



PADDINGTON GREEN
POLICE STATION

JANUARY 2023

Sustainability Statement

Sustainability Statement – January 2023 – GLA0711

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Berkeley
Designed for life

Paddington Green Police Station

Sustainability Stage 2 Report

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Glossary

Term	Definition
BMS	Building Management System
BUG	Building User Guide
CHP	Combined Heat and Power
CoCP	Code of Construction Practice
CP	City Plan 2019-2040
CWCP	City of Westminster City Plan
EPDs	Environmental Product Declarations
ESPD	Environmental Supplementary Planning Document
GFA	Gross Floor Area
GLA	Greater London Authority
GWP	Global Warming Potential
HVAC	Heating Ventilation and Air Conditioning
IAQ	Indoor Air Quality
KPI	Key Performance Indicators
LETI	London Energy Transformation Guide
LPG	London Plan Guidance
LZC	Low and Zero Carbon
ODP	Ozone Depletion Potential
PTAL	Public Transport Accessibility Levels
RIBA	Royal Institute of British Architects
SBTi	Science Based Target Initiative
SNA	Security Needs Assessment
SuDs	Sustainable drainage designs
VOCs	Volatile Organic Compounds
WCC	Westminster City Council
WEG	West End Gate

1 Introduction

1.1 Aim of this strategy

This report has been developed by Buro Happold at the end of RIBA Stage 2, for Paddington Green Police Station (the Site). It outlines the sustainability targets for the Site and reports on the proposed aspirations for the design and performance in relation to each sustainability topic.

1.2 About the site

Paddington Green Police Station was a Metropolitan Police Service Station located in Central London and closed in 2018. The Site is a residential-led mixed-use development by Berkeley, adjacent to the West End Gate (WEG) scheme, located in Paddington Green, London W2 (Figure 1-1).

The Proposed Development includes the demolition and redevelopment of the Site to provide three residential buildings ranging between 17, 24 and 39 storeys (Figure 1-2), including commercial space at ground level and providing 556 residential units (including 219 affordable housing homes), with associated landscaping, basement car and cycle parking provision.

The Vision

The Site introduces high quality residential dwellings including private development and affordable housing. Commercial spaces at ground floor (11,613 sq. ft) aim to create circa 60 new job opportunities. The redevelopment of Paddington Green Police Station will complement and enhance the local environment. This proposal will provide sustainable development for new residents, including the provision of enhanced public realm with active frontages across Blocks I, J and K surroundings.

In the context of the climate crisis and given the impact that new construction developments can have on carbon emissions, the importance of reducing embodied carbon with the supply chain has never been higher. The improvement of fabric efficiency is just one element of ensuring that the development has as low climate and ecological footprint as possible. Berkeley's commitment involves incorporating low carbon technologies such as ASHPs and PVs to align with UK 2050 net zero carbon commitments.

1.3 Sustainability

Sustainability is at the centre of Berkeley Homes approach. Their goal is "to play an active role in tackling the global climate emergency by creating low carbon, resilient homes", creating efficient design and resilient places, alongside transformational changes to construction processes and wider business operations.

The following sustainability report sets out the strategy for Paddington Green Police Station that meets Berkeley's levels of ambition and looks to push beyond best practice into pioneering levels of sustainable performance. Berkeley's suite of corporate documentation, sustainability targets, and commitments have been mapped out in the context of planning requirements, and industry best practice and pioneering achievements.

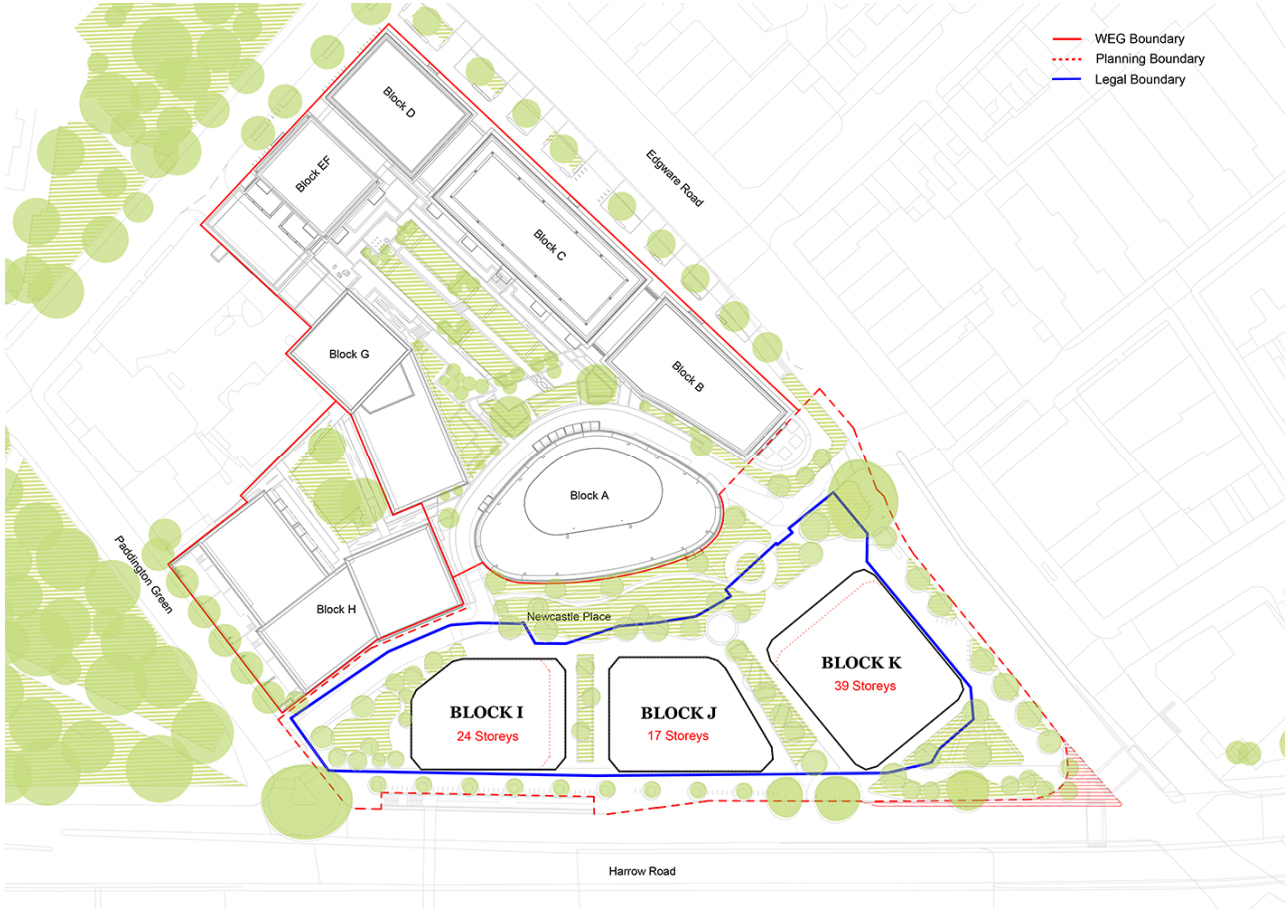


Figure 1-1 Proposed Development location plan highlighted in blue



Figure 1-2 PGPS view

2 Sustainability Strategy

The sustainability strategy for the site has been developed around eight key cross-cutting topics to set ambitious targets for this demolition and redevelopment. These eight topics are outlined below, each setting out what this topic means. There is significant overlap between the topics, and these are explored throughout the strategy.



Topic 1: Materials

Reducing the emissions associated with the construction of the building. This includes targets to encourage the proactive approach to minimising negative environmental impact including the reuse/recycling of high quality, durable materials.



Topic 2: Operational Energy & Carbon emissions

Increasing energy efficiency, decarbonisation of energy, heat and transport and balancing any remaining emissions through carbon offsetting. This section looks to set targets that will drive own energy demand and carbon emissions in line with [UK GBC Net Zero Carbon Buildings Framework Definition](#).



Topic 3: Climate Change Adaptation

Ensuring the development is prepared for and resilient to the shocks and stresses that may be anticipated with forecast changes in the future climate. The design will reduce overheating, flooding and water availability risk for the proposed development.



Topic 4: Ecology & Biodiversity

Increasing the abundance and diversity of plant and animal species appropriate to local ecology. Having a positive impact on the biodiversity gain of the site as well as how the site users will positively engage with the site through nature.



Topic 5: Water efficiency

Average household water consumption of <105 litres/person/day. Water saving opportunities have been incorporated to achieve a BREEAM target of 'excellent' in Wat 01, including the use of water saving fixtures and fittings, optimised water management through leak detection, and reduced water flow rates.



Topic 6: Sustainable Transportation & Access

Low mobility strategy to minimise the use of private fossil fuel transport from the site visitors and occupants. This is to be achieved by encouraging and increasing the use of public transport, and sustainable forms of private transport such as cycling and walking.



Topic 7: Pollution Management

Reducing the impact demolition and construction works on the pollution of the wider community from air pollutants, light pollution, noise, vibration and waste. This topic also aims to recommend mitigation measures and encourage environmental gains.



Topic 8: Waste Management

Waste management strategies aim to reduce resource use, increase the proportion of recycled and reused materials, and consider the end-of-life products to minimise risk of pollution and contamination. The ultimate goal is to reduce the amount of waste produced on site and from operation.

2.2 Structure of approach to strategy

The site vision has been developed by Berkeley Homes in conjunction with the design team, from which these eight topics have been outlined. These topics cover a wide range of sustainability areas that are relevant to the redevelopment context and location. The following documents have been considered and acknowledged for driving the holistic Sustainability strategy for the scheme:

- National Planning Policy Framework and Guidance
- The London Plan
- City of Westminster City Plan 2019-2040
- Environmental Supplementary Planning Document (ESPD)
- Berkeley Group and The Sustainable Development Goals
- Berkeley Group Climate Action Plan
- Berkeley Group Sustainability Standard – Contractors 2021
- Berkeley Group Sustainability Report 2021
- The Berkeley Group Plc Sustainability Policy
- Berkeley Group Sustainability Strategy
- Berkeley Group Climate Change Policy
- Berkeley Group Our Vision 2030

Section 3 within this report describes the sustainability drivers and policy context from a national, local and regional perspective, followed by thorough sections, per topic, on how the Proposed Development responded to the requirements for environmental performance set out in the London Plan, Westminster City Plan and relevant corporate policies. When design stage progresses, discussions with the design team will continue to be developed to ensure that the opportunities and constraints for the Site are clearly identified and aspiration strategies remain on track. The aim is to help this Proposed Development to meet and exceed the minimum requirements.

3 Planning Policy Context

3.1 Scope of the Policy Review

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

3.2 National Policy

National Planning Policy Framework (Updated July 2021)

The National Planning Policy Framework and relevant planning practice guidance sets out the Government’s planning policies for England. **The presumption in favour of sustainable development** is at the heart of the framework, cascading through to local plans and the approval process for planning applications.

Key issues addressed are summarised below:

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

25 Year Environmental Plan (2018)

This plan sets out the Government’s ambition to ‘...*champion sustainable development, lead in environmental science, innovate to achieve clean growth and increase resource efficiency to provide benefits to both our environment and economy*’.

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

Policies and actions are structured around six key areas:

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

Climate Change Act 2008

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

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

3.3 Regional Policy

3.3.1 London Plan

The Mayor of London formally adopted the London Plan on March 4th 2021. This new London Plan now forms part of the development plan, against which development proposals in London are assessed against.

Policies surrounding energy and carbon are summarised as follows.

Policy SI2 Minimising greenhouse gas emissions

Major development should be net zero carbon. This means reducing greenhouse gas emissions in operation, and minimising both annual and peak energy demand in accordance with the following energy hierarchy:

- 1) be lean: use less energy and manage demand during construction and operation.
- 2) be clean: exploit local energy resources (such as secondary heat) and supply energy efficiently and cleanly.
- 3) be green: maximise opportunities for renewable energy by producing, storing and using renewable energy on-site.
- 4) be seen: monitor, verify and report on energy performance.

A minimum on-site reduction of at least 35% from Building Regulations is required for major developments. Non-residential development should also achieve 15% and residential elements should achieve 10% through energy efficiency (“Lean”) measures.

The GLA requires the zero-carbon target to be achieved with a minimum of 35% savings on-site, beyond the notional Part L baseline. The remaining carbon emissions (typically 65%) are offset through a cash in lieu payment in this instance. The money is used to fund carbon reduction projects in the Southwark Borough boundary. This payment has to account for 30 years of carbon emissions at a fixed rate of cost and carbon intensity.

Policy SI3 Energy infrastructure

Major development proposals within Heat Network Priority Areas should have a communal low temperature heating system

- 1) the heat source for the communal heating system should be selected in accordance with the following heating hierarchy:
 - a. connect to local existing or planned heat networks
 - b. use available zero-emission or local secondary heat sources (in conjunction with heat pump, if required,
 - c. use low emission combined heat and power (CHP) (only where there is a case for CHP to enable the delivery of an area-wide heat network)
 - d. use ultra-low NO_x gas boilers
- 2) CHP and ultra-low NO_x gas boiler communal or district heating systems should be designed to ensure that they meet the requirements of policy SI1 (A)
- 3) where a heat network is planned but not yet in existence the development should be designed for connection at a later date.

Policy SI4 Managing heat risk

Development proposals should minimise adverse impacts on the urban heat island through design, layout, orientation, materials and the incorporation of green infrastructure. Major development proposals should demonstrate through an energy strategy how they will reduce the potential for internal overheating and reliance on air conditioning systems in accordance with the cooling hierarchy.

Policy GG2 Making the best use of land

To create successful sustainable mixed-use places that make the best use of land, those involved in planning and development must enable the development of brownfield land; prioritise sites which are well-connected by existing or planned public transport; aim to secure net biodiversity gains where possible; and plan for good local walking, cycling and public transport connections.

Policy GG3 Creating a healthy city

Developments should seek to improve London’s air quality; reduce public exposure to poor air quality; improve access to quality greenspaces; provide new green infrastructure; provide new spaces to play; and ensure that buildings are well-insulated and ventilated.

Policy GG6 Increasing efficiency and resilience

To help London become a more efficient and resilient city, those involved in planning and development must support the move to a low carbon circular economy and ensure that buildings and infrastructure are designed to adapt to a changing climate.

Policy G5 Urban greening

Major development proposals should contribute to the greening of London by including urban greening and incorporating high quality landscaping, green roofs, green walls and nature based sustainable drainage.

Policy SI1 Improving air quality

Development proposals must be at least air quality neutral and use design solutions to prevent or minimise increased exposure to existing air pollution.

Policy SI5 Water infrastructure

In order to minimise the use of mains water, water supplies and resources should be protected and conserved in a sustainable manner. Residential developments should achieve mains water consumption of less than 105 litres per person per day and non-residential development should achieve the BREEAM Excellent minimum standard according to credit Wat 01.

Policy SI7 Reducing waste and supporting the circular economy

Resource conservation, waste reduction, increases in material re-use and recycling, and reductions in waste going for disposal will be achieved by the Mayor, waste planning authorities and industry working in collaboration. Developments should have adequate, flexible, and easily accessible storage space and collection systems that support, as a minimum, the separate collection of dry recyclables (at least card, paper, mixed plastics, metals, glass) and food. Referable applications should promote circular economy outcomes and aim to be net zero-waste.

Policy SI12 Flood risk management

Development proposals should ensure that flood risk is minimised and mitigated, and that residual risk is addressed. This should include, where possible, making space for water and aiming for development to be set back from the banks of watercourses.

Policy SI13 Sustainable drainage

Development proposals should aim to achieve greenfield run-off rates and ensure that surface water run-off is managed as close to its source as possible.

Policy T5 Cycling

Development should facilitate and encourage cycling and reduce car dependency and the health problems it creates.

Policy T6 Car parking

Car parking should be restricted in line with levels of existing and future public transport accessibility and connectivity. Disabled persons parking should be provided as follows: designated and enlarged bays as 5% of total parking provision for workplaces and 6% designated/4% enlarged bays for retail.

Resulting Energy and Carbon Approach

Zero carbon implies that the target for new developments is to reduce carbon dioxide emissions down to zero. This requires at least 35% reduction in regulated carbon dioxide emissions (using SAP 10) to be achieved on-site; the remaining regulated carbon dioxide emissions – to 100% – are to be offset off-site, see the following Figure as per the London Plan (2021).

The London Plan (2021) Policy SI2 shows that the GLA are concentrating on a truly fabric first approach, meaning they will expect to see how the fabric specification has been challenged as much as possible.

On-site regulated carbon dioxide emissions are to be reduced by means of a combination of measures, following the structure outlined in the GLA Energy Hierarchy:

- Be Lean: reduce energy demand by improving the building’s fabric efficiency and ventilation system, and reducing lighting consumption to meet the 15% reduction for non-residential;
- Be Clean: exploit local energy resources where feasible and supply energy efficiently; and
- Be Green: install and use power generated by renewable energy sources on-site.
- In line with the GLA Guidance (Policy SI3, 9.3.8), renewable energy sources are to be installed regardless of whether the on-site 35% reduction target has been already achieved with the previous steps of the Energy Hierarchy. An exception can be made in cases where it can be demonstrated that renewable technologies are not technically feasible or economically viable for the considered development.
- Off-site carbon offsetting can be achieved through two main strategies:
 - Investing in existing local properties in the area, improving energy efficiency or installing renewable energy in order to generate an equivalent carbon reduction
 - Cash in lieu payment to the WCC.

3.3.2 London Plan Guidance (LPG)

London Plan Guidance (LPG) provides supplementary planning guidance to the policies in the London Plan, setting out how relevant policies should be applied to planning applications and boroughs’ Local Plans, as follows:

- Urban greening factor (Draft 2021)
- Air Quality Positive (Draft 2021)
- Air Quality Neutral (Draft 2021)
- Circular Economy Statements (March 2022)
- Whole Life-Cycle Carbon Assessments (March 2022)

3.4 Local Policy

3.4.1 Westminster City Plan 2019-2040 (Adopted April 2021)

Westminster’s City Plan is the main local policy document for planning applications in the City of Westminster. The 2019-2040 City Plan was adopted in April 2021.

The City Plan focuses on creating a city for all to enjoy with more affordable homes, sustainable developments which are conducive to their aim of becoming a carbon neutral city by 2040 and flexible policies which will enable Westminster to continue to be a city of unique character but a contemporary destination for residents and visitors alike.

The City Plan policies relevant to sustainability are summarised below.

Policy 7 Spatial Strategy: Managing development for Westminster’s people

Development will be neighbourly by:

- Protecting and where appropriate enhancing amenity, by preventing unacceptable impacts in terms of daylight and sunlight, sense of enclosure, overshadowing, privacy and overlooking.
- Protecting and where appropriate enhancing local environmental quality.
- Protecting and positively responding to local character and the historic environment.
- Not overburdening the capacity of local infrastructure.
- Contributing to the greening of the city.
- Improving sustainable transport infrastructure and highway conditions.
- Making appropriate and effective waste management arrangements.

Policy 12 Housing Quality

All new homes and residential extensions will provide a well-designed, energy efficient and high-quality living environment, both internally and externally. New homes will be designed to a standard that ensures the safety, health and wellbeing of its occupants.

Policy 24 Sustainable Transport

New development should contribute towards maintaining and enhancing Westminster’s places and streets as one of the most attractive and liveable areas in London. Development must positively contribute towards the improvement of its public transport nodes in terms of accessibility and legibility and the improvement and delivery of walking and cycling routes. In addition, they must support the reallocation of road and development space to promote walking, cycling and the use of public transport where appropriate.

Policy 32 Air Quality

Air Quality Assessments should identify the potential for air quality to impact on, or be caused by, new development and demonstrate how these impacts are being appropriately minimised and mitigated.

Policy 33 Local Environmental Impacts

- **Light pollution.** Developments must be designed to minimise the detrimental impact of glare and light spill on local amenity, biodiversity, highway and waterway users.
- **Noise and vibration.** Development should prevent adverse effects of noise and vibration and improve the noise environment in compliance with the council’s Noise Thresholds.
- **Odour.** Development will effectively address the adverse impact of odour through the incorporation of appropriate mitigation measures using a precautionary approach.
- **Land contamination.** Applicants are required to carry out contaminated land assessments and take appropriate remediation measures for development on or near a site which is potentially contaminated.

- **Construction impacts.** . Developments are required to minimise demolition and construction impact by complying with Westminster’s Code of Construction Practice (CoCP). Modern methods of demolition and construction that minimise negative local environmental impacts will be encouraged.

Policy 34 Green Infrastructure

- **City Greening.** Developments will, wherever possible, contribute to the greening of Westminster by incorporating trees, green walls, green roofs, rain gardens and other green features and spaces into the design of the scheme.
- **Biodiversity and Access to Nature.** Developments should achieve biodiversity net gain, wherever feasible and appropriate. Opportunities to enhance existing habitats and create new habitats for priority species should be maximised. Developments within areas of nature deficiency should include features to enhance biodiversity, particularly for priority species and habitats
- **Trees.** Trees of amenity, ecological and historic value and those which contribute to the character and appearance of the townscape will be protected. The planting of trees to optimise the city’s canopy cover will be encouraged in new developments.

Policy 35 Flood Risk

- **Sustainable Drainage.** New development must incorporate Sustainable Drainage Systems (SuDS) to alleviate and manage surface water flood risk. Development should aim to achieve greenfield run-off rates and demonstrate how all opportunities to minimise site run-off have been taken.

Policy 36 Energy

- **Carbon reduction.** All development proposals should follow the principles of the Mayor of London’s energy hierarchy. Major development should be net zero carbon and demonstrate through an energy strategy how this target can be achieved. Where it is clearly demonstrated that it is not financially or technically viable to achieve zero-carbon on-site, any shortfall in carbon reduction targets should be addressed via off-site measures or through the provision of a carbon offset payment secured by legal agreement.
- **Heat networks.** Developments should be designed in accordance with the Mayor of London’s heating hierarchy. Major developments must connect to existing or planned local heat networks, or establish a new network, wherever feasible.
- **Overheating.** All developments should be designed and operated to minimise the risk of internal overheating. Major development proposals will include a cooling strategy in line with the Mayor of London’s cooling hierarchy.

Policy 37 Waste Management

All new developments (including extensions and change of use) must provide appropriate facilities for the storage of separate waste streams which are safe and convenient to access for deposit and collection, with sufficient capacity for current and projected future use.

Developers are required to demonstrate through a Circular Economy Statement, Site Environment Management Plan and/or associated Site Waste Management Plan, the recycling, re-use, and responsible disposal of Construction, Demolition and Excavation waste in accordance with London Plan targets and the council’s Code of Construction Practice (CoCP).

Policy 38 Design Principles

- **People-centred Design.** All development will place people at the heart of design, creating inclusive and accessible spaces and places, introducing measures that reduce the opportunity for crime and anti-social behaviour, promoting health, well-being and active lifestyles through design and ensuring a good standard of amenity for new and existing occupiers.

- **Sustainable Design I.** Development will enable the extended lifetime of buildings and spaces and respond to the likely risks and consequences of climate change by incorporating principles of sustainable design, including:
 1. use of high-quality durable materials and detail;
 2. providing flexible, high quality floorspace;
 3. optimising resource and water efficiency;
 4. enabling the incorporation of, or connection to, future services or facilities; and
 5. minimising the need for plant and machinery.
- **Sustainable Design II.** Non-domestic developments of 500 sq m of floorspace (GIA) or above will achieve at least BREEAM “Excellent” or equivalent standard.

3.4.2 Supplementary Planning Document (Adopted February 2022)

Westminster has declared a climate emergency and committed to becoming a carbon neutral council by 2030 and a carbon neutral city by 2040. The Supplementary Planning Document (SPD) provides guidance for developers on how they can meet the environmental policies within Westminster’s City Plan 2019 – 2040.

The Environmental SPD covers seven environmental topics as described below:

1. Air Quality
2. Local Environmental Impacts
3. Green Infrastructure
4. Flood Risk
5. Energy
6. Waste Management
7. Retrofitting and Sustainable Design

The SPD contributes to the delivery of the City Plan objectives that seek to:

- Improve quality of life, climate resilience and tackle environmental challenges by protecting, enhancing, expanding our valuable network of parks and open spaces; and
- Improve air quality, minimise noise and other polluting impacts, and reduce carbon and water demands by minimising detrimental impacts from development.

All developments must integrate and positively address the sustainable design principles in policy 38 and are encouraged to aim to achieve the highest possible BREEAM standards. All non-domestic development over 500sqm (GIA) is required to achieve a minimum of **BREEAM Excellent**, or equivalent.

4 Topic 1: Materials



Reducing the emissions associated with the construction of the building. This includes targets to encourage the proactive approach to minimising negative environmental impact including the reuse/recycling of high quality, durable materials.

	Focus Areas	Minimum standards	Berkeley Group Corporate Commitments	Strategies to achieve/exceed requirements
1.1	Design Quality and Performance	<p><u>London Plan Policy D3:</u> Use attractive, robust materials which weather and mature well</p> <p><u>London Plan Policy D4:</u> Maximum detail appropriate for the design stage is provided to avoid the need for later design amendments</p> <p><u>CWCP 2019-2040 Policy 38. D:</u> Incorporate principles of sustainable design including the use of high-quality durable materials</p>	<p><u>Berkeley Group and Sustainable Development Goals</u> Work with supply chain partners for high impact material</p> <p>Implements a new materials strategy including an audit programme for suppliers by 2023</p> <p><u>The Berkeley Group Plc Sustainability Policy</u> Reduce the consumption of materials through careful design and site management</p> <p><u>Berkeley Group: Our Vision 2030</u> Ensuring buildings are constructed with the highest quality standards with attention to fire safety and material quality</p>	<p>Avoid unnecessary material use arising from over specification without compromising structural stability, durability, or the service life of the building</p> <p>Demonstrate the use of low embodied carbon materials; consideration of the end-of-life use of materials; and selection of planting species to maximise carbon sequestration over their lifetime.</p>
1.2	Circular Economy and Waste Management	<p><u>London Plan Policy SI 7:</u> Encourage waste minimisation and waste prevention through the reuse of materials. Meet or exceed targets for each:</p> <ul style="list-style-type: none"> Construction and demolition- 95% reuse/recycling/recovery Excavation – 95% beneficial use <p>Circular economy statement will be submitted to demonstrate how all materials arising from demolition will be re-used/recycled and how will the proposals design reduce material demands.</p>	<p><u>Berkeley Group and Sustainable Development Goals</u> Work with supply chain to develop material efficient processes and recycle all non-hazardous waste from sites.</p> <p><u>The Berkeley Group Plc Sustainability Policy</u> Manage fuels, hazardous materials, and waste to minimise the risk of pollution and contamination</p> <p><u>Berkeley Group Sustainability Report 2021</u> Aims to reuse/recycle 98% of waste from landfill (excluding hazardous waste) by 2025 from sites and achieve zero avoidable waste from construction sites by 2030</p> <p><u>Berkeley Group: Our Vision 2030</u> End-product is sustainable and future ready. Homes been constructed in a sustainable way but promote sustainable living once occupied and is ready to adapt to future changes.</p>	<p>Maximise recycling of demolition materials on site (at least 20%), otherwise incorporate reuse offsite where possible. For example, crushed bricked and concrete can be utilised for blinding concrete and mass concrete fill.</p> <p>The design and selection of materials will be based on the use of products that contain low or no levels of Volatile Organic Compounds (VOCs)</p>
1.3	Embodied Carbon and Whole Life Carbon (WLC)	<p><u>London Plan Policy SI 2:</u> Calculate and reduce whole life-cycle carbon (WLC) emissions and demonstrate actions taken to reduce life-cycle carbon emissions</p> <p><u>CWCP 2019-2040 Policy 36:</u> Major development should be net zero carbon and demonstrate through an energy strategy how this target can be achieved.</p> <p><u>BREEAM MAT 03 (Retail):</u> Facilitate the selection of products that involve lower levels of negative environmental, economic, and social impact across their supply chain including extraction, processing, and manufacturing</p>	<p><u>Berkeley Group and Sustainable Development Goals</u> Assess embodied carbon from materials and services on all new sites Target 40% reduction between 2019 and 2030.</p> <p><u>The Berkeley Group Plc Sustainability Policy</u> Take into account environmental impacts when specifying products, referring to the Green Guide to Specification and ISO20400.</p> <p>Specify products with consideration to the likely source and processing of materials</p> <p>Give preference to materials with low environmental impact, have a high recycled content or can be re-used</p> <p>Timber from certified sustainable sources only (FSC / PEFC)</p>	<p>Use insulation materials specified to have a low or zero Global Warming Potential (GWP) and low Ozone Depletion Potential (ODP). Review Environmental Product Declarations (EPDs) and choose products that have low environmental impact in accordance with BRE's 'The Green Guide to Specification.'</p> <p>All timber products should be sustainable sourced from accredited FSC or PEFC sources</p> <p><u>Environmental Supplementary Planning Document (ESPD) 2022:</u> Refer to the LETI guidance to help minimise the amount of embodied carbon</p> <p>Facilitate the selection of products that involve lower levels of negative environmental, economic, and social impact across their supply chain including extraction, processing, and manufacturing</p>

5 Topic 2: Operational Energy and Carbon



Increasing energy efficiency, decarbonisation of energy, heat and transport and balancing any remaining emissions through carbon offsetting. This section looks to set targets that will drive own energy demand and carbon emissions in line with [UK GBC Net Zero Carbon Buildings Framework Definition](#).

	Focus Areas	Minimum Standards	Berkeley Group Corporate Commitments	Strategy to achieve/exceed requirements
2.1	Energy Usage	<p><u>CWCP 2019-2040 Policy 36.B:</u> All development proposals should follow principles of the Mayor of London’s energy hierarchy. Net zero targets can be demonstrated through an energy strategy.</p> <p><u>London Plan Policy SI2:</u> Reduction in demand emissions ('Lean' emissions) by 15% for non-residential and 10% for residential (using Part L of Building Regulations 2013 Building)</p> <p><u>BREEAM Ene018:</u> Minimise operational energy demand, primary energy consumption and CO2 emissions.</p> <p><u>BREEAM Ene02:</u> To encourage the installation of energy sub-metering to facilitate the monitoring of operational energy consumption. To enable managers and consultant’s post-handover to compare actual performance with targets to inform ongoing management and help in reducing the performance gap.</p>	<p><u>Berkeley Group Sustainability Strategy</u> Commitment to reducing in use carbon emissions of the homes as part of Science Based Targets. 40% reduction between 2019-2030.</p> <p>Focus on efficient building fabric in line with the Future Homes Standard.</p> <p><u>Berkeley Group Climate Action Plan</u> Reduction of energy demand by designing homes to be more energy efficient and ensuring that all homes will be low carbon by 2030.</p> <p><u>Berkeley Group Sustainability Report 2021</u> Setting challenging benchmarks and standards for energy management 96% of homes with an EPC rating of B or above.</p>	<p>The Proposed Development adopts a low-carbon strategy, which includes highly insulated and airtight building fabric following LETI Climate Emergency Guide, energy efficient MEP systems and the provision of renewable sources such as air source heat pumps and photovoltaics. The Proposed Development has been assessed using Part L 2021.</p> <p>Fabric Energy Efficiency (FEE) limiting the heating demand of the dwelling demonstrates compliance with Approved Document Part L, I.E. DFEE ≤ TFEE</p>
2.2	Operational Carbon	<p><u>London Plan Policy SI2:</u> At least a 10% reduction in regulated emissions, with net zero requirements with the use of Borough offsetting schemes</p>	<p><u>Berkeley Group and Sustainable Development Goals</u> Reducing in-use lifetime carbon emissions of homes</p> <p><u>Berkeley Group Climate Action Plan</u> 40% reduction of in-use carbon emissions between 2019-2030</p> <p><u>Berkeley Group Sustainability Strategy</u> Commitment to reducing in use carbon emissions of the homes as part of Science Based Targets. 40% reduction between 2019-2030. Focus on efficient building fabric in line with the Future Homes Standard Focus on incorporating the right low carbon technologies for each site Focus on enabling low carbon lifestyles for those who live in our homes</p>	<p>Reducing the carbon emissions based on the GLA energy hierarchy when compared to Part L 2021 using Standard Assessment Procedure (SAP) 10.2 carbon factors.</p> <p>The Energy Statement demonstrates that the development achieves a carbon dioxide emissions reduction of 67% below the Building Regulations 2021 Baseline TER (Target Emission Rate), exceeding the GLA requirement of 35%. The development similarly exceeds the improvement of 10% (domestic) and 15% (non domestic) through the <i>lean</i> measures alone, achieving a 19% overall for the entire scheme.</p> <p>Following the ‘Be Seen’ Energy Monitoring Guidance (October 2020), and as per GLA monitoring requirement stated in Policy SI2 of the London Plan, the Applicant will demonstrate a commitment to monitor, verify and report on the energy performance post-construction of the PGPS scheme. The energy generation from renewables will offset the electrical loads with 61,057 kWh/yr.</p>
2.3	% Energy from renewables and low carbon sources	<p><u>London Plan Policy SI2:</u> Maximise opportunities for renewable energy by producing and storing and using renewable energy on-site</p> <p>‘Be clean’ by exploiting energy sources (such as secondary heat) and supply energy efficiently and cleanly</p> <p><u>CWCP Policy S40:</u> Maximise on-site renewable energy generation to achieve at least 20% reduction of carbon dioxide emissions where feasible</p>	<p><u>Berkeley Group and Sustainable Development Goals</u> Low carbon construction sites by implementing efficiency measures on sites and increasingly using biodiesel in places of gas oil</p> <p>Purchasing 100% renewable electricity in the UK (achieving 70% of homes supplied with low carbon or renewable energy)</p> <p><u>Berkeley Group Sustainability Report 2021</u> 70% of homes supplied with low carbon or renewable energy.</p> <p>52% of developments in production with PV panels</p> <p><u>Berkeley Group Sustainability Report 2021</u> Increasing the use of hybrid and electric machinery and increase use of sustainable biofuels</p>	<p>Implement highly efficient building fabric, low energy lighting (maximised use of LED lighting), efficient HVAC systems with heat recovery and low specific fan power systems. and PV panels fitted onto the roof level at the plant screens.</p> <p>Energy assessment should include evidence demonstrating the selection and specification of low or zero carbon technologies</p>

2.4	Energy procurement	<u>London Plan Policy SI3:</u> Masterplans to ensure most effective energy supply options allowing connection to future offsite heat networks	N/A – Meet policy at a project level.	Ensure future proofing of West End Gate (WEG) energy centre connected to the Proposed Development for district heating network resilience.
2.5	Carbon offsetting	<u>London Plan Policy SI2:</u> Where zero-regulated operational carbon target cannot be fully achieved on-site, any shortfall should be provided through either cash in lieu payments or at price of £95/tonne for 30 years.	N/A – Meet policy at a project level. Berkeley Group carry out offsetting for its own operational carbon.	A total one-off carbon offset payment of £470,302 is required to achieve the “Zero Carbon” target, following GLA energy hierarchy and as per Part L 2021.

6 Topic 3: Climate Change Adaptation and Flood Risk



Ensuring the development is prepared for and resilient to the shocks and stresses that may be anticipated with forecast changes in the future climate. This covers the focus areas outlined in the [DEFRA UK Climate Change Risk Assessment 2017](#): Heat stress, food supply, Disease response, Natural Capital and Water stress and Flood risk.

	Focus Areas	Minimum Standards	Berkeley Group Corporate Commitments	Strategy to achieve/exceed requirements
3.1	Overheating	<p><u>CWCP 2019-2040 Policy 36. E:</u> Developments designed and operated to minimise the risk of internal overheating</p> <p><u>London Plan Policy SI4:</u> Energy strategy to reduce risk of overheating following cooling hierarchy. TM52 methodology and TM49 for future climate</p> <p><u>London Plan Policy D6:</u> Design should provide sufficient daylight and sunlight whilst avoiding overheating, minimising overshadowing, and maximising the usability of outside amenity space</p>	<p><u>Berkeley Group Sustainability Report 2021</u> Increasing percentage of developments that undertook overheating assessments or dynamic thermal modelling (54% between 2019-2020)</p> <p>54% of developments completed overheating assessments or undertook dynamic thermal modelling in 2019-20.</p> <p>All sites to undertake overheating assessments and take action to mitigate</p>	<p>Reduce overheating risk with the use of passive and active measures for Design Summer Year 1 2020 from CIBSE TM49.</p> <p>Dynamic thermal modelling was carried out for predicting the overheating risk for domestic occupied spaces. The assessment demonstrated compliance with CIBSE TM59 and CIBSE A, following mechanical ventilation strategies to maintain adequate noise comfort and air quality levels, with summer operative temperatures falling within the upper and lower acceptable limits for occupant's adequate thermal comfort.</p> <p>Adopt a climate resilience approach with the reduction of unwanted internal gains through low percentage of glazing (33%), glazing recess and inset balconies to reduce mechanical cooling demand and to combat overheating risk.</p>
3.2	Natural Capital	<p><u>CWCP 2019 - 2014 Policy 34. G:</u> Developments should achieve biodiversity net gain, wherever feasible and appropriate.</p>	<p><u>The Berkeley Group Plc Sustainability Policy</u> Create net biodiversity gain on all new developments through the incorporation of green infrastructure, from ecological enhancements to living roofs</p> <p><u>Berkeley Group and Sustainable Development Goals</u> Developing an overall approach for environmental net gain</p> <p><u>Berkeley Group Sustainability Strategy</u></p> <p>Create a minimum net biodiversity gain of 10% of all our new developments Develop an approach on other aspects of environmental net gain such as water and air quality Implement a strategy to achieve an environmental net gain on at least one of our sites, including air quality, water quantity and quality and net biodiversity gain by 2025.</p>	<p>Street tree networks will be designed strategically to provide shade and manage water risk, be it periods of drought or extreme weather. Tree species selection will favour those with increased urban and climate resilience</p>
3.3	Water Consumption	<p><u>London Plan Policy SI 5:</u> Through planning conditions minimise the use of mains water in line with the Optional Requirement of Building Regulations to achieve 105 litres per head or less per day (excluding 5 litres for external water consumption)</p> <p><u>BREEAM NC 2018 WAT01:</u> Reduce the consumption of potable water for sanitary use through the use of water efficient components and water recycling systems</p> <p><u>BREEAM NC 2018 WAT02:</u> Specification of water meters to allow for management and monitoring of water use to identify areas of high usage and investigate potential causes</p>	<p><u>The Berkeley Group Plc Sustainability Policy</u> Supports the design of sustainable water management through the use of sustainable drainage systems (SuDs)</p> <p><u>Berkeley Group Sustainability Report 2021</u> Average water efficiency of complete homes – 104.5 (2020-21)</p>	<p>Ensure internal water consumption is achieving of 105 litres or less daily per person through the use of low flow fittings: without compromising on occupant perception of water flow.</p>

3.4	Water stress and Flood Resilience	<p><u>CWCP Policy S30:</u> Proposals should provide Flood Risk assessments as required by the National Policy Framework</p> <p><u>CWCP 2019-2040 Policy 35. J:</u> Incorporate SuDS to alleviate and manage surface water flood risk Flood Zone 3: A review of Climate Change Adaptation Risk alongside relevant project specific technical assessments such as a Flood Risk Assessment.</p> <p><u>London Plan Policy SI12:</u> Use the Mayor's Regional Flood Risk Appraisal and Strategic Flood Risk Assessment and Local Flood Risk Management Strategies where necessary</p>	<p><u>The Berkeley Group Plc Sustainability Policy</u> Designs for predicted changes in climate, focusing on flooding by supporting the design of sustainable water management using sustainable drainage systems (SuDs)</p> <p><u>Berkeley Group Climate Action Approach</u> Creating biodiverse landscapes that are resilient to extreme weather including flooding</p> <p><u>Berkeley Group Sustainability Report 2021</u> 91% of developments incorporate Sustainable Drainage Systems (SuDs) in 2020-21.</p>	<p>The surface water strategy proposes the discharge all runoff to the public combined water sewer via a new direct connection. Infiltration and discharge into a watercourse have both been discounted during the early design stages due to the impermeable underlying strata and distance to a suitable watercourse.</p> <p>SUDS in the form of green roofs, rainwater harvesting, permeable paving and below ground attenuation tanks have been provided sitewide within the ownership boundary.</p>
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7 Topic 4: Ecology & Biodiversity



Increasing the abundance and diversity of plant and animal species appropriate to local ecology. Having a positive impact on the biodiversity gain of the site as well as how the site users will positively engage with the site through nature.

	Focus Areas	Minimum Standards	Berkeley Group Corporate Commitments	Strategy to achieve/exceed requirements
4.1	Biodiversity Net Gain	<p><u>CWCP 2019 - 2014 Policy 34. G:</u> Developments should achieve biodiversity net gain, wherever feasible and appropriate.</p> <p><u>London Plan Policy G6:</u> Opportunities to enhance existing habitats and create new habitats for priority species should be maximised.</p> <p>Developments within areas of nature deficiency should include features to enhance biodiversity, particularly for priority species and habitats.</p>	<p><u>Berkeley Group and Sustainable Development Goals</u> Committed to create net biodiversity gain and make a measurable contribution to the natural environment on every development with average net gain scores of above 150%</p> <p>Development of 42 Net Biodiversity Gain strategies is set to create 480 acres of new or measurably improved natural habitats</p> <p><u>Berkeley Group Sustainability Strategy</u> Aim for 10% minimum net gain in biodiversity regardless of site's context or former use</p> <p><u>Berkeley Group Sustainability Report 2021</u> 1197% average net gain for sites that went into planning in 2020-21 8.1 hectares of new or measurably improved habitats for sites that went into planning in 2020-21</p>	<p>Exceed the 10% biodiversity net gain required by the planning policy by carrying out a Biodiversity Net Gain assessment for the proposed development.</p> <p>Biodiversity net gain for the Site resulted as 224%.</p>
4.2	Native Species	N/A	N/A	Implement site-specific plant palettes including native species and adapted plants with high durability and low water demands to increase the sites ecological value.
4.3	Number of Trees	<p><u>CWCP Plan 2019-2040 Policy 34.H & 34.I:</u> Trees of amenity, ecological and historic value and those which contribute to the character and appearance of the townscape will be protected. Planting of trees to optimise the city's canopy cover encouraged.</p> <p><u>London Plan, Policy G7:</u> Existing tress of value retained. Additional trees to be planted with preference of large canopies. Tree replacement valuation method to use: CAVAT or i-Tree Eco or similar.</p>	N/A – Meet policy at project level	Implement planting strategy to improve streetscape and rain garden
4.4	Urban Greening Factor	<p><u>London Plan, Policy G5:</u> Aim for UGF of 0.3 in line with GLA London Plan</p> <p><u>CWCP 2019-2040 Policy 34.B:</u> Wherever possible contribute to greening of Westminster by incorporating tress, green walls, green roofs, rain gardens, and other green features and space into design of schemes</p>	N/A – Meet policy at project level	Exceed Urban Greening Factor of >0.3

8 Topic 5: Water Efficiency



Reducing the consumption of potable water on-site, both inside the building and in terms of any irrigation; through reducing demand and maximising recycling. It also means increasing the site resilience to surface water flooding. Both through reducing impact on the site and managing surface water run-off in a smarter way.

	Focus Areas	Minimum Standards	Berkeley Group Corporate Commitments	Strategy to achieve/exceed requirements
5.1	Water Consumption: internal	<p><u>London Plan Policy SI5:</u> 105 litres per person per day Should include rainwater and/or greywater harvesting if feasible</p> <p><u>BREEAM NC 2018 WAT02:</u> Metering of water consumption of potable water through effective management</p>	<p><u>Berkeley Group and the Sustainable Development Goals</u> Committed to incorporating energy efficient fittings to every development undertaken to promote sustainable designs.</p> <p>Achieved an average internal water efficiency of 104.5 litres/person/day of homes</p> <p><u>Berkeley Group Sustainability Report 2021</u> Aims to operate water efficient sites and achieve a year-on-year reduction in water use</p> <p><u>Berkeley Group Sustainability Report 2021</u> Including rainwater harvesting within their developments and implemented this on average of 72% over the last 2-3 years.</p>	<p>Optimise harvesting of rainwater and greywater using smart technology, considering whole life costs and benefits.</p> <p>Combined attenuation and irrigation systems as per a system like Storm Harvest for external irrigation</p>
5.2	Water Consumption: external and irrigation	<p><u>London Plan Policy SI5 A & C:</u> Achieve minimum of BREEAM 'excellent' standard for the 'Wat 01' water category or equivalent (12.5% improvement over defined baseline standard).</p>	<p><u>Berkeley Group and the Sustainable Development Goals</u> Expanding their approach to environmental gain by delivering measurable improvements in water resources and aim to partner with a water company to undertake a trial on water neutrality at a development scale.</p> <p><u>Berkeley Group Sustainability Standards – Contractors</u> Berkeley Group ensures that contractors take responsibility for recording their consumption of water (including demolition and groundworks) monthly. Metering includes: <ul style="list-style-type: none"> a) Usage of mains water supply (m^3); b) Abstracted water usage (m^3); c) Harvested rainwater (m^3); and d) Hydrants (m^3) </p>	<p>Achieve at least BREEAM excellent standard (Retail only) for the WAT01 (12.5% improvement over defined baseline performance standard)</p> <p>Install water monitoring and leak detection systems including water meters to encourage residents to monitor and reduce their water consumption as well as allow for detection of major water leaks</p>
5.3	Run off rates	<p><u>London Plan Policy SI13:</u> Should aim to achieve green field run-off rates with preference for green over grey features in line with the drainage hierarchy.</p>	N/A – Meet policy at a project level	Achieve greenfield run off rate of 4.86 l/s with a minimum combined attenuation storage of 450 m^3 . The stored water from the two tanks will be discharge via gravity into the TW combined sewer.
5.4	Sustainable Drainage Systems (SuDs)	<p><u>CWCP 2019-2040 Policy 35. J:</u> Must incorporate Sustainable Drainage Systems to manage surface water as well as flood risk and aim to achieve greenfield run-off rates</p>	<p><u>Berkeley Group Sustainability Report 2021</u> Incorporating SuDs within approximately 94% of their developments within the past 2-3 years</p> <p><u>Berkeley Group Sustainability Policy</u> Design sustainable water management into our developments through the use of sustainable urban drainage systems (SuDs)</p> <p><u>Berkeley Group Sustainability Strategy</u> Guidance developed in relation to blue and green infrastructure, encouraging use of SuDs.</p>	<p>Include extensive green roofs as the primary SuDs on block I, J and K as well as green areas on top of the podium slab.</p> <p>Permeable block paving to treat run off from adjacent areas as well as impermeable hardstanding areas sloped to permeable or soft landscaping areas.</p>
5.5	Water Quality	<p><u>London Plan Policy G1:</u> Green infrastructure to help improve air and water quality</p> <p><u>London Plan Policy SI 13:</u> Drainage strategy to promote benefits of increased water use efficiency, and improved water quality</p>	<p><u>Berkeley Group Sustainability Strategy</u> Develop an approach on other aspects of environmental net gain such as water and air quality</p> <p>Implement a strategy to achieve an environmental net gain on at least one of our sites, including air quality, water quantity and quality and net biodiversity gain by 2025.</p>	SuDs will be employed as part of surface management train to improve water quality being discharged from the development

9 Topic 6: Pollution Management



Reducing the impact demolition and construction works on the pollution of the wider community from air pollutants, light pollution, noise, vibration and waste. It also aims to recommend mitigation measures and encourage environmental gains.

	Focus Areas	Minimum Standards	Berkeley Group Corporate Commitments	Strategy to achieve/exceed requirements
6.1	Light Pollution	<p><u>CWCP 2019-2040: Policy 33. B:</u> Minimise detrimental impact of glare and light spill on local amenity and biodiversity.</p> <p><u>Environmental Supplementary Planning Document (ESPD) 2022:</u> All external lighting to be in line with ILP Zone Standards</p> <p><u>New London Plan Policy D9. B:</u> Buildings should be designed to reduce light pollution from internal and external lighting</p>	N/A – Meet policy at local level	Developments must be designed to minimise the detrimental impact of glare and light spill on local amenity, biodiversity, highway and waterway users
6.2	Noise and Vibration	<p><u>CWCP 2019-2040: Policy 33.C:</u> Prevent adverse effects of noise and vibration and improve noise environments in line with the City of Westminster Noise Technical Guidance Note's Noise Thresholds</p> <p><u>Environmental Supplementary Planning Document (ESPD 2022:</u> Noise Impact Assessment if development could affect noise sensitive receptors, for in use and from proposed demolition and construction activities on identified noise sensitive receptors.</p> <p>Where new residential developments likely affected by existing ground-borne noise from underground trains operations, no increase in ground borne noise within neighbouring properties and 35dB L(ASmax) minimum standard day and night.</p> <p><u>CWCP Policy S32:</u> Provide acceptable noise and vibration climate for occupants and minimise exposure to vibration and external noise, securing to Westminster's sound environment</p> <p><u>London Plan Policy D14:</u> Improve and enhance acoustic environment and promoting appropriate soundscapes including Quiet Areas and spaces of relative tranquillity Any potential adverse effects should be controlled and mitigated through applying good acoustic design principles</p> <p><u>London Plan Policy T7 B & F:</u> Development plans should include freight strategies to reduce noise from freight trips</p>	<p><u>The Berkeley Group Plc Sustainability Policy</u></p> <p>Implementation of noise and vibration prevention measures on sites with consideration of the environment</p> <p>Undertake regular sustainability assessments of our sites to reduce our environmental impact</p>	<p>Consider new technologies with aim to buffer, suppress or mask noise as well as use innovative new materials which improve acoustics and reduce noise pollution, both interior and exterior to meet the council's requirements.</p> <p>Carry out a noise and vibration assessment for the proposed development</p> <p>The guidelines specified in ESPD 2022 with indoor noise should stay within 35dB L(ASmax) during the day and night</p>

6.3	Dust Pollution	<p><u>CWCP 2019-2040: Policy 33.F:</u> Minimise demolition and construction impact by complying with Westminster Code of Construction Practice (CoCP)</p> <p><u>Environmental Supplementary Planning Document (ESPD) 2022:</u> Proactive monitoring of construction impacts during the construction process should be planned for</p>	<p><u>Group Sustainability Standard – Contractors 2021</u> Dust prevention measures such as dust suppression of construction activities are controlled and maintained</p> <p>Regular site sustainability assessments are undertaken</p>	<p>Mitigation measures to combat the adverse effects of dust arising from demolition and construction works by complying with Westminster's Code of Construction Practice (CoCP).</p> <p>Modern methods of demolition and construction that minimise negative local environmental impacts will be encouraged.</p> <p>Control construction traffic through the framework CLP</p>
6.4	Water Pollution	<p><u>London Plan Policy SI 13:</u> Drainage strategy to promote benefits of increased water use efficiency, and improved water quality</p>	N/A – Meet policy at a project level	<p>SuDs will be employed as part of surface management train to improve water quality being discharged from the development</p>
6.5	Air Quality	<p><u>London Plan Policy SI 1:</u> Development proposals should not lead to further deterioration of air quality</p> <p>Proposals should use design solution to prevent or minimise increased exposure to air pollution or mitigation measures</p> <p>Major developments require an air quality assessment to consider how local air quality can be improved across the area and comply with the Non-Road Mobile Machinery Low Emission Zone</p>	N/A – Meet policy at a project level	<p>Carry out an air quality assessment with the aim to minimise air pollution</p> <p>Air Source Heat Pump (ASHP) system should be Air Quality Neutral benchmarks</p> <p>Major developments in Opportunity Areas and Housing Renewal Areas and those subject to an Environmental Impact Assessment must additionally demonstrate how local air quality can be improved across the proposed development as part of an air quality positive approach.</p>
6.6	Land Contamination	<p><u>London Plan Policy SD 1:</u> Take appropriate measures to deal with contamination that may exist</p> <p><u>CWCP 2019-2040 Policy 33. E:</u> Required to carry out contaminated land assessments and take appropriate remediation measures for development on or near site which is potentially contaminated</p> <p><u>Environmental Supplementary Planning Document (ESPD 2022:</u> Procedure for dealing with potential land contamination during the planning process</p>	N/A – Meet policy at a project level	<p>Requirement of contaminated land assessment and take appropriate remediation measures for development on or near site which is potentially contaminated</p>
6.7	Odour	<p><u>CWCP Plan 2019-2040 Policy 33. D:</u> Address the adverse impacts of odour through the incorporation of mitigation measures using precautionary approach</p>	N/A – Meet policy at a project level	<p>Incorporate mitigation measures using a cautionary approach to address adverse impact of odour</p>

10 Topic 7: Sustainable Transportation & Access



Ensuring the refurbishment is designed to minimise the use of private fossil fuel transport from the site visitors, and occupants. This is to be achieved by encouraging and increasing the use of public transport, and sustainable forms of private transport such as cycling, and walking.

	Focus Areas	Minimum Standards	Berkeley Group Corporate Commitments	Strategy to achieve/exceed requirements
7.1	Number of parking spaces	<p><u>CWCP 2019-2040: Policy 27. A:</u> All new parking spaces to provide active provision of EV charging</p> <p><u>London Plan Policy T6.1 C</u> For 3% of dwellings, at least one designated disabled persons parking bay per dwelling is provided</p> <p><u>London Plan Policy T6.3 E&F (Retail only):</u> Disabled parking should be provided in accordance to Policy T6.5</p> <p>Where car parking is provided at retail development, provision for rapid electric vehicle charging should be made.</p>	N/A – Meet policy at a project level.	<p>Promotes a low carbon mobility development in line with GLA guidelines, this excludes disabled/accessible parking requirements</p> <p>Car parking for mobility impaired with suitable step free access</p>
7.2	Walking & Access to Public transport	<p><u>CWCP 2019-2040: Policy 25. B:</u> Prioritise and improve pedestrian environment, contribute to first-class public realm, provide facilities for pedestrians to rest and relax (including seating)</p> <p>Permeable, easy and safe to walk, enhance existing routes, adequately lit, step free, links to other pedestrian movement corridors</p> <p>Enable footway widening, re-surfacing and de-cluttering where increased footfall is expected</p> <p><u>CWCP 2019-2040: Policy 26. B:</u> improve accessibility to, and legibility of existing and proposed public transport</p> <p><u>London Plan Policy GG2. G:</u> Plan for good local walking, cycling and public transport connections to support a strategic target of 80 per cent of all journeys using sustainable travel</p> <p><u>London Plan Policy T7. K:</u> During the construction phase of development, inclusive and safe access for people walking or cycling should be prioritised and maintained at all times</p>	<p><u>Berkeley Group Climate Action Plan</u> Prioritising clean energy tariffs and design well-connected, walkable neighbourhoods with local amenities, sustainable transport links and infrastructure</p> <p><u>Berkeley Group Climate Change Policy</u> Focus on locations with excellent public transport connections and promoting alternatives to private car use including walking, cycling public transport and car clubs.</p>	<p>6 mins to 5 separate bus stations and 6 mins to a rail station and underground.</p> <p>Public Transport Accessibility Levels (PTAL) score 6a</p>
7.3	Cycling	<p><u>CWCP 2019-2040: Policy 25.D:</u> Meet cycle parking and cycle facilities standards in the London Plan, where it is not possible to provide suitable short-stay cycle parking off the public highway, an appropriate on-street location should be considered provided. Promote and contribute toward introduction and expansion of cycle hire facilities.</p> <p><u>London Plan Policy T5:</u> 1 space per studio or 1 person 1 bedroom dwelling (long-stay for residents or employees) 1.5 spaces per 2-person 1 bedroom dwelling (long-stay for residents or employees) 2 spaces per all other dwellings (long-stay for residents or employees) 5 to 40 dwellings: 2 spaces, thereafter: 1 space per 40 dwellings (short stay for visitors)</p>	<p><u>Berkeley Group and Sustainability Goals 2021</u> 100% of developments provide cycling provision</p>	<p>Provide 1 cycle parking space per dwelling in line with London Plan Policy</p> <p>Integration of bike battery charging points in basement level.</p> <p>Cycle parking for mobility impaired with suitable step free access</p>
7.4	Car club spaces	<p><u>CWCP 2019-2040: Policy 27. B:</u> Provide car club membership for all residents and provision of car club spaces</p>	N/A - Meet policy at a project level	Provide car club access/membership for building users.

11 Topic 8: Waste Management



Reducing the amount of resources usage, increasing proportion of recycled content as well as the amount of materials reused and thinking about the end-of-life products to minimise risk of pollution and contamination. The ultimate goal is to reduce the amount of waste produced and send zero to landfill.

	Focus Areas	Minimum Standards	Berkeley Group Corporate Commitments	Strategy to achieve/exceed requirements
8.1	Waste disposal	<p><u>London Plan Policy SI 7:</u> Meet or exceed the municipal waste recycling target of 65 per cent by 2030</p> <p>Meet or exceed the targets for each of the following waste and material streams: a) construction and demolition – 95 per cent reuse/recycling/recovery b) excavation – 95 per cent beneficial use¹⁶⁴</p> <p><u>London Plan Policy D6, E:</u> Design adequate and easily accessible storage space that supports the separate collection of dry recyclables (for at least card, paper, mixed plastics, metals, glass) and food waste as well as residual waste</p> <p><u>BREEAM Wst01 (Retail):</u> Reduce construction waste by encouraging reuse, recovery to minimise landfill waste</p> <p><u>Waste Regulation 2011:</u> Mixed recycling storage is unacceptable, there should be a separate bin for different recyclable material waste streams</p>	<p><u>Berkeley Group and Sustainability Goals 2021</u> Aims to reuse or recycle 98% of our waste from construction activities by 2023-29 and intend to operate zero avoidable waste construction sites by 2030.</p> <p><u>Berkeley Group Sustainability Strategy</u></p> <p>Long term goal to reduce our impact on key resources including water and materials. Design to the principles of circular economy and collaborate with our supply chain to work towards zero waste construction sites.</p> <p>All sites to measure and report on our key waste streams and set reduction targets.</p> <p>Operate zero avoidable waste construction sites by following the principles of circular economy. Aim to achieve this by 2030.</p>	<p><u>Construction waste</u></p> <ul style="list-style-type: none"> Incorporate waste hierarchy to reduce, reuse and recycle <p><u>Retail waste</u></p> <ul style="list-style-type: none"> Tenants to transport waste from unit to presentation area for collection days Weekly collection frequency <p><u>Residential waste</u></p> <ul style="list-style-type: none"> Weekly collection frequency Promote the separation of recyclable materials Avoid waste chutes
8.2	Waste Management Sites	<p><u>London Plan Policy SI 9 A & C:</u> Existing waste sites should be safeguarded and retained in waste management use. Waste plans should be adopted before considering the loss of waste sites.</p> <p><u>CWCP 2019-2040, Policy 37, B:</u> Must provide appropriate facilities for the storage of separate waste streams which are safe and convenient to access for deposit and collection, with sufficient capacity for current and projected future use.</p>	N/A - Meet policy at a project level	<p>Provide enough internal space for collection bins for the storage of recycled as well as compostable materials and waste</p> <p>Carry out a waste management strategy to support convenient access</p>
8.3	Waste capacity	<p><u>London Plan Policy SI 8, A & D:</u> The waste management capacity of existing sites should be optimised, and new waste management sites should be provided where required</p> <p>Development plans should identify waste management facilities to manage waste capacity</p>	N/A	Provide sufficient internal waste storage containers using the residential waste generation metrics sourced from the guidance with at least 60% of the storage should be for recyclable mate
8.4	Circular Economy	<p><u>London Plan Policy SI 7:</u> Encourage waste minimisation and waste prevention through the reuse of materials and using fewer resources in the production and distribution of products</p> <p><u>London Plan Policy SI 10, A:</u> Encouraging re-use and recycling of construction, demolition, and excavation waste within London, including on-site</p> <p><u>CWCP 2019-2040, Policy 7, G:</u> Making appropriate and effective waste management arrangements</p>	<p><u>Berkeley Group and Sustainability Goals 2021</u> A team of approximately 20 sustainability professionals conduct regular audits of our operations to ensure we are making efficient use of natural resources and managing fuels and any chemicals on site in accordance with legislation and best practice</p> <p><u>Berkeley Group Sustainability Standard - Contractors</u> Committed to ensuring that all timber material is sustainably sourced in addition to procuring all timber and wood-based products from known and legal sources</p>	<p>A Construction Environmental Management Plan (CEMP) or Site Environmental Management Plan (SEMP) should be completed to set benchmarks in line with BREEAM Wst01 standards (Retail).</p> <p>Circular economy statement is required by both the London Plan and the GLA to inform the design team of the opportunities to reuse/recycle material or elements to reduce demolition waste</p>

		<p><u>CWCP 2019-2040 Policy 37. C:</u> Requires a Circular Economy Statement Management Plan and/or associated Site Waste Management Plan, the recycling, re-use, and responsible disposal of Construction, Demolition and Excavation waste in accordance with London Plan targets and the council's Code of Construction Practice (CoCP).</p> <p><u>BREEAM Wst03 (Retail):</u> Encourage the recycling of operational waste through the provision of dedicated storage facilities and space</p>	<p><u>Berkeley Group Sustainability Report 2021</u> Through the Sustainable Specification and Procurement Policy, all timber to be certified to either the Forest Stewardship Council (FSC) or Programme for the Endorsement of Forest Certification (PEFC) scheme and with a strong preference for all wood-based products to be either FSC or PEFC certified</p> <p><u>Berkeley Group Sustainability Strategy</u> Long term goal to reduce our impact on key resources including water and materials. Design to the principles of circular economy and collaborate with our supply chain to work towards zero waste construction sites.</p> <p>All sites to measure and report on our key waste streams and set reduction targets.</p> <p>Operate zero avoidable waste construction sites by following the principles of circular economy. Aim to achieve this by 2030.</p>	
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12 BREEAM

12.1 Introduction to BREEAM

BREEAM (the Building Research Establishment Environmental Assessment Methodology) sets the standard for best practice in sustainable building design, construction and operation and has become one of the most comprehensive and widely recognised measures of a building’s environmental performance.

The Primary aim of BREEAM New Construction is to mitigate the life cycle impacts of new buildings on the environment in a robust and cost-effective manner. This is achieved through integration and use of the scheme by clients and their project teams at key stages in the design and procurement process. Projects are assessed at design and post-construction stages using a system of environmental issues grouped within the following sections:

- Management
- Health and Wellbeing
- Energy
- Transport
- Water
- Materials
- Waste
- Land Use & Ecology
- Pollution
- Innovation (Additional)

The BREEAM Preliminary Assessment report AESG on behalf of Berkeley Group provides details to support the planning application for the development of Paddington Green Police Station, located at 2-4 Harrow Road, London W2 1XJ. The development includes the demolition of an existing building and redevelopment to provide residential and retail spaces together with servicing, car parking and landscaping. This pre-assessment outlines a strategy that enables the retail and commercial units of the development achieve a BREEAM Excellent rating.

The pre-assessment presented in this report has been undertaken using the ‘Shell Only’ BREEAM New Construction 2018 methodology. Under this methodology any issues relating to the fit-out specification are not assessed.

Certification is carried out at two stages:

- Design Stage – Capturing the design intent and commitment to the BREEAM performance targets
- Post-Construction Stage – Confirming the actual implementation of the BREEAM performance targets

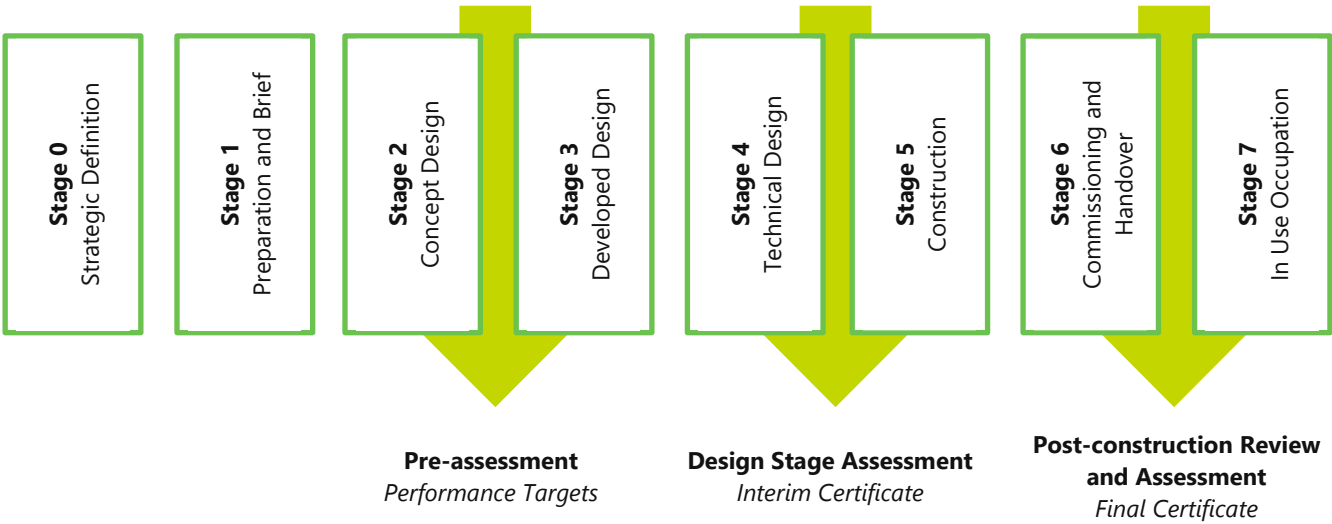


Figure 2-1 Key Stages of a BREEAM assessment against RIBA plan of work

BREEAM Bespoke process

The final BREEAM rating is awarded based on the total score achieved in all environmental categories, as shown in **Table 1** the achievement of the minimum requirements (mandatory credits) for the targeted score. The credits scored are shown as a weighted percentage score, which corresponds to an overall rating of Pass, Good, Very Good, Excellent or Outstanding as per Table 1:

Table 1-1 BREEAM minimum required score per rating level

Outstanding	Excellent	Very Good	Good	Pass
≥ 85	≥ 70	≥ 55	≥ 45	≥ 30

The building is assessed under nine environmental categories and an additional innovation category, which are weighted to reflect the relative environmental impact of each. Each environmental category comprises of a number relevant issues, under which the relevant credits can be found.

Based on these category weightings, a number of credits in each category has a different value in the overall BREEAM final score. The weighted value of 1 credit in each category is shown in **Figure 2**. As shown, Materials, Energy, Land Use and Ecology category credits are worth significantly more than the Waste category credits, for example, to reflect the relevant impact of each environmental issue. Each category consists of a differing number of assessment issues and BREEAM credits.

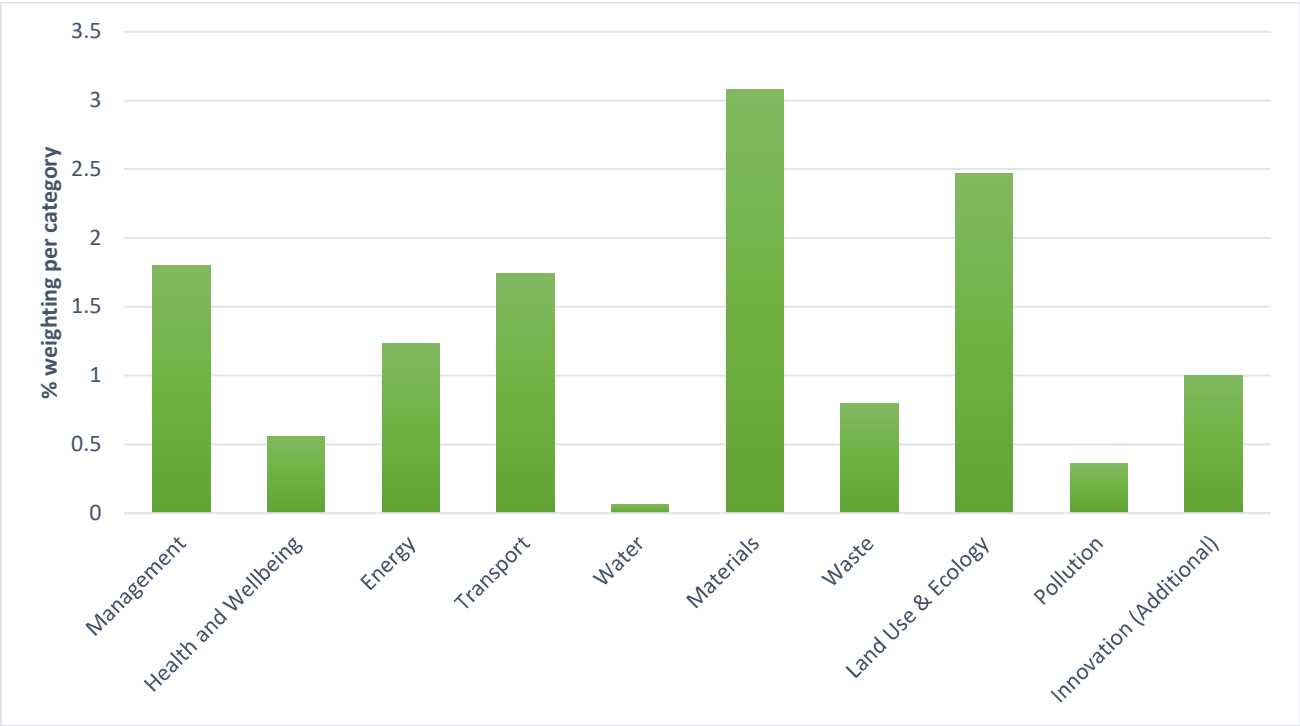


Figure 2-2 Weighted credit value per category

12.2 BREEAM Strategy

12.2.1 Berkeley Requirements

Berkeley requires the retail unites to achieve BREEAM ‘Excellent’ rating. As summarised in Sections 4 to Section 11, Berkeley sets out ambitious sustainability targets for their developments. To achieve BREEAM standards, the minimum overall percentage score must be achieved as well as the minimum standards.

12.2.2 Westminster City Council Requirements

Westminster City Council set out within their City Plan 2019 – 2040 under Policy 38.D that all non-domestic developments of 500sqm of floorspace (GIA) or above will need to achieve at least BREEAM “Excellent” or equivalent standard, similar to that of the GLA.

12.3 BREEAM Scheme Registration

The proposed retail units will be assessed using a BREEAM UK New Construction. The building is being assessed as a Shell only, which means the scope of works covers shell works, i.e. external walls, windows, doors (external), roof, core internal walls, structural floors, hard and soft landscaping areas only. Any aspect of core building services including the installation of central or communal transportation systems, water systems, fit-out of common areas, central mechanical and electrical systems (including HVAC), local fitting of systems within tenant areas are excluded from the assessment. The systems will typically be centralised with capped off distribution to each tenanted area (for future connection as part of a tenant’s fit-out works). It is recommended that the development is registered as soon as possible to receive the finalised credit weightings and criteria.

12.4 BREEAM Pre-assessment Purpose

The BREEAM pre-assessment has been undertaken for Paddington Green Police Station for the following reasons:

- To give confidence to the project team that the target of BREEAM ‘Excellent’ with aspiration for ‘Outstanding’ is achievable
- To highlight BREEAM credits which:
 - require action by the end of Stage 2 in order to comply with BREEAM.
 - are being targeted but are challenging to achieve, so that these are actioned from an early stage.
 - are essential for achieving an ‘Excellent’ rating.
 - can be targeted to achieve an ‘Outstanding’ rating.
 - require the appointment of specialist consultants.

This pre-assessment will be further reviewed as the building design develops through the next phases.

12.5 BREEAM Target

Following a review of the RIBA Stage 1-2 design the current BREEAM pre-assessment for the project is shown in **Table 1- 2**. As shown, a strategy achieving a score of 70.00% is deemed feasible for an ‘Excellent’ rating. Further potential credits can be targeted as part of the strategy for an ‘Outstanding’ rating and to increase the points buffer if needed, depending on financial viability. At this stage, the total credits targeted are 75.22% (110% is the maximum), so that a safety margin of at least 5% has been allowed the ‘Excellent’ case.

Table 1- 2 BREEAM Pre-assessment summary – Retail

BREEAM Category	Credits available	Credits Targeted	% Credits Targeted	Weighting	Target Score
Management	15	14	93.33%	12%	11.20%
Heat	8	6	75.00%	7%	5.25%
Energy	13	9	69.23%	9.5%	6.57%
Transport	12	12	100.00%	14.50%	14.50%
Water	3	3	100.00%	2%	2.00%
Material	14	9	64.29%	22.00%	14.14%
Waste	10	5	50.00%	8.00%	4.00%
Land Use & Ecology	13	9	69.23%	19.00%	13.15%
Pollution	6	3	50.00%	6.00%	3.00%
Innovation	10	2	20.00%	10.00%	0200%
Total	130	91	75.82%	-	75.22%

13 Whole Life Carbon Assessment

As per the London Plan (March 2021) Policy SI 2, development proposals referable to the Mayor should calculate whole life-cycle carbon emissions through a nationally recognised Whole Life-Cycle Carbon Assessment (WLCA) and demonstrate actions taken to reduce life-cycle carbon emissions. This section outlines the expected whole life carbon emissions following the guidance provided in the consultation document Whole Life-Cycle Carbon Assessments Guidance (March 2022).

At this stage of the design, a simple Whole Life Carbon Assessment has been undertaken, using OneClick LCA software with:

- 1. Building specific inputs where known
- 2. One Click LCA database inputs used where product specification is unknown;
- 3. Further gaps filled with industry data such as maintenance, repair and replacement

13.1 Introduction

This section details the initial whole life-cycle carbon assessment of the proposed development in accordance with the British Standard BS EN15978:2011 (Sustainability of construction works – Assessment of environmental performance of buildings – Calculation method), and the RICS Professional Statement ‘Whole life carbon assessment for the built environment 2017’. Furthermore, the guidance set out by the Mayor of London – Whole Life-Cycle Carbon Assessments Guidance – consultation (March 2022) was adopted for this assessment.

Life Cycle Assessment is a standardised methodology for assessing the environmental impacts of a product or system, which considers its entire life cycle, from raw materials extraction, through product manufacturing, to the use of the product and the end of life treatment and disposal. In the case of this study the examined product is the buildings and infrastructure contained within the Site. All calculations have been performed using One Click LCA software tool.

13.2 Whole Life-Cycle Carbon Background

Whole life-cycle carbon emissions are the total greenhouse gas emissions arising from a development over its entire lifetime, from the emissions associated with raw material extraction, the manufacture and transport of building materials, to installation/ construction, operation, maintenance, and eventual material disposal.

Operational carbon emissions will make up a declining proportion of a development’s whole life carbon emissions as operational carbon targets become more stringent. To fully capture a development’s carbon impact, a whole life-cycle approach is needed to capture its unregulated emissions (i.e. those associated with cooking and small appliances), its embodied emissions (i.e. those associated with raw material extraction, manufacture and transport of building materials, and construction) and emissions associated with maintenance and eventual material disposal).

Development proposals referable to the Mayor of London should calculate whole life-cycle carbon emissions through a nationally recognised Whole Life-Cycle Carbon Assessment and demonstrate actions taken to reduce life-cycle carbon emissions. (London Plan 2021 Policy SI2)

To provide a holistic view of the Global Warming Potential (GWP), the whole life carbon assessment accounts for all components relating to the project during all life stages.

Embodied Carbon emissions are attributed to four main categories taken from BS EN 15978. The categories are:

- Product Stages (module A1 to A3): The carbon emissions generated at this stage arise from extracting the raw materials from the ground, their transport to a point of manufacture and then the primary energy used (and the associated carbon impacts that arise) from transforming the raw materials into construction products.
- Construction (module A4 to A5): These carbon impacts arise from transporting the construction products to site, and their subsequent processing and assembly into the building.
- In-Use Stages (module B1 to B5): This covers a wide range of sources from the embodied carbon emissions associated with the operation of the building, including the materials used during maintenance, replacement and refurbishment.
- End of Life Stages (module C1 to C4): The eventual deconstruction and disposal of the existing building at the end of its life takes account of the on-site activities of the demolition contractors. No ‘credit’ is taken for any future carbon benefit associated with the reuse or recycling of a material into new products.
- Benefits and loads beyond the system boundary (Module D).

13.3 Sourcing of material quantities

The assessment collated the most up-to date and representative data that was available for material quantities for each building and the associated infrastructure on the Site. This involved the use of figures from a high level cost model, OneClickLCA as well as reports and diagrams produced by other disciplines in the design team. The detail and EPDs available for the Furniture, Fixtures & equipment (FF&E) across the proposed development were not available to produce an accurate or representative figure. Therefore, a weighted average was taken from the benchmarks provided for “Residential” building uses in the GLA Whole-Life Carbon Assessments Guidance Appendix 2.

Similarly, at this stage of the project, maintenance and repair scenarios for the site had not been developed and a weighted average for these modules was taken for the proposed development.

The following are key calculation inputs and assumptions made during the life cycle assessment conducted for the Site.

Table 13—1 LCA Inputs

Building element	Input Parameters
Foundations & Lowest floors	Figures received from Structural Engineers
	50% GGBS for foundations
	97% recycled content
Floor slabs	Figures received from Structural Engineers
	50% GGBS slabs and beams. Reinforcement steel
	97% recycled steel assumed for all reinforcement
Concrete Frame	Figures received from Structural Engineers
	50% GGBS all columns and walls bar those specified as C60/75 concrete
	40% GGBS all columns specified as C60/75 concrete
	97% recycled steel assumed for all reinforcement
Internal Doors	Data from cost plan
Windows	From information received from Architect
External doors	Data from cost plan
Roof Finishes	Data from cost plan
Stairs	Data from cost plan
Facade	Data from cost plan
Internal Finishes	Previous Buro Happold Highrise residential project benchmark used. Data from cost plan used where possible.
External Works	Data from cost plan
Energy Consumption	From Energy Statement
Construction Site Emissions	In lieu of complete construction information: <i>Average site impacts - temperate climate (North)</i> used based on GFA from One Click LCA
Building Services	Previous Buro Happold Highrise residential project benchmark used. This was supplemented by available building services information available at the time of assessment. This included the key heating and cooling sources listed in the MEP Stage 2 report and the lift specifications provided in the stage 2 costing information.
GIA (m²)	Floor areas received from Architect

All EPDs used in the assessment are given in the ‘Reference EPDs for WLC Assessment’ Appendix.

13.4 Methodology

13.4.1 LCA scope and service life

The following life cycle stages were included in this assessment according to EN 15804:

- A1-A3 Manufacturing of construction materials
- A4 Transportation to site
- A5 Site works
- B1-B5 Maintenance and material replacements
- B6-B7 Operational energy and water use
- C1-C4 Deconstruction
- D Reuse, recovery and recycling potential (not included in totals)

This study includes the following building elements:

- External works and landscaping
- Foundations and substructure

- External walls and façade
- Columns
- Beams
- Upper floor constructions
- Roof constructions
- Internal walls and partitions
- Internal doors
- Internal finishes
- Windows and external doors
- Stairs
- Building services

The building’s design life was set to 60 years, the standard reference study period for GLA assessments. Component lifespans have been assumed as per Table 9 of the RICS guidance, ‘Whole life carbon assessment for the built environment (2017)’, unless noted otherwise.

13.4.2 LCA software

The software used in this study was One Click LCA. The software has been third party verified for compliancy with the following LCA standards: EN 15978, ISO 21931–1 and ISO 21929, and data requirements of ISO 14040 and EN 15804.

13.5 Results

13.5.1 Proposed buildings

The following table details the outcomes from the Whole Life-Cycle Carbon Assessment for the Paddington Green Police Station proposed development.

Table 13—2 Estimated WLC emissions of Paddington Green Police Statement

Paddington Green Police Station – GIA 45,044 m²						
	Module A1-A5	Module B1-B5	Module B6-B7	Module C1-C4	Module D	A-D, excluding Modules B6 & B7
TOTAL kg CO₂e	33,967,256	22,490,722	29,900,107	1,498,993	-18,370,914	39,586,936
TOTAL kg CO₂e/m² GIA	516	341	454	22	-279	600

13.5.2 Results comparison to benchmark

To compare the WLC estimation results to the benchmark, modules A1-A5, modules B-C (excluding B6 & B7) and modules A-C (excluding B6 & B7) are compared in the table below.

Table 13—3 WLC benchmarks for modules A1-A5, B-C (excluding B6 & B7) and, A-C (excluding B6 & B7)

	A1-A5 (kg CO₂e/m² GIA)	B-C (excl B6 & B7) (kg CO₂e/m² GIA)	A-C (excl B6 & B7) (kg CO₂e/m² GIA)
WLC benchmark – Residential	<850	<350	<1200
Aspirational WLC benchmark - Residential	<500	<300	<800
Paddington Green Police Station	516	363	879

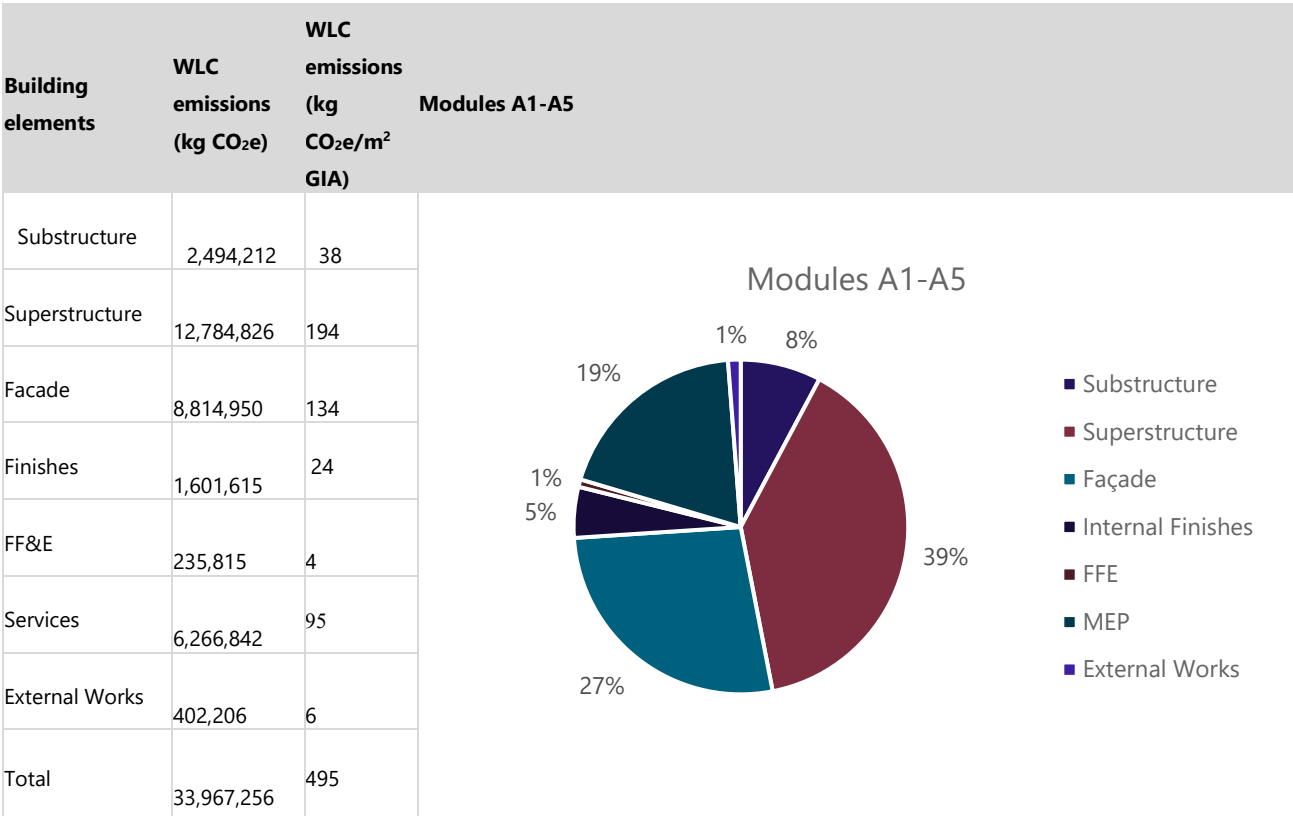
13.5.3 Modules A1-A5

The results for the Paddington Green Police Station proposed development embodied carbon (modules A1-A5) are given in the following table.

The 516 kg CO₂e/m² (A1-A5) of the proposed development performs better than the Standard WLC Benchmarks given by the GLA but falls short of the Aspirational target as shown in Table 13—3.

The cost consultant has provided the cost plan from which the quantities and types of materials have been extracted. Constructions used for the facades are based on libraries previously developed by Buro Happold including all the necessary materials for each façade system. Table 12-1 lists the analysis model inputs and their respective sources where different to the cost plan. As the design process evolves further carbon emission reduction strategies will be explored. Recycled content in aluminium elements will be further analysed.

Table 13—4 WLC results with the breakdown of building elements for modules A1-A5 for Paddington Green Police Station



As shown in Table 13—4, 47% of the embodied carbon of the building is comprised of the substructure and superstructure elements. For a concrete frame building, sitting atop piles, much of this mass exists as concrete. At present, most concrete specified features 50% cement replacement in the form of GGBS – increasing this percentage could help to lower the embodied carbon of the structure. Furthermore, a great volume of the concrete is specified to be C60/75 concrete – this has a higher cement content than other concrete mixes and often will be unable to contain the same volume of cement replacement. Throughout this analysis, the C60/75 concrete could only be modelled to include 40% GGBS, as per the EPD’s available within the OneClick database- it is suggested that the structural engineer review the concrete mix requirements during the next design stage if possible.

It should be caveated however that care and attention should be paid to the GGBS supply chain over the coming years, as it may be unrealistic to specify higher rates of GGBS once the construction date arrives. Furthermore, due to the extent of concrete involved within the project, potential investigation into leaner design could be undertaken in future design stages to enable the reduction of concrete volume across the project.

27% of the embodied carbon produced by the analysis model can be attributed to the façade – this higher than a typical residential development. This is due to the inefficient aspect ratio of the structure, creating a maximal façade area, which is then repeated across the three buildings, alongside the nature of the façade build-up. In the next design stage, there is opportunity to investigate less carbon intensive aluminium and GRC façade elements.

The building services represent around 18% of A1-A5 emissions. Over recent years as the understanding around the embodied carbon of building services has developed, it has been identified that this represents far larger quantities than previously accounted for. The MEP figure for this development has been taken from a similar, tall, residential building in London that Buro Happold recently conducted a detailed embodied carbon study for. These figures were pro-rated to account for the uplift in floor area for the proposed development and supplemented, where possible with the information

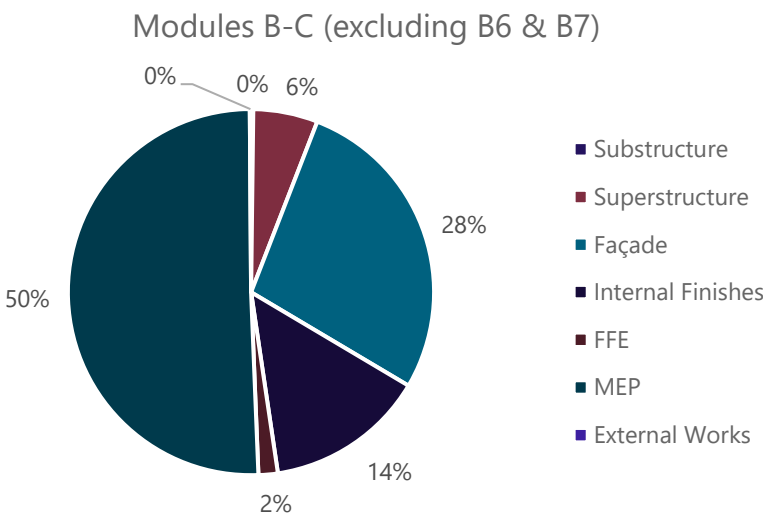
provided in the MEP Stage 2 report and Cost plan. High impact areas for the MEP focussed around the distribution networks which contain high quantities of metal and high density plastic ductwork and pipework, as well as the vertical transportation and fan coil units, which have been assumed to be included in all private dwellings, private dwelling corridors, private dwelling entrance spaces and ground floor commercial/retail units.

Additional high impact categories include the internal finishes, which are expected to contribute roughly ~24 kg.CO_{2e}/m². This was also taken primarily from a previous, detailed Buro Happold residential embodied carbon study, however was supplemented with the inclusion of suspended ceilings in large parts of the building. The greatest contributors to the embodied carbon of the building where high impact finishes such as non-recycled carpet tiles and vinyl flooring, but most significantly the suspended ceilings used. It is highly recommended that exposed services are used where possible, due to the high impact that suspended ceilings have on overall embodied carbon performance.

13.5.4 Modules B-C (Excluding B6 & B7)

The results for the Paddington Green Police Station embodied carbon (modules B-C excluding B6 & B7) are given in the following table.

Table 13—5 WLC results with the breakdown of building elements for modules B-C (excluding B6 & B7) for Paddington Green Police Station

Building elements	WLC emissions (kg CO _{2e})	WLC emissions (kg CO _{2e} /m ² GIA)	Modules B-C (excluding B6 & B7)
Substructure	48,883	1	
Superstructure	1,313,941	20	
Façade	6,372,957	96	
Finishes	3,259,495	49	
FF&E	396,722	6	
Services	11,665,493	177	
External Works	23,064	1	
Total	23,222,667	365	

The 365 kg CO_{2e}/m² B-C modules (excluding B6 & B7) of the proposed development is slightly above the GLA benchmark of 350 kg CO_{2e}/m² but falls short when compared to the aspirational WLC benchmarks provided by GIA and 300 kg CO_{2e}/m² GIA. In order to reach the 300 kg CO_{2e}/m² GIA standard benchmark, the B-C modules must be reduced. It must be noted that assumptions have been made for the B2/B3 modules following the GLA’s Whole Life Carbon Assessment guidance (March 2022), as repair and maintenance strategies have yet to be developed, alongside the other material

assumptions provided in Figure 13-1. This is therefore an area that should be monitored closely, and updated when information is produced, over future design stages.

The results identify the major contributors to be the façade (~28%), the services (50%) and the finishes (~14%). As highlighted in the previous section, it should be noted that the façade has been modelled with an element of conservatism – particularly with respect to lifespans, which will have a direct impact on the CO_{2e} value of the refurbishment (B4) module. This amplifies the embodied carbon related to the high-carbon intensity glazing façade typologies used and helps to explain why these modules do not fall within the GLA benchmarks at this stage, though does not suggest that the benchmarks will not be met once further, more detailed modelling has been undertaken. Building services contribute by far the greatest quantity of B-C emissions due to the short lifespans assumed for these elements, drastically increasing the B4 emissions. Additionally, the heating and cooling strategy selected involves the use of high volumes of high GWP refrigerants. This contributes significantly to the overall B1 emissions on the project. Key recommendations for the next stage are to identify equipment with good longevity, as well as identifying either solutions to reduce the quantity of GWP intensity of the refrigerants used. However, these implementations should always be considered with regards to WLC emissions impacts that variations in MEP systems might result in. The internal finishes for the project were also identified as high intensity for modules B-C. This is again due to the short lifespans of finishes. Identification of higher performance or more resilient products in the coming design stages would be highly recommended.

13.6 Strategies for Reducing Environmental Impact

The façade elements carbon intensity is identified as having the biggest potential for carbon emission reduction in the next design stage. The unitised façade elements will be closely monitored and where possible, materials with lower emission rates will be selected. Particularly, aluminium elements with higher recycled contents and, if feasible, more efficient fabrication systems will be proposed. 50% GGBS content in most concrete elements is being targeted, all efforts will be made to comply with this and if possible, increase the percentage.

The results show an overall embodied carbon value of 879 kgCO_{2e}/m² GIA for modules A-C (excluding B6 and B7), falling just short of the GLA aspirational target of 800 kgCO_{2e}/m² GIA. In order to reach the aspirational target, the project will need to reduce its overall embodied carbon by 9%.

As discussed previously, given that concrete contributes to ~28% of the embodied carbon of the overall project, particular attention should be paid to reducing the embodied carbon of this element. At present, the main way to achieve lower embodied carbon within concrete mixes is through the use of cement replacements such as GGBS. As mentioned previously, care should also be taken to consider the relatively volatile supply chains surrounding GGBS, and it should not be used alone to support the sustainability aspirations of the development.

Further opportunities to reduce the carbon associated with the project will present themselves as the detailed design is developed such as including a minimum recycled content above 40% for all aluminium façade elements as well as maximising where possible the recycled content within the steel façade elements. Integrating brick with high recycled content (above 80%) or using brick produced using alternative fuel source could also be considered.

With regards to building services, the key design recommendations are to identify ways to reduce all pipework and ductwork length, the minimisation of refrigerant charge and/or the use of lower GWP refrigerant types and the identification of equipment with longer lifespans, in order to reduce whole-life embodied carbon emissions.

The internal finishes considered for the project should also take reduced use and longevity as priority actions. Exposed soffits opposed to suspended ceilings would contribute the largest A1-A5 savings, with polished concrete floors opposed to carpet or vinyl finishes being second. Where finishes are required, the most resilient solutions and any solutions including recycled materials (e.g. recycled carpet tiles) should be identified.

13.7 Module Breakdown

The graph presented below shows the total emissions breakdown per module. The operational energy emissions were obtained from the Part L, BRUKL reports. B2 and B3 stages were benchmarked following the Whole Life-Cycle Carbon Assessments Guidance (March 2022).

The study included analysis of the D stage as well, including the modules Reuse, Recovery and Recycle. These figures are calculated directly in One Click LCA with data provided by each manufacturer in each of the EPD's (Environmental Product Declarations) corresponding to each of the construction elements declared.

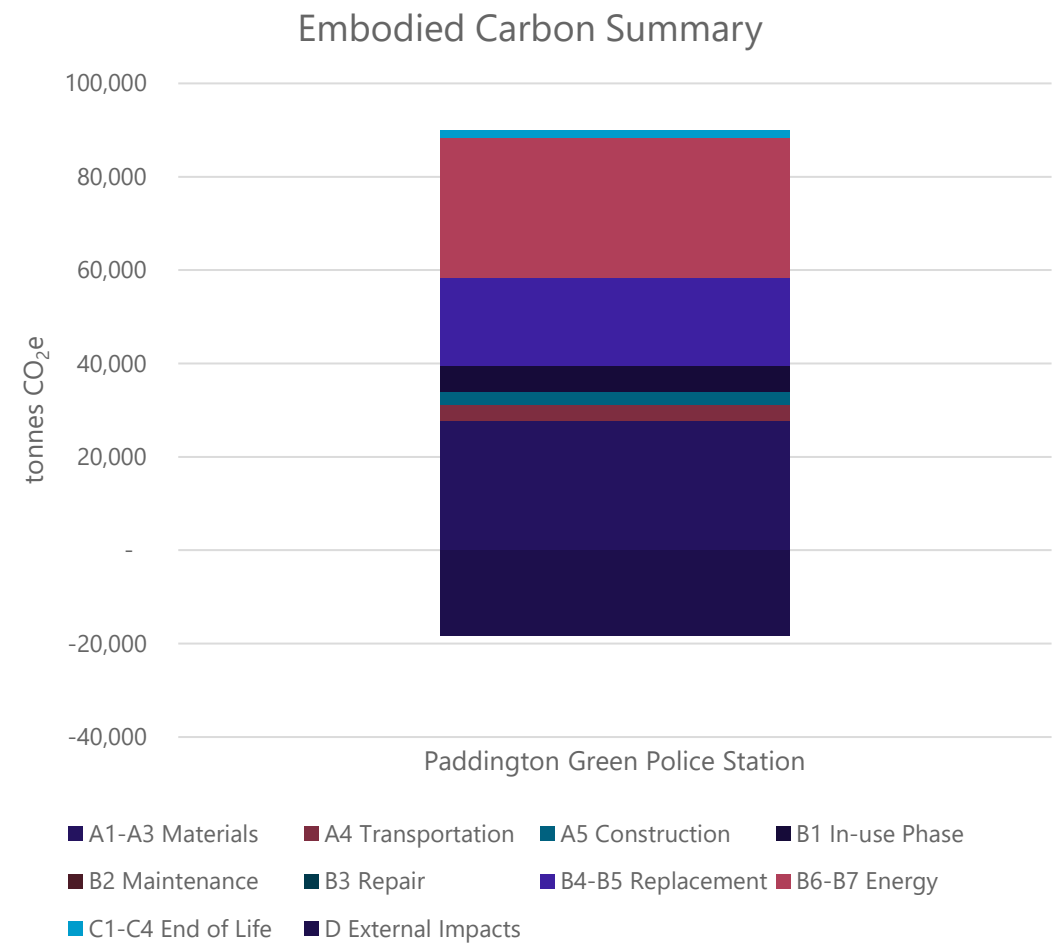


Figure 13—1 Module Breakdown

13.8 Conclusion

A whole life-cycle carbon assessment was carried out for the three towers that create Paddington Green Police Station development. The most recent and relevant quantities available were used to complete the assessment as accurately as possible. It was estimated that the total emissions (modules A1-A5) per area based on the GIA were ~516 kgCO₂e/m², which were found to be better than the GLA's standard benchmarks, but below the aspirational benchmarks. The analysis has identified that the largest opportunities contributing to potential reduction in life-cycle carbon are the inclusion of higher recycled content in aluminium and GRC elements of the façades and if possible leaner design in concrete elements and/or the selection of lower cement content concrete mixes. The height of the building presents challenges to carbon reduction, for that reason, at this stage, assumptions have been taken in a conservative manner. As the project evolves further reduction strategies will be analysed in close interaction with the design team.

Additionally, it was estimated that the total emissions (modules B-C excluding B6 & B7) per area based on the GIA were ~365 kgCO₂e/m², which were found to miss both the GLA's aspirational and standard benchmarks. The analysis has identified that the largest factors contributing to life-cycle carbon are the façade, the services and the structural frame.

14 Conclusions

This Sustainability Statement considers the various sustainability policy requirements and targets for the revised proposals and describes the strategies to deliver a sustainable Paddington Green Police Station scheme. Key strategies to achieve the various targets and requirements and deliver sustainable outcomes over the lifecycle of the project include:



Topic 1: Materials

A strategy has been developed to promote resource efficient construction; facilitate reuse and recyclability; use materials with low embodied carbon & water; use responsibly sourced materials; optimise durability and lifespan; and design flexibility.



Topic 2: Operational Energy & Carbon emissions

An energy strategy has been developed and is detailed in the separate Energy Statement. It follows the GLA energy hierarchy; first applying lean measures such as consideration of highly efficient fabric and low air tightness of the building to reduce energy consumption, before then applying efficient systems, supplying low carbon heat through Air Source Heat Pumps (ASHP). Through the application of the energy hierarchy, Paddington Green Police Station achieves a carbon dioxide emissions reduction of 66% below the Building Regulations 2021 Baseline Building and based on SAP 10.2 carbon factors.



Topic 3: Climate Change Adaptation

The design includes measures that will help mitigation of and adaptation to climate change. Mitigation measures include energy efficiency through on-site low carbon heating plant; reducing embodied carbon; low energy lighting; and sustainable transport strategies. Measures to adapt to future climate change include SuDS implementation; best practice flood resilience measures; assessment of the risk of overheating in higher temperatures; use of green infrastructure to minimise and mitigate heating to the urban environment; resilient foundations.



Topic 4: Ecology & Biodiversity

The revised proposals aim to improve site biodiversity, with the inclusion of surface water attenuation and the utilisation of native species or species with a known benefit to wildlife. This will incorporate features specifically designed to benefit pollinators and other invertebrates, birds, bats, hedgehogs and other terrestrial wildlife.



Topic 5: Water efficiency

A strategy has been developed to reduce water demand through water efficiency measures. The rate of discharge of surface water will be limited to achieve the London Plan requirements and the target agreed with the Environment Agency for the whole masterplan. This will be achieved by incorporating SuDS measures.



Topic 6: Sustainable Transportation & Access

Low mobility strategy to minimise the use of private fossil fuel transport from the site visitors and occupants. This is to be achieved by encouraging and increasing the use of public transport, and sustainable forms of private transport such as cycling and walking.



Topic 7: Pollution Management

Reducing the impact demolition and construction works on the pollution of the wider community from air pollutants, light pollution, noise, vibration and waste. This topic also aims to recommend mitigation measures and encourage environmental gains.



Topic 8: Waste Management

A strategy for waste reduction and promotion of recycling has been developed which follows a waste hierarchy to minimise waste and promote recycling during operation and construction. The segregation of different waste streams for recycling. Where possible circular economy principles will be used to either reduce, reuse and recycle.

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