. This includes a good level of accessibility to public transport, safe walking routes to local facilities and cyclist facilities for the 2 Waterhouse Square building occupants. A transport consultant will be appointed to undertake a travel plan and assessment for the development, which will address all sustainable transport measures.
Walking In order to promote walking in the borough and improve the pedestrian environment, we will seek to ensure that developments: - improve the pedestrian environment by supporting high quality public realm improvement works; - make improvements to the pedestrian environment including the provision of high quality safe road	

Policy	Development Response
crossings where needed, seating, signage and landscaping; - are easy and safe to walk through ('permeable') - are adequately lit; - provide high quality footpaths and pavements that are wide enough for the number of people expected to use them. Features should also be included to assist vulnerable road users where appropriate - contribute towards bridges and water crossings where appropriate.	
Cycling In order to promote cycling in the borough and ensure a safe and accessible environment for cyclists, the Council will seek to ensure that development: - provides for and makes contributions towards connected, high quality, convenient and safe cycle routes, in line or exceeding London Cycle Design Standards, including the implementation of the Central London Grid, Quietways Network, Cycle Super Highways and; - provides for accessible, secure cycle parking facilities exceeding minimum standards outlined within the London Plan (Table 6.3) and design requirements outlined within our supplementary planning Camden Local Plan | Transport 301 document Camden Planning Guidance on transport. Higher levels of provision may also be required in areas well served by cycle route infrastructure, taking into account the size and location of the development; - makes provision for high quality facilities that promote cycle usage including changing rooms, showers, dryers and lockers; - is easy and safe to cycle through ('permeable'); - contribute towards bridges and water crossings suitable for cycle use where appropriate.	In accordance with the BREEAM Pre-assessment, the development is pursuing all credits associated with Tra 03: Cyclist Facilities. Therefore, the design team will ensure that a suitable number of cycle storage spaces and cyclist facilities are provided.

Policy	Development Response
Public Transport In order to safeguard and promote the provision of public transport in the borough we will seek to ensure that development contributes towards improvements to bus network infrastructure including access to bus stops, shelters, passenger seating, waiting areas, signage and timetable information. Contributions will be sought where the demand for bus services generated by the development is likely to exceed existing capacity. Contributions may also be sought towards the improvement of other forms of public transport in major developments where appropriate.	As 2 Waterhouse Square is an existing building, contributions to local public transport have already been implemented. Where there are opportunities to contribute further, these will be outlined within the travel plan and assessment undertaken by the transport consultant, and discussed further with the project team.
Where appropriate, developments will be required to provide for interchanging between different modes of transport including facilities to make interchange easy and convenient for all users and maintain passenger comfort.	
T2 Parking and car-free development	
The Council will limit the availability of parking and require all new developments in the borough to be car-free through the following – not issue on-street or on-site parking permits in connection with new developments and use legal agreements to ensure that future occupants are aware that they are not entitled to on-street parking permits; – limit on-site parking to: – spaces designated for disabled people where necessary, and/or – essential operational or servicing needs; – support the redevelopment of existing car parks for alternative uses; and resist the development of boundary treatments and gardens to provide vehicle crossovers and on-site parking	

3. Sustainability

The overall sustainability vision will utilise the Five Capitals Model; this approach is focussed on creating value with the aim to realise real term and tangible benefits. This model is an evolution-of-sorts of the traditional three pillars of environmental, social, and economic sustainability.

3.1 The Five Capitals Model.

Themes, objectives and targets are to be finalised with the design team, however the current approach to sustainability is described in the following section.

The focus will be to:

- Create value
- Deliver measurable and made-to measure benefits.

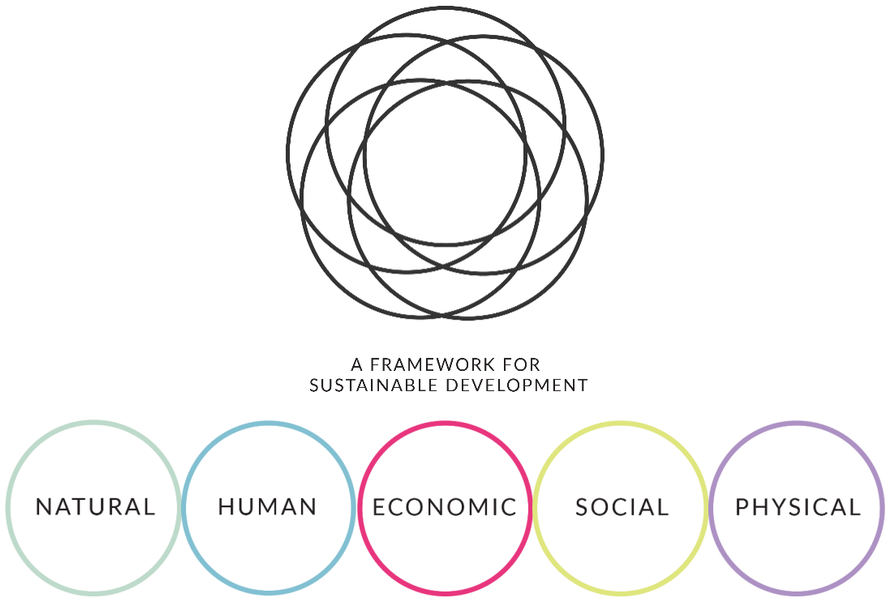


Figure 4: Framework for sustainability.

- Natural: Positive impact – integrity is maintained through design and operation through enhancement of ecological assets and responsible resource management.
- Human: Happy and Healthy - putting people at the heart of the design process and ensuring that the physical and mental wellbeing of occupants and visitors is catered for.
- Economic: New opportunities - ensuring that priority is given to local small / medium enterprises and independent service providers as means of boosting the local economy.
- Social: Connecting People – creating a destination for people to work and interact, enhancing existing communities and fostering new connections.
- Physical: Fit for the future – buildings that are robust and equipped to navigate future environmental challenges.

3.2 Sustainability at 2 Waterhouse Square

The following section outlines the key sustainability design features aligned with the Five Capitals Model and meeting policy requirements. A full outline of compliance with the local policy requirements can be found in Appendix A.

Natural	
Biodiversity Net Gain	The proposed development is located within an 8-minute walk to Lincoln's Inn Fields. Regarding enhancing the ecological value of the site, although there is little available space within the project boundary, planters are proposed to enhance the site's urban greening factor. Refer to the Design & Access statement for further details. Native planting will be favoured where possible, providing advantages such as minimal upkeep, reduced reliance on fertilisers, and supporting the local habitat community.
Circular Economy	The proposed development includes part-refurbishment of the existing buildings with large parts of the substructure and superstructure being retained. Therefore, by nature, this embodies the principles of circular economy to a greater extent than many other construction projects. Where demolition and new build has been deemed necessary and new materials are being introduced, the scheme will look to avoid unnecessary materials use arising from over specification and continue to follow the circular economy principles. More details can be found in Section 8. It is assumed 100% of timber and timber-based products used on the project are 'Legal' and 'Sustainable' as per the UK Government's Timber Procurement Policy (TPP). Where considered most practical, and cost effective to the design, the materials will be sourced from locally certified suppliers.
Human	
Human-Centric Design	Human centric design puts user needs, desires, and abilities at the centre of the design process. Using key requirements set out in the WELL Building Standard, the design is including appropriate measures to ensure good levels of air quality, thermal comfort and acoustics to all occupied space. Air Quality - The Application Site is located within Camden's Air Quality Management Area declared by the London Borough of Camden for exceedances of the annual and 1-hour mean NO_2 and annual and 24-hour mean PM10 air quality objectives. Mechanical ventilation is being proposed which will include appropriate filters ensuring air is circulated and maintained at a healthy air quality level. Thermal Comfort – High temperatures and overheating are often cited as reasons for poor concentration levels and high levels of fatigue. Energy efficient heat pumps are being proposed to maintain thermal comfort in all occupied spaces. Acoustics - Appropriate acoustic measures will be incorporated into the scheme in order to minimise disturbance and enhance productivity.
Economic	
Local procurement	Key considerations will be made in regard to procurement. The team will look to facilitate the selection of products that involve lower levels of negative environmental, economic and social impact across their supply chain including extraction, processing and manufacture. This strategy will not only promote more economically, socially and environmentally responsible practices, but will also encourages the design and procurement process to identify risks and reduce the environmental, economic and social issues in the supply chain of construction products.
Fair operating practices	Prior to the commencement on works on site, the client will take due consideration of the appointment Principal Contractor, ensuring fair operating practices are implemented throughout the construction process. The Principal Contractor will be required to maintain an ISO 14001 EMS standard, as well as ensure the site is registered with CCS scheme upon commencement of work.

Social	
Inclusive Design	In terms of inclusive design, the scheme will be designed and specified in accordance with the relevant local and national planning guidance. Key considerations will be made including step free access, (within the constraints of the existing building), visual signage, fluid interfaces, automated systems, ease of control use will be considered throughout the scheme ensuring the building is a safe easy to use facility for not only building employees, but the visitors. The development will aim to make people feel at home irrelevant of their ethnicity, nationality, physical ability, or any other socioeconomic or demographic characteristic.
Social infrastructure	The site is located in Holborn. The surrounding area comprises a mixture of large-scale retail and commercial space and therefore the proposed development office use and the proposed areas for change of use to retail remain appropriate for the location.
Physical	
Whole life carbon	The assessment of Whole Life Carbon (WLC) emissions consists of the following sections: embodied carbon emissions; total operational carbon emissions (regulated plus unregulated); and any future potential carbon emissions 'benefits', post end-of-life, including benefits from reuse and recycling of building structure and materials. Embodied carbon emissions - The proposed development comprises a part-refurbishment and therefore a large part of the substructure and superstructure is being retained. The structural elements account for the largest percentage of embodied carbon and therefore by reusing these elements, a large saving of embodied carbon is made. For all new elements, an assessment will be undertaken in line with RICS Professional Statement: Whole Life Carbon Assessment for the Built Environment (and therefore GLA guidance for undertaking WLC Assessments). Operational Carbon Emissions – The proposed development will follow design principles set out in Design for Performance (DfP). DfP is an emerging industry initiative that aims to improve the energy performance of the office sector in the UK by setting energy targets, in energy consumed per square meter (kWh/m^2). Advanced energy modelling (beyond standard Part L compliance tools) is utilised during design to better understand anticipated building performance, and the final detailed model is then used to enhance commissioning and building optimisation.
Monitoring and reporting	Effective energy metering will be enabled by the provision of suitable infrastructure within the buildings services systems. The metering strategy will follow the design principles of Design for Performance (DfP). This will enable energy usage of the heat-pump systems to be monitored, and the system performance optimised. Electrical and thermal meters will be provided on the main central Heat Pumps, providing data on plant energy consumption throughout the year. Each tenant area and each area of high energy load will be sub-metered in order to monitor energy consumption in greater granularity and facilitate billing and reporting. Energy intensity and carbon emissions will be monitored and reported annually. The Applicant is committed to monitoring and reporting sustainability performance and data every year in a transparent way.

3.3 Environmental Assessment Methods

In line with local policy drivers and the Applicant's sustainability aspirations, BREEAM will be targeted for the scheme with an aspiration to achieve BREEAM 'Excellent' in line with local planning policy. As the development is a major renovation, a BREEAM 2014 Refurbishment and Fit out (RFO) assessment will be undertaken.

As the proposed development comprises of both refurbishment and new build elements, the development does not fall into the traditional BREEAM assessment schemes. Therefore, a Bespoke set of criteria will need to be developed by the BRE to enable the buildings to be accurately assessed. To inform the pre-assessment for this development, the Bespoke criteria for a similar building in central London has been utilised.

The scope of the BREEAM assessment currently considers Parts 1, 2, and 3.

- Part 1: Fabric and Structure: Alterations to the main fabric including façade, roof or windows.
- Part 2 Core Services: Heating, ventilation, and air-conditioning (HVAC), building management system, water services and low/zero carbon (LZC) technologies. *Where at least two systems are installed/upgraded and require compliance with Building Regulations.*
- Part 3 Local Services: Lighting (fittings, systems, and controls), local ventilation, heating, and cooling; point of use water heaters. *Where at least two fixed local services are installed/upgraded.*

The current anticipated baseline score is 80.21%, equivalent to a BREEAM 'Excellent' rating, with a difference between the minimum required score for a BREEAM 'Excellent' rating of 70% of 10.21%. Further details on the credits targeted can be found in Appendix B.

A margin of at least 3% – 5% is recommended above the minimum required score at this stage to secure the target rating taking into account contingency for design changes and potential constraints identified during the construction stage.

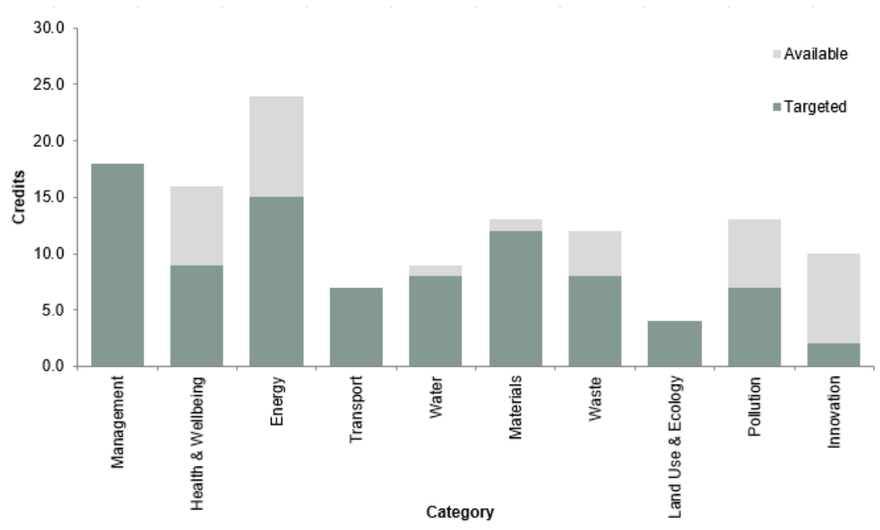


Figure 5 Score distribution across BREEAM issue categories

4. Energy

The existing building is to undergo extensive refurbishment as well as extension. This offers the opportunity to bring the proposed development in line with best practice energy efficient operation and put the building on a trajectory towards net zero carbon.

Operational energy consumption impacts on a number of the Proposed Development's ESG targets as follows.

- BREEAM Energy Credits
- Energy Performance Certificate
- Net Zero Carbon Aspirations
- Whole Life Cycle Assessment
- NABERS UK Design for Performance

4.1 Drivers

The ESG targets are influenced both by tenants' expectations for sustainable workplaces, as well as regulatory and policy requirements.

A detailed policy review is provided in section 2 above, however key policies that have been used to inform the energy strategy for the Proposed Development is summarised below:

National drivers; Approved Document Part L of the Building Regulations
Part L of the Building Regulations is the mechanism by which government is driving reductions in the regulated CO_2 emissions from new and refurbished buildings. The Proposed development will be assessed against Building Regulations Part L (2021) using approved software. The new extension areas will need to demonstrate an improvement over the notional building as defined by the National Calculation Methodology. The existing refurbished areas will need to comply with the requirements for refurbished elements.

Regional drivers; Greater London Authority (GLA) Policy
The Mayor's Sustainable Infrastructure policies and the energy hierarchy: 'Be Lean, Be Clean, Be Green, Be Seen' as detailed in the Greater London Authority (GLA) London Plan (2021). The energy hierarchy promotes a fabric first approach whereby the focus of any development should be on reducing the demand for energy first. As such developments are required to comply with Part L through 'Be Lean' measures only and demonstrate a 15% reduction against the Part L notional building without the use of renewable energy. Following this the hierarchy moves to supplying energy efficiently and using renewable sources as far as possible. A minimum 35% reduction in against the Part L notional building should be demonstrated.

The fourth stage of 'Be Seen' introduced in the latest update of the London Plan encourages the monitoring of energy consumption in use. This approach is intended to address the performance gap between how buildings are designed and how they operate.

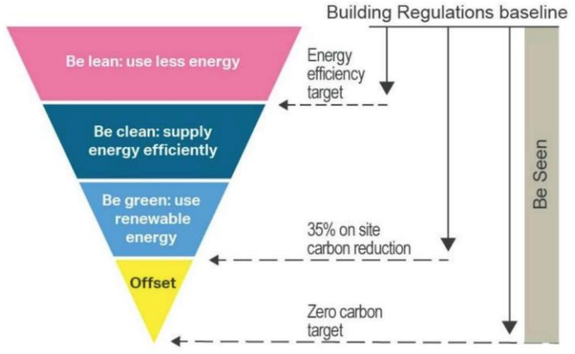


Figure 6 – GLA Energy Hierarchy

Local drivers; London Borough of Camden
The London Borough of Camden has adopted the London Plan energy targets and energy hierarchy approach.

4.2 Assessments

Energy analysis in the UK is most commonly undertaken using Part L compliance assessment tools for Building Regulations purposes. This approach uses the National Calculation Methodology (NCM), which uses pre-determined building operation such as levels of occupancy, usage patterns, ICT equipment (small power), lighting levels, and ventilation rates. This methodology essentially standardises all operational factors and establishes a level playing field which is appropriate for compliance purposes. Additionally, this methodology only allows a selection of simplified building services systems, for example the building can make use of 'Fan Coil Units', 'Variable Air Volume', 'Displacement Ventilation' systems – which is suitable for the nature of compliance calculations, however it is not suitable for detailed analysis as the detailed design, operation and control of these systems cannot be altered from the set profiles. The NCM / Part L compliance assessments also assumes that the building services systems have unlimited heating and cooling capacity, simplified seasonal efficiencies, and perfect control i.e. heating, cooling and ventilation systems only operate when the building is occupied and never heat / cool beyond exact setpoints.

The Part L assessments are used to test for building regulations compliance, determine the development's predicted EPC rating, and also to inform the BREEAM ENE01 credit assessment.

Design for Performance (DfP) modelling, contrary to Part L compliance modelling is used to determine a better prediction of actual operational energy which takes into account both regulated and unregulated energy end uses. DfP is an industry initiative that aims to improve the energy performance of the office sector in the UK by setting energy targets, in energy consumed per square meter (kWh/m^2), measured during actual operation. This approach follows a similar method to the Australian National Australian Building Environment Rating System (NABERS). Advanced energy modelling is used during design to better understand anticipated building performance, and the final detailed model then used to enhance commissioning and building optimisation.

The ESG targets are assessed using different approaches as set out in the table below:

Table 3 – Energy Compliance and Performance Modelling

Assessment Methodology	Output
Compliance Modelling (Part L 2021)	– Planning Policy requirements – BREEAM Energy Credits – Energy Performance Certificate
Performance Modelling	– Net Zero Carbon Aspirations – Whole Life Cycle Assessment – NABERS UK Design for Performance

4.3 Energy Compliance Modelling

4.3.1 Energy Strategy

The Proposed Development target is to achieve at least **35% reduction in CO_2 emissions** beyond the 'Part L 2021 Baseline'.

Be Lean

The 'Be Lean' stage of the GLA Energy Hierarchy focusses on building fabric performance in isolation from MEP systems or renewable technologies. The Proposed Development is targeting at least **15% reduction in CO_2 emissions** beyond the 'Part L 2021 Baseline' through the application of lean (passive) measures only in line with GLA guidance.

Table 4 - Target fabric performance values

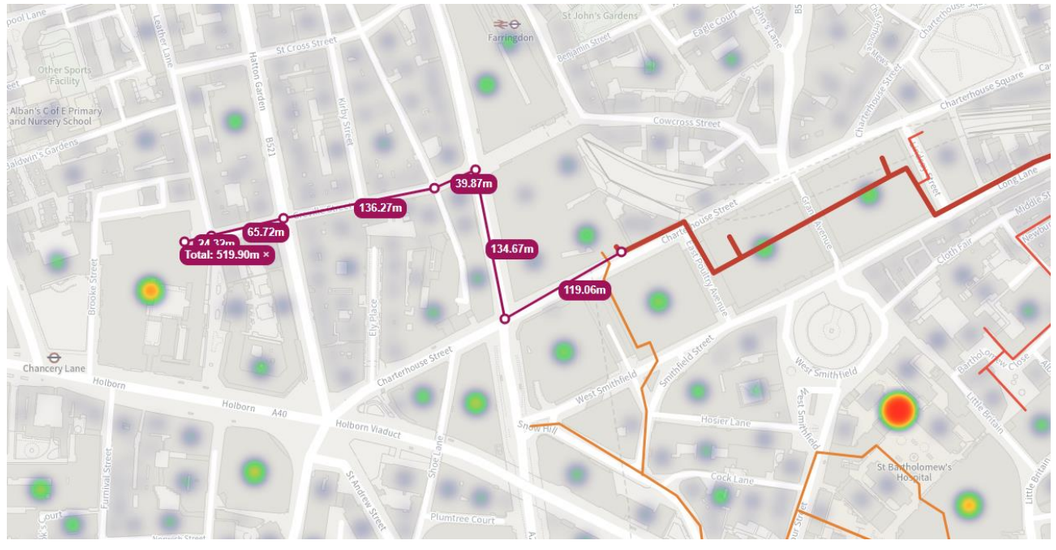
Building Element	Part L 2021 Limiting Values – New or replacement elements	Part L 2021 Notional Building Values	Suggested Target Performance
Air Permeability ($m^3/h.m^2$ at (50Pa))	8	3	3
External wall U-value ($W/m^2.K$)	0.26	0.18	0.18
Windows ($W/m^2.K$)	1.60	1.40	1.20
Façade Glazing Ratio	40%	40%	40%
Roof u-value (W/m^2K)	0.18 (flat)	0.15	0.15
Curtain Walling U-Value (Average) ($W/m^2.K$) - (Glazing + Solid and inclusive of all thermal bridging including the slab-to-façade junction and all support systems / brackets i.e. repeating and non-repeating thermal bridges)	1.60	0.18 (the notional building does not have curtain walling)	0.18
Ground / Exposed Floor U-value (W/m^2K)	0.18	0.15	0.15
Internal Floor/Ceiling U-value (W/m^2K)		1.00	1.00
Rooflights (W/m^2K)	2.20	2.10	2.10
Pedestrian Doors (W/m^2K)	1.60	1.90	1.60
Glazing Performance			
Window g-value		0.29	0.3-0.4
Rooflight g-value		0.40	0.3-0.4
Window light transmittance		0.6	0.6
Rooflight light transmittance		0.71	0.71
Window Frame Factor		0.10	0.10
Rooflight Frame Factor		0.15	0.15

Table 5 - Target services performance values

Services Item	Unit	
Heat Pump Heating Efficiency		2.84
Heat Pump Cooling Efficiency		3.15
Heat Pump Domestic Hot Water Heating Efficiency		2.86
Ventilation Specific Fan Power	W/l/s	1.8
Ventilation Heat Recovery	%	80
Fan Coil Unit Specific Fan Power	W/l/s	0.25
Lighting	lm/W	110

Be Clean

The majority of central London is identified as a Heat Network Priority Area, i.e. areas where heat density is sufficient for heat networks to provide a competitive solution for supplying heat to buildings and consumers. The proposed development is located within 550m of the existing Citigen heat network, as identified by the London Heat Map (http://www.londonheatmap.org.uk).



Current connection not proposed to this network for a number of reasons summarised below:

- The Citigen network is not a fossil fuel free network, this will compromise the scheme's net zero carbon pathway and limit operational carbon efficiency
- The current proposal for combined heating and cooling ASHPs benefits from energy recovery from simultaneous heating and cooling operation between different usages, i.e. office and residential. Connection to a heat network will remove the ability to recover heat from the cooling systems.

- Increased distribution losses are associated with heat networks due to their higher operating temperatures and increased pipework lengths.
- The Waterhouse Square site comprises of 3 buildings, currently proposals include for a local heat network to provide both heating and cooling to all three of the buildings on site.

Future connection will be made possible in terms of plant space allocation should Citigen decarbonise the heat network.

Be Green

As discussed above, an on site heating and cooling network will be fed from combined Air Source Heat Pumps. This will result in an ell-electric building servicing strategy enabling the Proposed development to benefit from a decarbonizing grid as well as on site renewable electricity generation.

The Proposed Development is also seeking to maximise the opportunity for deploying rooftop solar photovoltaic (PV) panels to further reduce energy demand of the Proposed Development. 85m^2 of PV array is proposed. The final location of the PV is to be confirmed.

4.3.2 Performance against GLA Energy Hierarchy Targets

The proposed development meets both of the GLA targets:

- 15% reduction through lean measures only
- 35% overall reduction against baseline

The results are given in the table below and figure opposite.

Table 6 - Regulated carbon dioxide emissions as each stage of the Energy Hierarchy.

	Carbon Emissions (tCO_2/year)	
	Regulated	
Baseline: Part L 2021 Building Regulations Compliant	242	
After energy demand reduction (Be Lean)	124	
After heat network / CHP (Be Clean)	124	
After renewable energy (Be Green)	122	
	Carbon Emissions Savings	
	(tCO_2/year)	(%)
Savings from energy demand reduction	117	48.6%
Savings from heat network / CHP	0	0.0%
Savings from renewable energy	2	1.0%
Cumulative on-site savings	120	49.6%

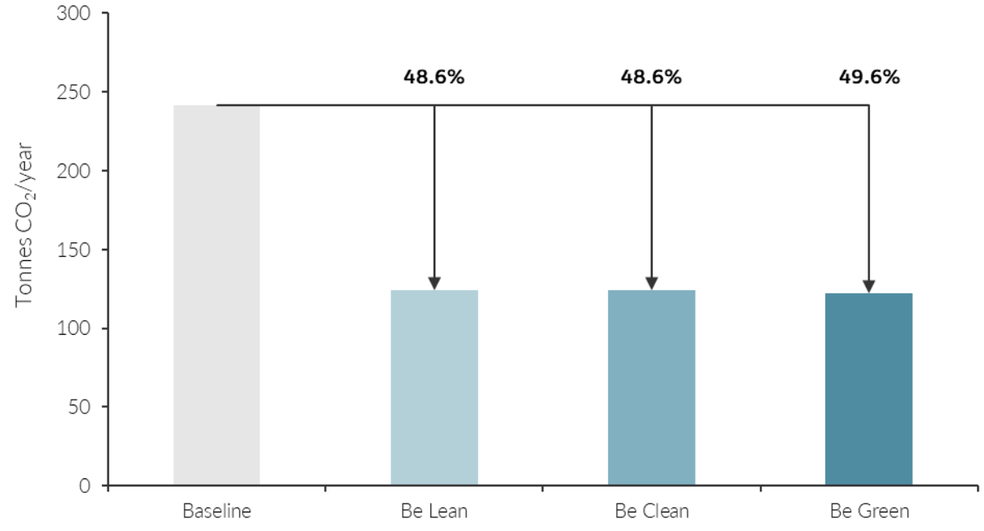


Figure 7 – Energy Hierarchy

5. Circular Economy

In contrast to a linear economy, a circular economy creates and maintains value by using materials for much longer and then reusing, repurposing, or recycling them, just as nature does.

The construction and operation of the built environment consumes 60% of all materials in the UK. At the end of life, materials are often diverted from landfill, but in reality, downcycled, reducing their value.

Designing for longevity and adaptability and maximizing the use of recycled and renewable materials could reduce greenhouse gas emissions while increasing innovation opportunities and economic growth. Replacing finite and fossil-based materials with responsibly managed renewable materials can decrease carbon emissions whilst reducing dependency on finite resources.

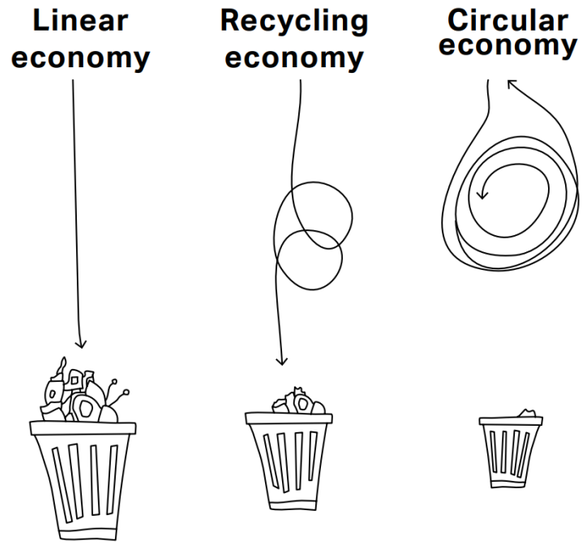


Figure 8: Circular economy (GLA Circular Economy Statement Guidance, 2021).

It is recognised that in order to implement Circular Economy principles most effectively, it is helpful to explore opportunities early in the development process.

A Circular Economy-focused workshop was held in collaboration with the project team to help craft a consistent approach for the development. Considerations around resource efficiency, material circularity and ethical sourcing have been a critical element of the overarching sustainability strategy. The following commitments were agreed and set by the client and design team, in alignment with the regulatory requirements, to uphold sustainable design and circular economy principles for the Proposed Development:

- Achieve a minimum of a BREEAM 'Excellent' rating under the BREEAM 2014 Bespoke Scheme, with an aspiration to achieve BREEAM 'Outstanding' rating.
- 100% of construction and demolition waste is to be diverted from landfill for reuse, recycling or recovery
- 95% of non-hazardous construction, demolition and excavation waste will be reused or recycled.
- Municipal waste recycling target of 65% by 2030
- Minimum 20% of the building material elements to be comprised of recycled or reused content
- Achieve a refurbishment and fit-out waste resource efficiency rate of ≤5.29 m^3 per m^2 GIA or ≤2.6 tonnes per 100m^2 GIA (this is in line with at least 2 Wst 01 credits under BREEAM 2014 Bespoke Scheme)

It is acknowledged that the approach to circular economy will evolve as the design evolves, or in response to wider considerations and feedback from the GLA or other stakeholders.

This section summarises how the project is addressing circular economy principles:

1. Building in layers;
2. Designing out waste;
3. Designing for longevity;
4. Designing for adaptability or flexibility;
5. Designing for disassembly;
6. Using systems, elements or materials that can be reused or recycled.

It is recommended that a revised Circular Economy Statement Report will be produced at RIBA Stage 4 / Pre-construction to capture the detailed information not available at this stage of design.

5.1 Building in layers

The Building in Layers approach is a fundamental step in designing a building to adhere to the principles of Circular Economy. In the various stages of design and development, the design team will consider the Proposed Development in terms of its 'layers', where each layer has its own life cycle that might require a different approach. The Proposed Development takes a design approach which recognises these distinctions, with the structure and façade designed to be long lasting and adaptable, whilst individual components are designed to support reuse or recycling.

5.2 Designing out waste

Minimising the quantities of materials and other resources used

The proposed development is retaining large parts of the substructure and superstructure, and the listed façade is being retained. Across the development, the main steel frame is being retained with only small sections removed- approximately 30% of the structure/floor plate is to be demolished. Many of these removed sections, including raised access floor tiles and structural steel, will be reused directly onsite to support other areas of the structure, such as the infill of the atrium. The basement structure and foundations are being retained.

Where new materials are being introduced, the scheme will look to avoid unnecessary materials use arising from over specification and continue to follow the circular economy principles. The scheme will aim to support the local procurement of materials, with prioritisation of products under a recognised responsible certification scheme. The design team confirmed that will try to specify recycled materials within the design, although it is too early to provide further details at this stage.

In addition to minimising use of land resources, the scheme will be designed to address efficient use of energy and water. Operational energy demands will be minimised.

Minimising demolition, excavation, and construction waste

Construction waste will be minimised through adoption of pre-fabrication methods where possible. The contractor will be required to produce a Site Waste Management Plan (SWMP) that will outline targets for minimising waste generation and diverting materials from landfill. This will align with and support the BREEAM waste credits.

The proposed development's demolition waste will be minimised through good site management practices that will be outlined in the SWMP. Strip-out waste will be reused on-site as much as possible, with exceptions including ceiling tiles to be reused and recycled off-site. The architect is also engaged with a third party to identify further opportunities for reutilising the granite façade both on and off site. Current considerations for

re-use include, but are not limited to, the formation of landscaping features, the creation of terrazzo floor/wall tiles, and the use of granite aggregate in waste-based bricks. The floor is composed of concrete on metal deck slabs. The metal will be recycled, so will therefore be diverted from landfill.

Strip out & 'pre-strip out' contractors have been engaged to maximise the recoverability and re-use/recycling target.

Due to retention of the substructure, excavation waste is expected to be low but will be minimised through good site management practices that will be outlined in the SWMP. Details of the excavation waste that cannot be repurposed on site will be logged in the SWMP.

Managing municipal waste
The operational waste will be reduced. A project-specific Operational Waste will be developed for the Proposed Development making all necessary allowances to ensure that waste arisings can be accommodated under a full occupancy scenario. The strategy considers the flow of waste from waste generator through to storage and collection.

5.3 Designing for longevity
The design team have confirmed that they are already maximising the site's potential and limiting the need for demolition in the future. Durability and longevity will be factors considered throughout the design of the proposed development, the design team have confirmed that, when specifying the building materials, they will undertake a review of the durability of materials. This review is to also consider the potential impact of degradation due to environmental factors, both now and in forecasted climates.

The Proposed Development will consider the importance of replaceability in layers where this approach is necessary. The intention is for the new facade to be lightweight, independent of the structure, and mechanically fixed, for ease of replacement. Options for modular façade design are to be investigated further during the detailed design stage.

5.4 Designing for adaptability or flexibility
The Proposed Development aspires to deliver a design for long-term adaptability. This is to be achieved through the following:

- All services infrastructure through the building is to be designed within designated risers, and all risers designed to be accessible.
- A high quality, robust materials palette is proposed.
- All windows provided with the facility to open (such that occupants can benefit from natural ventilation should noise and air quality improve in the future).
- The MEP systems in the office will be designed to provide flexibility for future furniture or layout changes with minimal alterations.
- The newly refurbished and newly constructed elements will be completed to a Cat A finish, to allow for maximum flexibility for future tenants and avoid unnecessary waste from strip-outs during the Cat B fit-out phase.
- The design provides glazed elements on all orientations, therefore allowing easy rearrangement of internal layouts as daylight provision and views out will be adequate on all sides of the floorplate.

As part of the design for flexibility, the Proposed Development makes considerations for the necessary accommodations for change of use:

- The building could potentially accommodate a small extension vertically. The Proposed Development fills most of the site and cannot easily be extended on the ground plane, however the atria could be infilled to provide more usable floorspace.
- Risers are located around the core to facilitate change of use; however it is constrained by the central plant provision as this services the wider development. Therefore the central plant may need enhancing should the building's use differ substantially from the use type now. For example, potential conversion to higher education or life sciences (dry labs) would be possible with intervention, and wet labs with more significant intervention.

5.5 Designing for disassembly
Design for disassembly will ensure the longevity of the building is protected. The design includes but is not limited to the following measures to reduce waste arisings at replacement or end of life:

- Allowance for all major plant to be dismantled and removed.
- MEP design to be modular, where possible.
- The new façade design will consider disassembly and utilise mechanical connections.
- A façade access strategy will also be produced at a later design stage.
- Pre-fabrication and modular design are options which will be investigated further. At this early stage in the design, current considerations include the use of prefabricated/modular toilet pods, showers, risers, and façades.

5.6 Designing for recyclability, reusability, or recoverability
As part of the design for both disassembly and adaptability, the Proposed Development inherently considers the recoverability and recyclability of the building layers through modular design, sustainable procurement, and flexible design. The architect has analysed a typical floor and identified reuse opportunities for the strip out works. These include, but are not limited to, exploring the deconstruction of ceiling tiles, vinyl flooring and carpet tiles for donation to charities, the deconstruction of curtain walling for recycling purposes, and exploring re-manufacture opportunities for light fittings.

A Whole Lifecycle Carbon Assessment will also be completed and will be used to inform the design and selection of materials. A sustainable procurement plan will be developed which outlines the benchmarks expected to be met by construction partners and the entire supply chain regarding sustainable development, including circular economy principles relating to recycled content. An end-of-life strategy will be produced prior to construction to describe how building materials, components and products can be disassembled and re-used at the end of their useful life. This will include how the information will be communicated to future building users.

6. Whole Life Carbon

Carbon emissions from operational use of buildings has been the subject of regulation for some time and has historically been the primary focus of reducing the impact of built environment projects. More recently, this focus has been expanded to also include carbon emission associated with the building materials themselves.

Some studies have historically suggested that 40-50% of the total carbon emissions for buildings over their lifetime are due to embodied carbon. With increasing energy efficiency within buildings and an increasingly decarbonised electricity supply, building operational carbon emission are being acknowledged to be rapidly reducing. As this occurs, the significance of embodied carbon emissions increases and the potential for reduction of overall carbon emissions through structural design choice and material selection becomes greater.

An embodied carbon assessment will be carried out for the proposed development will be included within the Whole Life Carbon Assessment (WLCA) together with the operational carbon for the building.

The Proposed Development will have an intrinsically low embodied carbon through the re-use of the existing structure, extending the building's lifespan for the next generation of workers within Camden.

The existing building is to be extended vertically with a new roof extension. The core is to be reconfigured, while keeping and reusing a proportion of the structure. The building use will remain predominately as office space and will provide additional lettable space.

Where new materials are to be specified and used, minimising the embodied carbon of these materials is key target for the project. This will be achieved through maximising the % of recycled content within material specifications and selection of low carbon alternatives wherever possible.

6.1 Drivers

The ESG targets are influenced both by tenants' expectations for sustainable workplaces, as well as regulatory and policy requirements.

A detailed policy review is provided in section 2 above, however key policies that have been used to inform the WLCA approach for the Proposed Development is summarised below:

Regional drivers; Greater London Authority (GLA) Policy

Local drivers; London Borough of Camden
The London Borough of Camden has adopted the London Plan energy targets and energy hierarchy approach.

6.2 Upfront Embodied Carbon Benchmarks

Given the development is a refurbishment appropriate targets have been adopted for different building elements, taking into account the extent of refurbishment proposed. These have been set out in the table below, with reference made to industry benchmarks. As the design detail develops, these aspirational targets will be used as guidance to inform the design in the context of embodied carbon.

Table 7: Summary of embodied carbon targets and estimates at RIBA Stage 2.

Building elements	Included in works?	Design team comment	GLA Benchmark. Upfront embodied carbon (S&C/ CAT A) (% split)	GLA Benchmark. Upfront embodied carbon targets, new build, CAT A ($kgCO_2e/m^2$)	Project Specific Benchmarks for 2 Waterhouse Square Upfront embodied carbon targets ($kgCO_2e/m^2$)
Substructure	Yes – low	Majority of substructure and superstructure is retained.	19%	181	-
Superstructure	Yes – medium	New façade proposed	53%	342 (Superstructure) 162 (Façade)	123 (Superstructure) 36 (Façade)
Finishes	Yes	Estimate here accounts for Cat A works, it is expected that the total embodied carbon will increase as a result of Cat B works.	10%	95	60
Fittings, furnishings, and equipment (FF&E)	Yes	Estimate here accounts for Cat A works, it is expected that the total embodied carbon will increase as a result of Cat B works.	2%	19	12
Building services/ MEP	Yes	All building services are being replaced.	14%	133	84
External Works	Yes - low	Limited external works within project boundary.	2%	19	-
Total	-	*All RIBA Stage 2 estimates will need to be reviewed and refined throughout future project stages.*	*100%*	*950 $kgCO_2e/m^2$*	*315 $kgCO_2e/m^2$*

7. Façade Replacement Study

Justification of the proposed façade replacement is important to the Planning Authority given the upfront embodied carbon associated with existing façade demolition and replacing with new. This chapter sets out the work undertaken to review façade optioneering and provides a summary comparison of potential façade options and the impact this as on sustainability metrics.

7.1 Need for refurbishment or replacement

A CRREM analysis has been undertaken on the existing building performance and shows that the building is stranded and significant retrofit is required to bring the proposed development in line with CRREM net zero carbon pathways. The existing fabric performance is poor, and configuration of the existing façade limits the improvements that are possible. A façade condition study has been undertaken by a façade specialist to determine opportunities to upgrade the thermal performance of the existing façade.

Carbon Risk Real Estate Monitor

The building has been assessed against the Carbon Risk Real Estate Monitor (CRREM) and based on current operation the building is 'stranded', meaning that the building operational energy and associated carbon emissions exceed the Paris 1.5°C science-based targets. In order for the asset to align with the CRREM energy and carbon reduction pathways aimed at achieving Net Zero Carbon by 2050, significant retrofit action is required. In line with the energy hierarchy emphasis is placed on reducing energy demand in the first instance, this relies on optimising building fabric performance to minimise unwanted heat gains and losses as well as minimising uncontrolled infiltration.

Existing façade condition survey

A façade condition study has been undertaken by a façade specialist Colorminium to determine opportunities to upgrade the thermal performance of the existing façade. The primary objective of the review was to identify the options available for refurbishment of the facade and assess the feasibility of each.

The study summarised that options to improve the performance of the existing facade through refurbishment are limited and performance gains possible are capped by the existing design. A light touch refurbishment would only result in a minor improvement in the façade performance which is unlikely to be cost effective in view of the minor difference it will make to operational carbon. Furthermore, even with a light touch approach, the façade would need further upgrading within the next 15 years. Despite extending the life of the existing facade and delay a full replacement, this would not address the need to improve the performance of the facade, and inaccessible elements of the facade will continue to deteriorate reducing this performance further. This will have a significant impact on building efficiency and energy usage resulting in poor operational energy, issues with thermal comfort and air infiltration.

To materially upgrade the performance of the façade, substantial further refurbishment would also be required. These works are very intensive and would involve fully demounting the large unitised facade to provide the access required and transporting these to an off-site location. New framing members would also need to be extruded to accommodate the upgraded glass and potential panel strengthening due for the additional loads. Stone damage and replacements would also need to be considered. The report concluded that this solution would likely result in similar carbon emissions to a carbon efficient new facade which would have significantly better operational performance.

Building Fabric Performance

The existing glazing units are double glazing with a 6/12/6mm build-up. These typically have a useful service life of around 25 years, the existing units are expected to be over 30 years old and are therefore initial installation failures could occur imminently.

From an intrusive survey it's been determined that the existing insulation comprises of 80mm of mineral wool which falls far short of current standards. It was concluded that upgrading the insulation level may cause condensation issues and is therefore not proposed.

A review of record information shows that there are areas of existing thermal bridging which would not be possible to rectify without substantial dismantling of the existing system.

A comparison of façade performance is set out below in the table below. Through façade replacement a 69% improvement in seen in the area weighting U-value. This has a direct impact on both heat loss and gain, significantly reducing the space heating demand.

Table 8 – Façade Thermal Performance – Comparison of Existing and Proposed New

	Existing Performance	New façade Performance	Improvement
Glazing	U-value: 1.5-1.9 W/(m²K) (centre pane) Spacer: 12mm Window U-value including frame is estimated to be in line with building regulations Part L 1995 at 3.3 W/(m²K)	U-value: ≤1.0 W/(m²K) (centre pane) Spacer: 16mm Window U-value: 1.2 W/(m²K) (glazing & frames)	~41% improvement in glazing U-value ~64% improvement in overall window U-value
Solid Walls	U-value: 0.55-0.65 W/(m²K) (centre pane)	U-value: 0.13 W/(m²K) (overall)	~78% improvement in U-value
Roof	Roof U-value unknown however Part L 1995 figure was 0.25 W/(m²K) Rooflight U-value is unknown Part L 1995 figure was 3.3 W/(m²K) Area weighted average including rooflights: 0.78 W/(m²K)	U-value: 0.15 W/(m²K) (overall) Rooflight U-value: 2.1 W/(m²K) Area weighted average including rooflights: 0.3 W/(m²K)	~62% improvement in U-value
Façade Average (Area Weighted)	U-value: 1.53	U-value: 0.47	~69% improvement in overall façade U-value
Solar Control Glazing	G-value: unknown, assumed in region of 0.7 for time of installation	G-value: 0.4	~42% lower g-value
Glazing Percentages	34% Glazing is concentrated around atrium areas.	32% Glazing is more evenly distributed providing occupants with better access to daylight and views out.	Façade glazing ratios have reduced marginally. Better distribution and positioning of windows.
Window Reveal Depths / External shading	~200mm Shading provided to upper floor fully glazed facade	~350mm average Shading provided in the form of fins to 6th floor. Upper floors benefit from setback windows in the slope of the walls. Increased reveal depths on lower floors	
Rooflights	615m² of rooflight area.	265m² of rooflight area.	57% reduction in rooflight area

Occupant Experience
The existing façade glazing is centred around central core / spine areas which limits the access to natural daylight and views out from the office floor plates. Provision of a new façade maintains a similar glazing ratio but with rationalised window location to address this issue.

The existing façade is sealed and does not offer opportunity for opening windows. Openable windows have two-fold benefit in that it allows occupants control over their location environment and better access to nature whilst further energy savings could be realised through potential adoption of a mixed mode ventilation strategy.

Thermal comfort of occupants is heavily impacted by draughts and sitting near cold surfaces. Provision of a new façade will improve air tightness to prevent draughts and a much better U-value will prevent cold surfaces and eliminate thermal bridging cold spots.

Circular Economy
The design team have embraced the principles of circular economy when considering façade design in maximising the reuse of materials, incorporating disassembly strategies, and exploring pre-fabrication and modular design options. This is essential for creating a sustainable and resilient façade solution that minimises waste and optimises resource usage.

Reuse Opportunities
The design team has worked closely with the Local Works Studio to identify opportunities for the reuse of materials removed. The existing facade consists of approximately 2700 m^2 of granite, comprising of two varieties: red imperial and rosa limbara. To maximise resource conservation and minimise waste, the proposed design aims to incorporate the following reuse strategies:

- Reclaimed slabs of rosa limbara Granite: Reclaimed slabs could be utilised as a 'plinth' at the ground floor, maintaining the building's original aesthetic while reducing waste and preserving valuable resources.
- Recycled Red Imperial Granite Aggregate: Recycled red imperial granite aggregate could be incorporated into precast panels, promoting circularity by reducing the demand for new raw materials and minimising environmental impact.

Disassembly and Mechanical Connections
To enhance the future adaptability of the facade, the new façade design prioritises disassembly and mechanical connections. This approach enables the separation and repurposing of components at the end of the building's lifecycle, reducing waste generation and supporting circularity. A comprehensive facade access strategy will also be developed which will facilitate regular maintenance and minimise the need for extensive interventions in the future, thereby extending the lifespan of the building envelope to ~30 years.

Pre-fabrication and Modular Design
Embracing pre-fabrication and modular design offers numerous sustainability advantages, including construction efficiency and adaptability. By implementing these features into the new facade, the project aims to achieve the following benefits:

- Waste Reduction: Pre-fabrication minimises waste generation during construction through optimised material usage and controlled manufacturing processes.
- Easy Disassembly and Reconfiguration: The modular nature of the design enables easier disassembly and reconfiguration in the future, promoting flexibility and reducing waste during renovations.

The proposal to replace the façade also presents an opportunity to collaborate with the Local Works Studio the project can repurpose the existing granite, minimise waste and reduce the need for new material extraction. The incorporation of reclaimed slabs and recycled aggregate aligns with circular economy principles, while the use of mechanical connections ensures the future disassembly and repurposing of the facade. Additionally, a facade access strategy and exploration of pre-fabrication/modular design strategies will contribute to the longevity and adaptability of the building.

7.2 Façade Study
Façade upgrade options have been reviewed holistically considering the impact on long term operational energy vs the upfront embodied carbon associated with façade replacement.

The study compares four scenarios set out as follows;

	1 – Essential Intervention	2 – Existing Refurbished	3 – Extension and Atrium Infill with Façade Retention	4 – Planning Scheme
Description	Existing building with minor internal refurbishment only	Existing building with extensive internal refurbishment including new finishes and services	Building with upper floors extension and atrium infill with full internal refurbishment including new finishes and services	Building with upper floors extension and atrium infill with full internal refurbishment including new finishes, services as and façade.
Internal Finishes	New	New	New	New
FFE	New	New	New	New
MEP	Retained as is	New	New	New
Extension and Core Reconfiguration	Not included	Not included	Included	Included
Extension/Infill Facade	Not included	Not included	New	New
Existing Listed Facade	Retained as is	Retained as is	Secondary Glazing Upgrade	Secondary Glazing Upgrade
Existing Façade	Retained as is	Retained as is	Retained as is	Replaced with New

Methodology

Upfront Embodied Carbon
Façade embodied carbon has been assessed based on material quantities and types within accredited OneClick tool. Embodied carbon associated with structural alterations have been determined by the Structural Engineers. All other modules have been based upon benchmarking, based on GLA targets for 'new build' for: internal finishes, FFE, and services as these are assessed as either retained or wholly renewed.

Energy Use Intensity
Existing building energy consumption is based on utility metered data for scenario 1, where new services are assessed but no changes made to the configuration or façade, the utility meter data is adjusted for new services efficiencies. For the fully new proposed scheme the client has set aspirational EUI targets for the development to achieve, this has been used for scenario 4. Scenario 3 which includes part new build areas, and part retained with new services is based on an area weighted average between scenarios 2 and 4. It should be noted that the targets are aspirational and will need to be verified through detailed modelled as the design progresses as part of the NABERS Design for Performance methodology.

Whole Life Carbon
The whole life carbon is assessed for each option based on the embodied carbon (modules A1-A5, B1-B5 and C1-C4) as well as energy use intensity (B6) over a 60 year periods. Modules B and C are based on benchmark figures. Retrofit considered over the 60 year period is option specific based on delayed façade replacement requirements for options 1 to 3.

Façade Study Outcome

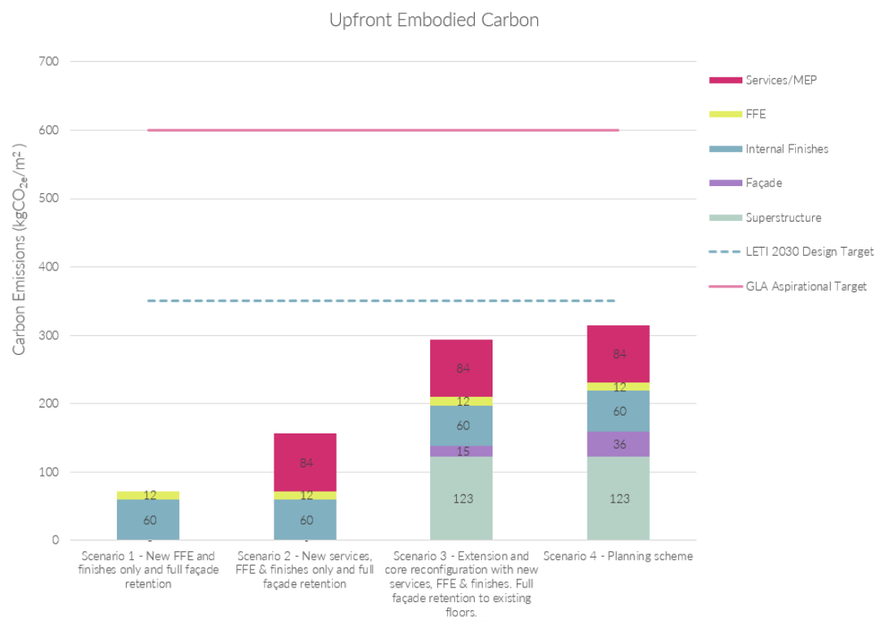
The options were compared for a number of sustainability metrics and targets as set out in the comparison table on the next page. Key metrics include upfront embodied carbon and whole life carbon taking account of operation (energy) and maintenance over a 60 year period. The outcome of the study demonstrates that over the lifetime of the building, scenario 4 results in the lowest whole life carbon solution. This is due to the condition of the existing façade requiring replacement within the next 15 years which impacts on modules B1-B5 and C.

A further key metric is for the development to avoid stranding against the CRREM global carbon and energy reduction pathways to limit global warming to 1.5°C. Whilst scenario 2 performs well for whole life carbon, the building would become stranded in 2030 under this scenario and so would require further retrofit at that time to realign with the CRREM reduction pathways, as such this scenario presents a short-term solution and is not deemed feasible. The proposed option to replace the façade enables optimised fabric performance for limiting unwanted heat loss and gain, as well as enables openable windows. Opening windows could be used as part of mixed mode ventilation strategy allowing the building to benefit from free cooling and reduced reliance on mechanical ventilation. This will contribute towards lowering the EUI and meeting the aspirational target EUI of 93 kWh/m^2/year. The CRREM EUI pathway for offices in the UK requires an EUI of 85 kWh/m^2/year or below from the year 2036 onwards. Therefore, at year 2036, further improvements would be required, however since the deficit is small, it is anticipated that this would be met through operational and behavioural controls to limit energy consumption, as well as further improvements expected in the availability of lower energy consuming small power appliances such as laptops and monitors, such that further façade retrofit would be avoided. This will be further aided by the new façade design which has prioritised disassembly and mechanical connections, enabling the separation and repurposing of components at the end of their lifecycle, avoiding the need for future full façade replacement.

Given the limitations on carrying out remedial works and upgrading insulation levels of the existing façade together with the wide range of benefits listed below, it is proposed to replace the existing façade with new. Circular economy principles have been adopted to minimise waste and maximise re-use of the existing façade materials removed.

Provision of a new façade enables:

- Optimised operational energy from day 1
- Provides opportunity for a mixed mode ventilation strategy
- Improved thermal comfort for occupants
- Improved daylighting distribution
- Avoids asset stranding against the CRREM Energy Reduction Pathway for UK Offices until 2036
- Achieves 69% Improvement in façade U-value
- 18% reduction in whole life carbon over a scenario 1 retention scheme
- Exceeds GLA 35% reduction target for regulated carbon with 49.6% reduction achieved



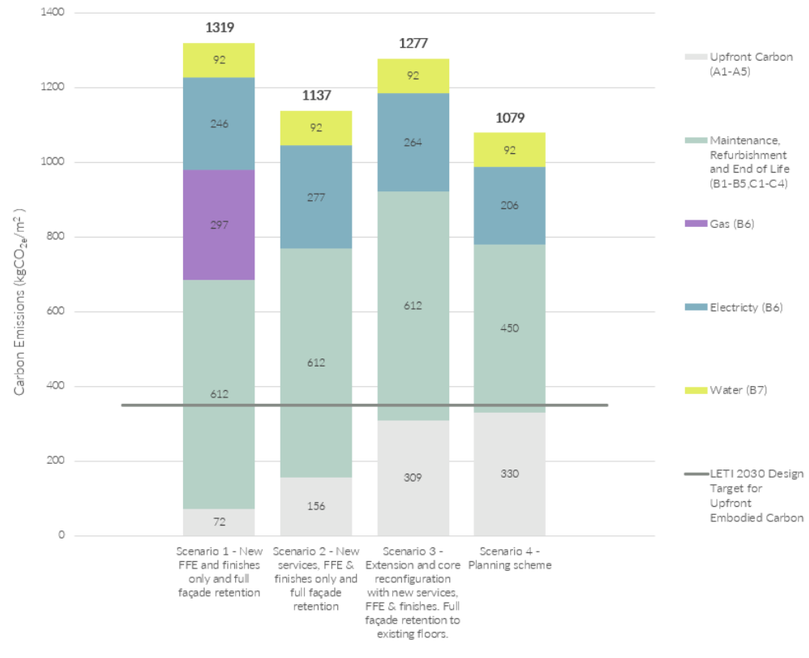
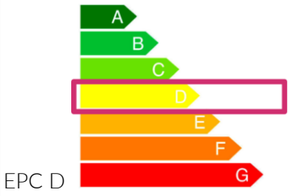
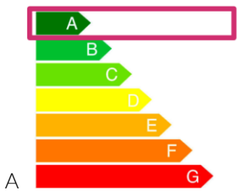


Figure 9 –Upfront Embodied Carbon Comparison (above) and Figure 10 – Whole Life Carbon Comparison (below)

Table 9 - Façade Study Comparison Table

Metric / Target	Unit	1 – Essential Intervention	2 – Existing Refurbished	3 – Extension and Atrium Infill with Façade Retention	4 – Planning Scheme
Gross Internal Area	m^2_{GIA}	29,226	29,226	29,853	29,853
Increase in GIA	m^2_{GIA}	No area gain	No area gain	627	627
Upfront Embodied Carbon Modules A1-A5	$kgCO_2e/m^2_{GIA}$	72	156	309	330
Industry Benchmark Met – Upfront Embodied Carbon	$kgCO_2e/m^2_{GIA}$	LETI "A++" Rating (<100)	LETI "A+" Rating (<225)	LETI "A" Rating (<350) In line with LETI 2030 Design Target	LETI "A" Rating (<350) In line with LETI 2030 Design Target
Embodied Carbon Modules A1-A5, B1-B5, C1-C4	$kgCO_2e/m^2_{GIA}$	684	768	920	780
Façade Fabric Performance	$W/(m^2K)$	1.53	1.53	1.23	0.47
Mixed Mode Ventilation		Not possible	Not possible	Not possible	Possible
Operational Carbon Module B6	$kgCO_2e/m^2_{GIA}$	543	277	264	206
Energy Use Intensity (aspirational targets)	kWh/m^2_{GIA}	Electric: 103 Gas: 110	Electric: 125	Electric: 119	Electric: 93
Industry Benchmark – Energy Use Intensity	kWh/m^2_{GIA}	Fails to meet UKGBC Targets for Offices	Meets UKGBC 2020-2025 Target for Offices	Meets UKGBC 2020-2025 Target for Offices	Meets UKGBC 2025-2030 Target for Offices
Total Whole Life Carbon (60 years)	$kgCO_2e/m^2_{GIA}$	1319	1137	1277	1079
EPC Benchmark		 EPC D	 EPC A-B	 EPC A-B	 EPC A
BREEAM Benchmark		N/A 			
Net Zero Carbon CRREM Stranding * To avoid stranding until 2050, the EUI would need to be reduced to 85 kWh/m^2_{GIA}		EUI Stranded Asset 	 EUI Stranded in 2030 Further 32% EUI reduction required to avoid stranding until 2050.	 EUI Stranded in 2031 Further 28.6% EUI reduction required to avoid stranding until 2050.	 EUI Stranded in 2036 Only 8.6% further EUI reduction required to avoid stranding until 2050.
Regulated Carbon Savings		No Savings	<35% Savings Expected	<35% Savings Expected	>45% Savings Assessed
Fuel Source		Gas / Electricity	Electricity	Electricity, PV Inclusion	Electricity, PV Inclusion

Appendix A: BREEAM Summary

This section provides an indicative BREEAM Bespoke pre-assessment for the proposed development. The development falls under the BREEAM Refurbishment and Fit out Commercial Buildings and a Parts 2, 3 and 4 assessment has been conducted. The development is targeting a BREEAM 'Excellent' rating with the aspiration for an 'Outstanding' rating. A route to 'Outstanding' will be developed in later design stages and adopted where feasible.

The current anticipated baseline score is 80.21%, equivalent to a BREEAM 'Excellent' rating, with a difference between the minimum required score for a BREEAM 'Excellent' rating of 70% of 10.21%.

Figure 11 and Figure 5 show the targeted score and the distribution across BREEAM issue categories.

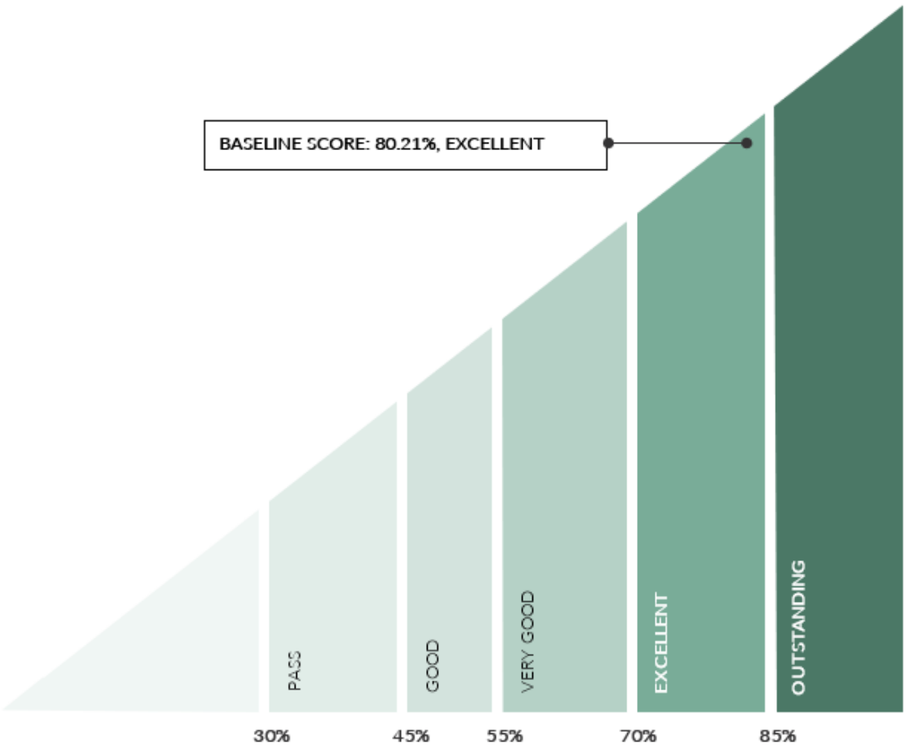


Figure 11 Anticipated BREEAM score

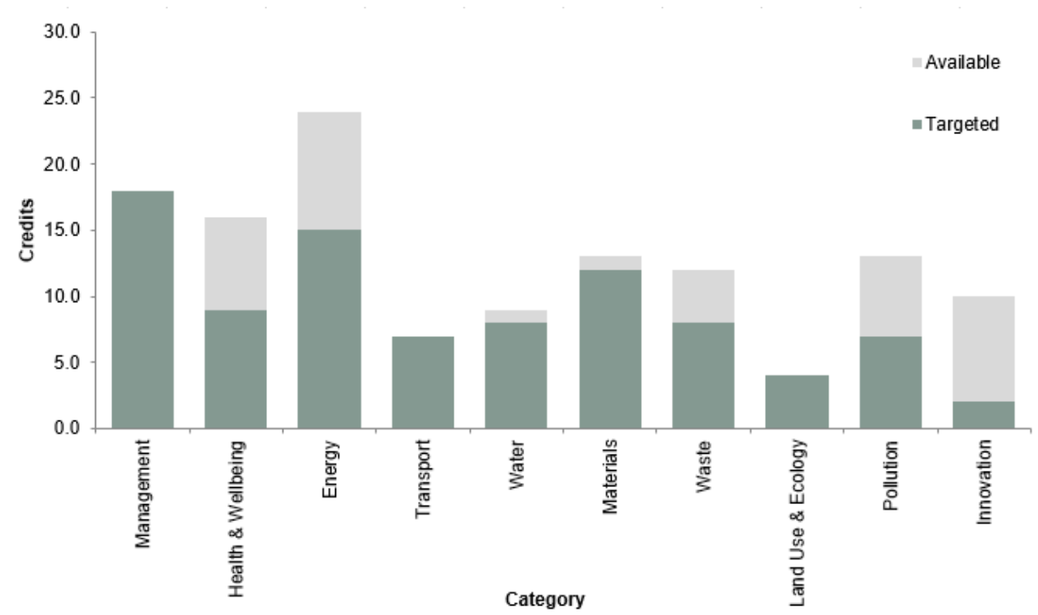


Figure 12 Score distribution across BREEAM issue categories

Summary Score Sheet

The summary table below highlights the list of targeted credits for the current BREEAM Bespoke 2014 pre-assessment. Mandatory credits to achieve a 'Very Good' rating and above are highlighted by (M_v). Additional mandatory credits for an 'Excellent' or 'Outstanding' rating are highlighted by (M_e) and (M_o) respectively.

It should be noted that the design team have been consulted on all of the BREEAM credits discussed in this report, thus providing a latest position for the proposed works.

Table 10: BREEAM Target Summary.

Category	Issue	Credits	
		Available	Targeted
Management	Man 01: Project Brief and design	4	4
	Man 02: Lifecycle Cost and Service Life Planning	4	4
	Man 03: Responsible Construction Practices (M_e) (M_o)	6	6
	Man 04: Commissioning and Handover (M_e) (M_o)	4	4
Health & Wellbeing	Hea 01: Visual Comfort	6	1
	Hea 02: Indoor Air Quality	3	2
	Hea 04: Thermal Comfort	3	3
	Hea 05: Acoustic Performance	2	2
	Hea 06: Safety and Security	1	1
Energy	Ene 01: Reduction of Energy Use & CO_2 Emissions (M_e) (M_o)	15	8
	Ene 02: Energy Monitoring (M_v) (M_e) (M_o)	2	2
	Ene 03: External Lighting	1	1
	Ene 04: Low Carbon Design	3	1
	Ene 06: Energy Efficient Transportation Systems	3	3
Transport	Tra 01: Sustainable Transport Solutions	3	3
	Tra 02: Proximity to Amenities	1	1
	Tra 03: Cyclist Facilities	2	2
	Tra 05: Travel Plan	1	1
Water	Wat 01: Water consumption (M_v) (M_e) (M_o)	5	4
	Wat 02: Water Monitoring (M_v) (M_e) (M_o)	1	1
	Wat 03: Water Leak Detection and Prevention	2	2
	Wat 04: Water Efficient Equipment	1	1
Materials	Mat 01: Life Cycle Impacts	6	6
	Mat 03: Responsible Sourcing of Materials (M_v) (M_e) (M_o)	4	3
	Mat 04: Insulation	1	1
	Mat 05: Designing for Durability and Resilience	1	1
	Mat 06: Material Efficiency	1	1
Waste	Wst 01: Project Waste Management (M_o)	7	4
	Wst 02: Recycled Aggregate	1	1
	Wst 03: Operational Waste (M_e) (M_o)	1	1
	Wst 04: Speculative finishes	1	-
	Wst 05: Adaptation to Climate Change	1	1
	Wst 06: Functional Adaptability	1	1
Land Use and Ecology	Le 02: Protection of ecological value	1	1
	Le 04: Enhancing site ecology	1	1
	Le 05: Long Term Impact on Biodiversity	2	2
Pollution	Pol 01: Impact of Refrigerants	3	1
	Pol 02: NOx Emissions	3	-
	Pol 03: Surface Water Run-off	5	4
	Pol 04: Reduction of night-time light pollution	1	1
	Pol 05: Noise Attenuation	1	1
Innovation	Man 03: Responsible construction practices	1	1
	Mat 01: Life Cycle Impacts	1	1
	Wst 05: Adaptation to Climate Change	1	-
	Targeted weighted score / rating:	80.21% 'Excellent'	

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