SUSTAINABILITY STATEMENT

330 Gray's Inn Road

Produced by XCO2 for 330 Gray's Inn Road Ltd.

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XCO2
56 Kingsway Place, Sans Walk
London EC1R 0LU

+44 (0)20 7700 1000
mail@xco2.com
xco2.com

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EXECUTIVE SUMMARY

The sustainability strategy for the proposed development at 330 Gray's Inn Road has been developed with the design team to comply with the relevant environmental policies from the London Borough of Camden and the London Plan. Relevant energy policies have been addressed in the accompanying Energy Statement. The proposed development is targeting the achievement of BREEAM 'Excellent' and expected to reduce on-site regulated carbon emissions by 40.9% with SAP 10 emission factors.

This report outlines the sustainability strategy for the proposed mixed-use development at 330 Gray's Inn Road, in line with the requirements set out by the London Plan and the London Borough of Camden.

This sustainability statement is divided into three parts:

- Planning Policies;
- Sustainability Measures; and
- BREEAM Pre-assessment.

The first part provides an overview of the site and planning policies applicable to this development in accordance with the London Plan and relevant Camden policies.

The second part then outlines the sustainability strategy that has been employed to address the relevant planning policies.

The third part of this report outlines the sustainability measures that have been adopted to achieve a BREEAM New Construction 'Excellent' rating for the commercial areas. A summary of the pre-assessment credits for the BREEAM assessment are provided at the end of this section.

The key sustainable design and construction measures incorporated in the proposals are summarised below:

Sustainable design and layout

- The proposed site is the former location of the Royal National Throat, Nose and Ear Hospital. The proposed development provides a new use for the site, with an effective layout and suitable scale;
- The design of the proposed development showcases consideration of the surrounding context by reconfiguring the site. The masterplan enhances the pedestrian network in the area, by providing a new pedestrian connection directly across the site between Wicklow Street and Swinton Street, and introduces a new public access way from Gray's Inn Road to a 775m^2 public courtyard;
- Adequate levels of ventilation will be ensured through the specification of Mechanical Ventilation with Heat Recovery (MVHR) for improved energy efficiency;
- The development will incorporate industry leading renewable technologies such as air source heat pumps (ASHPs) and photovoltaics (PV);
- The energy strategy will be combustion-free, thereby reducing carbon emissions as well as NOx emissions, with an overall benefit to local air quality;
- The buildings within the proposed development are thoughtfully designed to reduce energy demand through improved U-values and air permeability with carefully designed glazing to maximise daylight. Low energy lighting will be utilised to reduce reliance on artificial lighting;
- The proposed development aims to reduce water consumption to less than 105 litres per person per day. Water consumption will also be offset through the provision of rainwater collection for irrigation purposes across the development; and
- The proposed development will seek to include responsibly sourced materials with low embodied carbon and incorporate circular economy principles.

Climate change adaption

- A comprehensive Sustainable Urban Drainage Strategy has been prepared for the site;
- The proposal will seek to introduce soft landscaping with a range of native plant and shrub species to attract invertebrates, birds and other fauna to the area;
- The scheme aims to maximise the Urban Green Factor (UGF) through the combination of measures such as extensive green roofs, green walls, flower-rich perennial plants, and standard tree planting throughout the landscaped areas; and
- The potential risk of overheating and demand for active cooling will be mitigated by incorporating passive and active design measures.

Waste & Pollution Management

- Air pollution from construction and demolition activities on site will be kept to a minimum where possible;
- The development will take measures to reduce waste and pollution on site during construction and operation, and provide adequate waste and recycling storage;
- By avoiding the provision of car parking spaces, the development aims to encourage residents and employees to travel by non-car methods, in particular cycling, walking and public transport;
- The development will integrate adequate measures to mitigate noise from the nearby railway to adequate level; and
- Water pollution to surrounding watercourses will be minimised by the increase in permeable ground, thereby reducing surface water runoff. In addition, contractors will adopt best practice policies to mitigate water pollution from construction activities on site. The proposed development will discharge domestic sewage via a connection to the public foul sewer or combined sewer network where it is reasonable to do so.

In summary, the proposed development at 330 Gray's Inn Road meets the targets set out by the Borough of Camden and the Greater London Authority (GLA). The commercial areas of the scheme could achieve a BREEAM score varying between 73% and 75%, exceeding the BREEAM 'Excellent' target of 70%.

The number of credits obtained in the BREEAM pre-assessment reflect the client and design team's aspirations in integrating sustainability measures and demonstrates that the project is designed to exceed the planning policy sustainability requirements.

SITE

The proposed scheme comprises the redevelopment of the former Royal National Throat, Nose and Ear hospital site in the London Borough of Camden.

The redevelopment of the former Royal National Throat, Nose and Ear hospital comprises the retention of 330 Gray's Inn Road and a two storey extension for use as hotel, demolition of all other buildings, the erection of a part 13 part 9 storey building plus upper and lower ground floors for use as a hotel including a café and restaurant; covered courtyard; external terraces; erection of a 7 storey building plus upper and lower ground floors for use as office together with terraces; erection of a 10 storey building plus upper and lower ground floors for use as residential on Wicklow Street and office space at lower ground and basement floors; erection of a 5 storey building plus upper and lower ground floors for use as residential on Swinton Street and associated residential amenity space; together with a gymnasium; new basement; rooftop and basement plant; servicing; cycle storage and facilities; refuse storage; landscaping and other ancillary and associated works.

The site is bound to the north in part by the UCL Ear Institute and in part by Wicklow Street and railway cuttings to the east; Swinton Street to the south and Gray's Inn Road runs along the site's western boundary. The site sits towards the centre of the growing Knowledge Quarter within the eastern section of the area.

The site is immediately adjoined by Swinton House and the Water Rats public house to the south on Gray's Inn Road, and to the north by UCL Centre for Auditory Research and 334-336 Gray's Inn Road to north.

The approximate location and boundary of the application site is shown in the following figure.

Figure 1: Approximate location of application site

PLANNING POLICY

The proposed development at Gray's Inn Road has been designed in line with the requirements set out by the London Borough of Camden as well as the London Plan[1].

The relevant planning policy documents for sustainability are:

- The London Plan (2016);
- Intend to Publish London Plan (2019);
- Sustainable Design and Construction SPG (2014);
- Housing Supplementary Planning Guidance (2016);
- Camden Local Plan (2017);
- Camden Planning Guidance – Energy Efficiency and Adaption (Draft 2020).

THE LONDON PLAN

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

The overarching policy setting out the principles of sustainable design and construction to be incorporated in major proposals is Policy 5.3:

POLICY 5.3 SUSTAINABLE DESIGN AND CONSTRUCTION

"Planning decisions:
B. Development proposals should demonstrate that sustainable design standards are integral to the proposal, including its construction and operation, and ensure that they are considered at the beginning of the design process.
C. Major development proposals should meet the minimum standards outlined in the Mayor's supplementary planning guidance and this should be clearly demonstrated within a design and access statement. The standards include measures to achieve other policies in this Plan and the following sustainable design principles:

a. minimising carbon dioxide emissions across the site, including the building and services (such as heating and cooling systems)
b. avoiding internal overheating and contributing to the urban heat island effect
c. efficient use of natural resources (including water), including making the most of natural systems both within and around buildings
d. minimising pollution (including noise, air and urban runoff)
e. minimising the generation of waste and maximising reuse or recycling
f. avoiding impacts from natural hazards (including flooding)
g. ensuring developments are comfortable and secure for users, including avoiding the creation of adverse local climatic conditions
h. securing sustainable procurement of materials, using local supplies where feasible, and
i. promoting and protecting biodiversity and green infrastructure."

Complementary to, and expanding upon Policy 5.3 are the following London Plan policies:

- Policy 5.2 Minimising Carbon Dioxide Emissions
- Policy 5.5 Decentralised Energy Networks
- Policy 5.6 Decentralised Energy in Development proposals
- Policy 5.7 Renewable Energy
- Policy 5.9 Overheating and Cooling
- Policy 5.11 Green Roofs and Development Site Environs
- Policy 5.12 Flood Risk Management

[1] The London Plan, Further Alterations to the London Plan (March 2015) and Housing Standards Minor Alterations to the London Plan (March 2016), herein referred to as The London Plan

- Policy 5.13 Sustainable Drainage
- Policy 5.15 Water use and Supplies
- Policy 5.18 Construction, Excavation and Demolition Waste.

Specific requirements on the use of energy and water resources, applicable to all major proposals, are as follows.

POLICY 5.2 MINIMISING CARBON DIOXIDE EMISSIONS

"...Major developments [must] meet the following targets for carbon dioxide emissions reduction in buildings. These targets are expressed as minimum improvements over the Target Emission Rate (TER) outlined in the national Building Regulations leading to zero carbon residential buildings from 2016 and zero carbon non-domestic buildings from 2019."

POLICY 5.15 WATER USE AND SUPPLIES

"...setting an upper limit of daily domestic water consumption to 105 litres/head for residential developments (excluding a maximum allowance of 5 litres/head/day for external water consumption)."

INTEND TO PUBLISH LONDON PLAN

The current 2016 London Plan still forms part of the Development Plan. However, the Intend to Publish London Plan, last updated in December 2019, is a material consideration in planning decisions. The New London Plan is scheduled to be published late 2020.

The proposed development seeks to comply with the relevant sustainability policies within the Intend to Publish London Plan, where feasible. This Sustainability Statement outlines how these policies will be met by the proposed development. The following paragraphs highlight the key changes and additional requirements stemming from emerging policies related to sustainable development.

GREENHOUSE GAS EMISSIONS

The Good Growth objective GG6 (Increasing efficiency and resilience) sets a positive direction for the new draft Plan in terms of ambitious new greenhouse gas emission targets. This policy references London's target to become zero carbon by 2050 and the need to design buildings and infrastructure for a changing climate. To drive this change both residential and non-residential major schemes will need to be net zero-carbon (via offset payments, regulated emissions only). At least 35% of this reduction must be made on site for major developments, with residential developments expected to achieve at least a 10% (and non-residential at least a 15%) regulated reduction in emissions through energy efficiency measures alone (Policy SI 2).

In a major departure from the previous London Plan, calculations will be required to include both regulated and unregulated emissions at each stage of the energy hierarchy. Furthermore, major developments are encouraged to submit details of the method with energy performance and carbon dioxide emissions monitored post-construction for at least the first five years of building operation.

ENERGY INFRASTRUCTURE

In addition to upgrades to the lean and green stages of the energy hierarchy the clean stage has also been enhanced. A "be seen" stage has also been introduced so the development energy performance is monitored and reported. Most notably, all major developments within Heat Network Priority Areas will need to utilise a communal low-temperature heating system.

Policy SI 3 (Energy infrastructure) recommends zero-emission or local secondary heat sources technology as step on the heating hierarchy but prioritises a connection to local existing or planned heat networks where feasible, for selecting communal heating systems. Where developments are utilising low-emission CHP this policy requires them to demonstrate that the CHP will *enable the delivery of an area-wide heat network, meet the development's electricity demand and provide demand response to the local electricity network*.

MATERIALS, WASTE & LIFE CYCLE CARBON

Policy SI 2 (Minimising greenhouse gas emissions) mentions the requirement for Energy Strategies to include a *whole life-cycle carbon emissions assessment and actions to reduce life-cycle carbon emissions*. This is to fully capture the development's carbon impact: unregulated and embodied emissions, and emissions associated with maintenance, repair and demolition will be considered. This may result in more sustainable material choices at design stage and could lead to natural and recycled materials alongside the more widely recognised cross-laminated timber becoming more commonplace in the capital. This section also links with Policy SI 7 (Reducing waste and supporting the circular economy), whereby materials are retained in use at their highest value for as long as possible to minimise waste. All referable applications should submit a Circular Economy Statement, intended to cover the whole life cycle of development.

AIR QUALITY

The new draft Plan addresses this crucial area by requiring large-scale development proposals to demonstrate how they maximise benefits to air quality and the measures or design solutions they will implement to minimise exposure to air pollution.

In practice this will mean that a preliminary Air Quality Assessment (AQA) to be carried out for all major developments prior to any design work taking place, with a full AQA submitted in support of the planning application. In addition, the new draft London Plan supports electric vehicle charging points and other transport alternatives to achieve carbon-free travel by 2050.

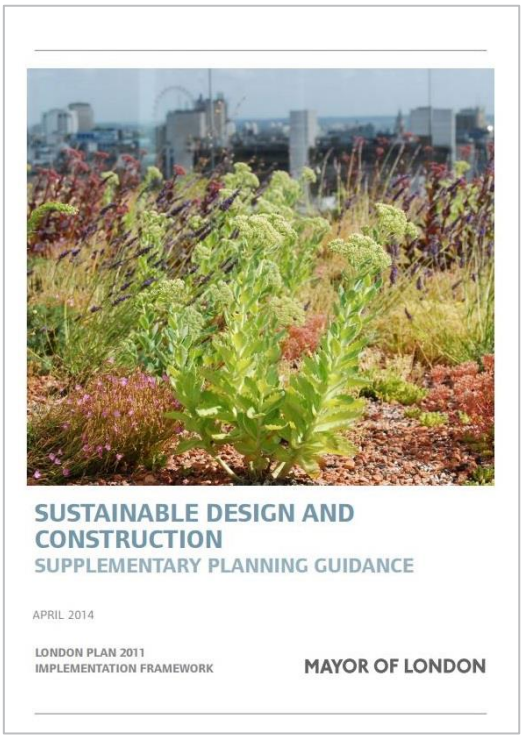
SUSTAINABLE DESIGN AND CONSTRUCTION SPG

The Sustainable Design and Construction SPG, adopted in April 2014, provides additional information and guidance to support the implementation of the Mayor's London Plan. The SPG does not set new policy, but explains how policies in the London Plan should be carried through into action.

It is applicable to all major developments and building uses so it has been used to guide the design. It covers the following areas:

- Resource Management
- Adapting to Climate Change and Greening the City
- Pollution Management

This SPG provides a basis for sustainable design in London and is used as the overarching structure of this report. Where additional local policies are addressed by these areas this has also been indicated.

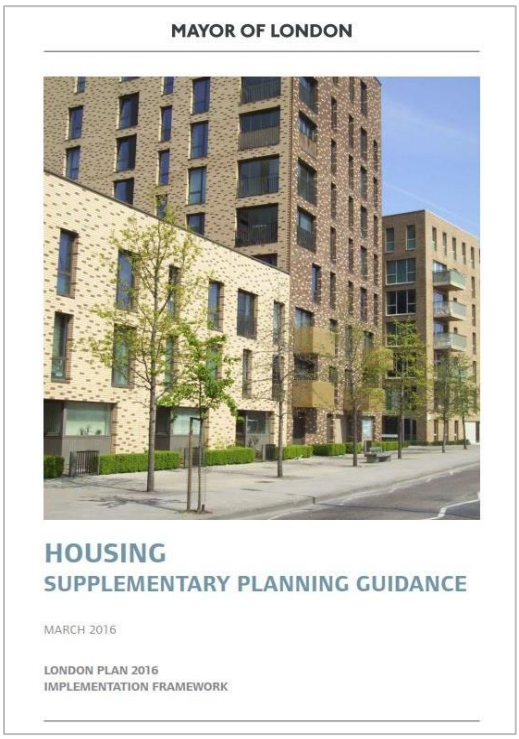


HOUSING SPG

This document provides guidance on the implementation of housing policies in the London Plan and it replaces the 2012 Housing SPG.

Part 2 covers housing quality and updates London housing standards to reflect the implementation of the government's new national technical standards through the Minor Alterations to the London Plan (2015-2016).

As design affects the quality of life, health & wellbeing, safety and security of users and neighbours, this guidance is integral to sustainable development and will be cross-referenced as relevant in the subsequent sections.



LOCAL BOROUGH POLICY

CAMDEN LOCAL PLAN (2017)

The Camden Local Plan, adopted in 2017, sets out the following policies for energy and sustainability:

Policy C1: Health and Wellbeing

The Council will improve and promote strong, vibrant and healthy communities through ensuring a high quality environment with local services to support health, social and cultural wellbeing and reduce inequalities. Measures that will help contribute to healthier communities and reduce health inequalities must be incorporated in a development where appropriate.

The Council will require:

a) development to positively contribute to creating high quality, active, safe and accessible places; and
b) proposals for major development schemes to include a Health Impact Assessment (HIA).

We will:

c) contribute towards the health priorities of the Health and Wellbeing Board and partners to help reduce health inequalities across the borough;
d) support the provision of new or improved health facilities, in line with Camden's Clinical Commissioning Group and NHS England requirements; and
e) protect existing health facilities in line with Policy C2 Community facilities.

Policy A3: Biodiversity

The Council will protect and enhance sites of nature conservation and biodiversity. We will:

a) designate and protect nature conservation sites and safeguard protected and priority habitats and species;
b) grant permission for development unless it would directly or indirectly result in the loss or harm to a designated nature conservation site or adversely affect the status or population of priority habitats and species;
c) seek the protection of other features with nature conservation value, including gardens, wherever possible;
d) assess developments against their ability to realise benefits for biodiversity through the layout, design and materials used in the built structure and landscaping elements of a proposed development, proportionate to the scale of development proposed;
e) secure improvements to green corridors, particularly where a development scheme is adjacent to an existing corridor;
f) seek to improve opportunities to experience nature, in particular where such opportunities are lacking;
g) require the demolition and construction phase of development, including the movement of works vehicles, to be planned to avoid disturbance to habitats and species and ecologically sensitive areas, and the spread of invasive species;
h) secure management plans, where appropriate, to ensure that nature conservation objectives are met; and
i) work with The Royal Parks, The City of London Corporation, the London Wildlife Trust, friends of park groups and local nature conservation groups to protect and improve open spaces and nature conservation in Camden.

Trees and vegetation

The Council will protect, and seek to secure additional, trees and vegetation. We will:

j) resist the loss of trees and vegetation of significant amenity, historic, cultural or ecological value including proposals which may threaten the continued wellbeing of such trees and vegetation;
k) require trees and vegetation which are to be retained to be satisfactorily protected during the demolition and construction phase of development in line with BS5837:2012 'Trees in relation to Design, Demolition and Construction' and positively integrated as part of the site layout;
l) expect replacement trees or vegetation to be provided where the loss of significant trees or vegetation or harm to the wellbeing of these trees and vegetation has been justified in the context of the proposed development;
m) expect developments to incorporate additional trees and vegetation wherever possible.

Policy CC1: Climate change mitigation

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

We will:

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

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

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

d) support and encourage sensitive energy efficiency improvements to existing buildings;

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

f) expect all developments to optimise resource efficiency.

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

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

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

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

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

Policy CC2: Adapting to climate change

The Council will require development to be resilient to climate change.

All development should adopt appropriate climate change adaptation measures such as:

a) the protection of existing green spaces and promoting new appropriate green infrastructure;

b) not increasing, and wherever possible reducing, surface water runoff through increasing permeable surfaces and use of Sustainable Drainage Systems;

c) incorporating bio-diverse roofs, combination green and blue roofs and green walls where appropriate; and

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

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

Sustainable design and construction measures

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

e) ensuring development schemes demonstrate how adaptation measures and sustainable development principles have been incorporated into the design and proposed implementation;

f) encourage new build residential development to use the Home Quality Mark and Passivhaus design standards;

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

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

Policy CC3: Water and flooding

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

We will require development to:

a) incorporate water efficiency measures;

b) avoid harm to the water environment and improve water quality;

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

d) incorporate flood resilient measures in areas prone to flooding;

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

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

Where an assessment of flood risk is required, developments should consider surface water flooding in detail and groundwater flooding where applicable.

The Council will protect the borough's existing drinking water and foul water infrastructure, including the reservoirs at Barrow Hill, Hampstead Heath, Highgate and Kidderpore.

Policy CC4: Air quality

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

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

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

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

Policy CC5: Waste

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

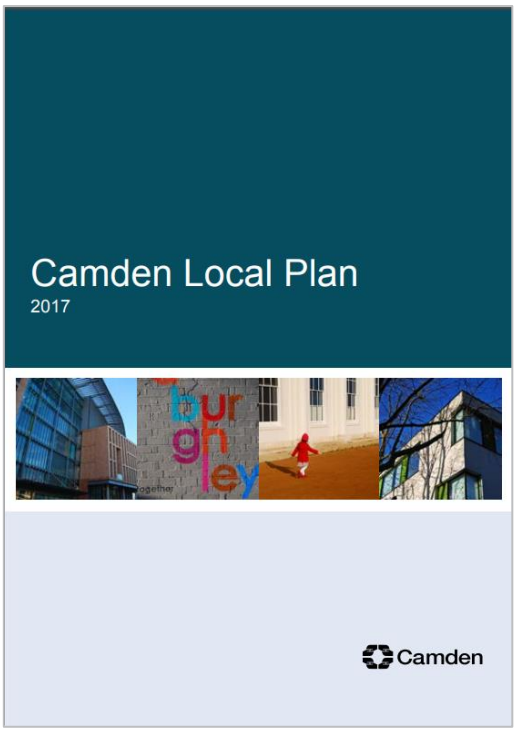
We will:

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

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

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

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



CAMDEN PLANNING GUIDANCE – ENERGY EFFICIENCY AND ADAPTION

The Camden Planning Guidance for Energy Efficiency and Adaption has been prepared to support the policies within the Camden Local Plan (2017). The guidance provides most specific information on the key energy and resource issues within the Borough. The document was adopted in March 2019 and replaces the CPG3 Sustainability July 2015 (updated March 2018). A revised draft document released in July 2020 is intended to replace the current version following consultation.

The sections of the current version of the document that will be covered by the following sections of this Sustainability Statement are listed below:

The energy hierarchy

- *All developments in Camden is expected to reduce carbon dioxide emissions by following the energy hierarchy in accordance with Local Plan policy CC1.*
- *Energy strategies are to be designed following the steps set out in the energy hierarchy.*

Making buildings more energy efficient

- *Natural 'passive' measures should be prioritised over active measures to reduce energy.*

Decentralised energy

- *All new major developments in Camden are expected to assess the feasibility of decentralised energy network growth.*

Renewable energy technologies

- *There are a variety of renewable energy technologies that can be installed to supplement a development's energy needs.*
- *Developments are to target a 20% reduction in carbon dioxide emissions from on-site renewable energy technologies.*

Energy statements

- *Energy statements are required for all developments involving 5 or more dwellings and/or 500sqm or more of any (gross internal) floorspace.*
- *Energy statements should demonstrate how a development has been designed following the steps in the energy hierarchy.*
- *The energy reductions should accord to those set out in the following chapter 'Energy reduction'.*

Energy reduction

- *All development in Camden is expected to reduce carbon dioxide emissions through the application of the energy hierarchy.*
- *All new build major development to demonstrate compliance with London Plan targets for carbon dioxide emissions.*
- *Deep refurbishments (i.e. refurbishments assessed under Building Regulations Part L1A/L2A) should also meet the London Plan carbon reduction targets for new buildings.*
- *All new build residential development (of 1 – 9 dwellings) must meet 19% carbon dioxide reduction.*
- *Developments of five or more dwellings and/or more than 500sqm of any gross internal floorspace to achieve 20% reduction*

in carbon dioxide emissions from on-site renewable energy generation.

Energy efficiency in existing buildings

- *All developments should demonstrate how sustainable design principles have been considered and incorporated.*
- *Sensitive improvements can be made to historic buildings to reduce carbon dioxide emissions.*
- *Warm homes and buildings are key to good health and wellbeing. As a guide, at least 10% of the project cost should be spent on environmental improvements.*
- *The 20% carbon reduction target (using on-site renewable energy technologies) applies for developments of five or more dwellings and/or more than 500sqm of any gross internal floorspace.*

Resource efficiency

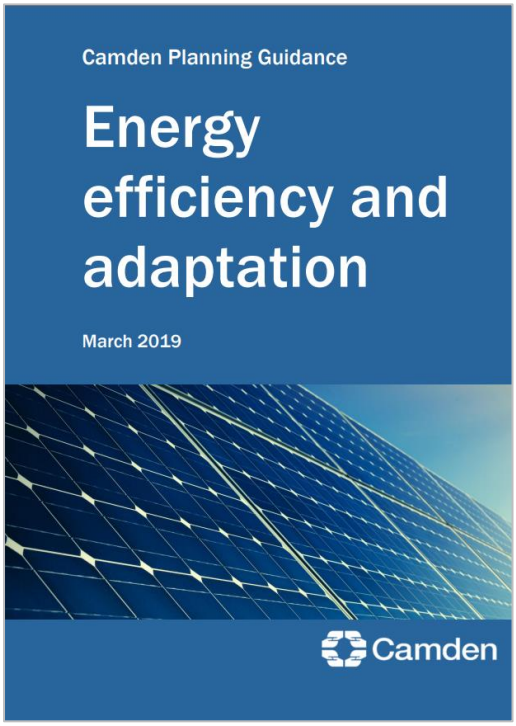
- *Proposals for substantial demolition should be justified in terms of the optimisation of resources and energy use, in comparison with the existing building;*
- *Where demolition cannot be avoided developments are expected to divert 85% of waste from landfill (see paragraph 8.17 Local Plan).*

Sustainable design and construction measures

- *All developments involving 500 sqm or more should address sustainable design and construction measures (proposed in design and implementation) in a Sustainability Statement (Local Plan policy CC2).*
- *Active cooling (air conditioning) will only be permitted where its need is demonstrated and the steps in the cooling hierarchy are followed (Local Plan policy CC2).*
- *Development is expected to reduce overheating risk through following the steps in the cooling hierarchy. All new development should submit a statement demonstrating how the cooling hierarchy has been followed (Local Plan policy CC2).*
- *All developments should seek opportunities to make a positive contribution to green space provision or greening.*

Sustainability assessment tools

- *BREEAM Excellent is required for all non-residential development of 500sqm or more floorspace.*
- *Other assessment tools such as Home Quality Mark and Passivhaus are encouraged, they can serve to demonstrate the incorporation of sustainable design principles.*



RESPONSE TO PLANNING POLICIES

This part of the report presents the key elements of the proposal that underpin environmental sustainability, demonstrates how the development complies with sustainable development policies and incorporates guidance on sustainable design and construction.

LAND AND SITE LAYOUT

Land use

The land for this proposal is efficiently used as the scheme will be constructed on previously developed land. The site comprises the former Royal National Throat, Nose and Ear Hospital which has relocated to a new location.

Reuse of Existing Buildings

In line with Policy CC/1 of the Camden Local Plan, relevant studies have been carried out to assess the reuse of existing buildings. A Whole Life Carbon comparative assessment was carried out to determine the carbon performance of different design scenarios of refurbishment and new build. The results of these studies have informed the final proposed design submitted for planning.

For more details please refer to the accompanying Whole Life Carbon assessment.

It is also proposed that a portion of current existing materials will be reused for the proposed development. Further details can be found in the accompanying Circular Economy Statement.

Land Form and Site Layout

The proposed development comprises the retention of 330 Gray's Inn Road and a two storey extension for use as hotel, demolition of all other buildings, the erection of a part 13 part 9 storey building plus upper and lower ground floors for use as a hotel including a café and restaurant; covered courtyard; external terraces; erection of a 7 storey building plus upper and lower ground floors for use as office together with terraces; erection of a 10 storey building plus upper and lower ground floors for use as residential on Wicklow Street and office space at lower ground and basement floors; erection of a 5 storey building plus upper and lower ground floors for use as residential on Swinton Street and associated residential amenity space; together with a gymnasium; new basement; rooftop and basement plant; servicing; cycle storage and facilities; refuse storage; landscaping and other ancillary and associated works.

Consideration has been given to the layout and scale of the surrounding buildings. The scale of the development follows a principle of densification but, at the same time, it considers the neighbouring buildings with regard to height and overall volume.

The scheme considers the surrounding urban connections and aims to reconfigure the public realm by creating new pedestrian links through the site.

Daylight & Sunlight Impacts

The proposed scheme has been thoughtfully designed with suitable levels of glazing to ensure that all habitable spaces have adequate levels of daylight and sunlight.

The site layout and buildings' massing has taken in consideration the amenity and open spaces in order to minimise overshadowing effects. Amenity areas for the residents of the flats are provided on roof terraces, where light and sunlight will be abundant. Appropriate levels of daylight and sunlight contributes to positive health and wellbeing of the residents and occupants of the scheme.

The scheme will have no significant adverse effects on access to daylight and sunlight of neighbouring properties.

Further details can be found in the Daylight and Sunlight Assessment by Point2, submitted in support of this application.

Micro-climate

A microclimate is the distinctive climate of a small-scale area and the variables within it, such as temperature, rainfall, wind or humidity may be subtly different to the conditions prevailing over the area as a whole. The main characteristics of microclimates within London are temperatures and wind.

The impact on local wind conditions in London is generally limited to the City where large developments can influence (and in some cases, exacerbate) wind speeds and direction without careful consideration. However, it is important to consider pedestrian comfort within developments of this scale and as such, a high-level assessment has been undertaken to both measure the potential impacts of the development and provide recommendations for any mitigation that may be required.

Further details can be found in the Technical Memorandum prepared by RWDI in support of this application.

Urban Greening

The proposed scheme will contribute to the increase of green spaces within London by providing landscaped areas, which contribute to increase in physical activity and relaxation of occupants, improvement of local air quality, and reduction of Urban Heat Island effect.

The scheme aims to maximise the Urban Green Factor (UGF) through the combination of measures such as extensive green roofs, green walls, flower-rich perennial plants, and standard tree planting throughout the landscaped areas.

Further details and specific calculation of the UGF can be found in Appendix A and the Landscaping scheme prepared by East.

Impacts on Neighbours from Demolition and Construction

The Considerate Constructors Scheme will be used to ensure that contractors carry out their operations in a safe and considerate manner.

Construction impacts (e.g. dust generation) shall be minimised through adoption of best practice construction measures, formalised through a Construction Management Plan.

Land Contamination

In the event of any discovery of potentially contaminated soils or materials, this discovery will be quarantined and reported to the most senior member of site staff or the designated responsible person at the site for action. The location, type and quantity will be recorded and the Local Authority, a competent and appropriate third-party Engineer/Environmental consultant notified immediately. An approval from the Local authority will be sought prior to implementing any proposed mitigation action.

Further details can be found in the Contaminated Land Assessment by WSP, submitted in support of this application.

HEALTH AND WELLBEING

Inclusive Design

The development aims to prioritise the future needs of user by ensuring the building is designed to comply with Part M of the Building Regulations.

Safety and Security

The design team have liaised with a Design Out Crime Officer from the Metropolitan Police, on the proposed development. The masterplan has been reviewed with the Design Out Crime Officer and the incorporation of specific design measures were recommended to further strengthen the safety and security of the scheme. The proposed development takes these measures into account and aims to comply with the principles of Secured by Design to provide safe and secure spaces to all building users.

Open Spaces/Amenity

Landscaped open space will be provided through the courtyard on the ground floor, connecting all buildings of the proposed scheme. This will allow building occupants to gather, socialise and connect to the natural environment, enhancing occupant wellbeing.

Daylight/Sunlight

By provision of large glazing areas to all spaces, the proposed development ensures that occupants enjoy satisfactory levels of visual comfort and beneficial effects from daylight exposure, whilst also reducing energy consumption by minimising the use of artificial lighting as far as feasible.

Physical activity

The presence of amenity providers (shops, pharmacies, public open space such as Argyle Square and St. George's Gardens) within walking distance to the development may encourage office users and staff of the proposed development to walk during the breaks in the workday. The provision of cycle storage spaces will also encourage the use of alternative means of transportation for the building users.

In line with Policy C1 of the Camden Local Plan, a Health Impact Assessment has been prepared for the proposed development. It was found that the proposed scheme will have an overall positive impact on the occupants and surrounding community. Further details can be found in the accompanying Health Impact Assessment supporting this application.

ENERGY & CARBON DIOXIDE EMISSIONS

The Energy Strategy for the proposed development has been designed in line with the London Plan's Policy 5.2, which states that every effort should be made to minimise carbon dioxide emissions in accordance with the following energy hierarchy:

1. Be lean: use less energy
2. Be clean: supply energy efficiently
3. Be green: use renewable energy
4. Be seen: monitoring

Be Lean

The buildings have been thoughtfully designed to reduce energy demand through an enhanced building fabric, minimising heat loss through air infiltration, reducing reliance on artificial lighting, utilising low energy lighting and ensuring adequate levels of ventilation are maintained whilst reducing heat loss through the specification of MVHR.

At the 'Be Lean' stage, the proposed development is expected to meet the GLA target of 10% regulated CO_2 emission reductions for the residential portion of the scheme using SAP2012 carbon factors. The commercial portion of the development falls slightly short of the 15% reduction despite maximising fabric efficiency as far as possible. Further details can be found in the accompanying Energy Statement.

Be Clean

As discussed in detail in the accompanying Energy Statement, this stage requires consideration of an energy efficient heating infrastructure. The application site is located in an area where district heating is not expected to be implemented in the future.

A site heat network is proposed; this will comprise a single energy centre supplied by air source heat pumps (ASHPs) and high efficiency electric boilers and will be connected to the development or all uses on site.

Be Green

A range of renewable technologies were considered for generating on-site renewable energy. Photovoltaic panels and ASHP were considered suitable technologies for this development due to adequate flat roof space, easy installation process, and substantial CO_2 savings. The incorporation of these two technologies into this development contribute to a further reduction of regulated CO_2 emissions over the baseline emissions.

Further details about the photovoltaic and ASHP strategy, as well as the alternative renewable technology options with site-wide CO_2 emission reductions can be found in the accompanying Energy Statement.

Be Seen

The proposed development integrates a metering strategy to allow for the measure of energy consumption during the operation of the building. Metering will be split into lighting, small power and HVAC, in line with current Part L requirements. The office will have utility meters on each floor for each tenant.

The residential dwellings will be provided with smart meters to monitor the heat and electricity consumption of each dwelling; the display board will demonstrate real-time and historical energy use data and will be installed at an accessible location within the dwellings.

Furthermore, the proposed development incorporates solar PV which will have their own generation meter to help identify how much renewable energy is generated on site.

WATER

Water Efficiency

The proposed development aims to reduce internal water consumption to less than 105 litres per person per day, in line with the recommended target set out in the GLA's Housing SPG, through the use of water efficient fittings, and these are listed below.

Table 1: Recommended specification for sanitary fittings

Fitting	Fitting specification
WC	6/3 litres dual flush
Kitchen sink tap	6 litres per min
Wash basin tap	4 litres per min
Shower	8 litres per min
Bath	180 litres
Washing machine	8.17 litres/kg
Dishwasher	1.25 litres/place setting

As part of the BREEAM Wat 01 targets for the proposed scheme, sanitary fittings within each commercial unit will be specified and installed by the prospective tenants. Where sanitary fittings are to be specified by the developer/landlord, water efficient fittings will be included.

Water Reuse

Whist the development aims to reduce water demand in the first instance, consumption will also be offset through the provision of rainwater collection for irrigation purposes.

The feasibility of greywater harvesting has also been explored by the design team. A high-level system specification was obtained from a greywater harvesting supplier, Aquality, and associated costs were estimated by the Cost Consultant for the proposed scheme. Due to the very significant capital cost involved and the constraints created by the technical requirements, the cost-benefit of incorporating greywater harvesting was not deemed sustainable for the proposed development.

MATERIALS AND WASTE

Responsible Sourcing

100% of the timber used during construction will be sourced from accredited Forest Stewardship Council (FSC) or Programme for the Endorsement of forestry Certification (PEFC) source.

The main contractor will be required to prioritise products holding responsible sourcing certification (EMS/ISO14001) for the key process as per minimum, to ensure economic, social and environmentally responsible practices are implemented throughout construction products supply chain.

Healthy Materials

To minimise potential sources of indoor air pollution, low VOC paints, finishes and other products will be prioritised as far as practically possible. Best practice design detailing and careful construction techniques will also be employed to reduce the risk of thermal bridging and condensation issues, limiting the potential for mould growth.

Embodied Carbon

To further reduce carbon emissions over the lifecycle of the building, low embodied carbon materials will be used as far as practically possible, whilst also focusing on design practices to reduce waste production.

For example, the scheme will use GGBS as cement replacement and use modular construction for the

hotel rooms. A Whole Life Carbon Assessment, including detailed calculations of the embodied carbon associated with building materials, has been carried out for the proposed development, please refer to the accompanying report prepared by XCO2.

Circular Economy

Circular economy is based on three key principles: design out waste, keep products and materials in use, and regenerate natural systems. A Circular Economy Statement has been prepared in support of this application, where the proposed scheme addresses these three key circular economy principles:

- *Conserve Resources:* The proposed scheme seeks to ensure that material and resource use is minimised as far as possible. Focus has been given to minimising the quantities of materials and other resources used, as well as ensuring materials will be sourced responsibly during construction.
- *Eliminate Waste:* The proposed scheme seeks to ensure the design is flexible and adaptable, thereby increasing the building's lifespan. It seeks to minimise maintenance, and aims to reduce construction, demolition, and excavation waste.
- *Manage Waste Sustainably:* The proposed development will seek to carefully manage demolition, construction, and municipal waste and to maximise recycling, reuse and minimise the amount of waste sent to landfill.

Further details can be found in the Circular Economy Statement by XCO2 submitted in support of the application.

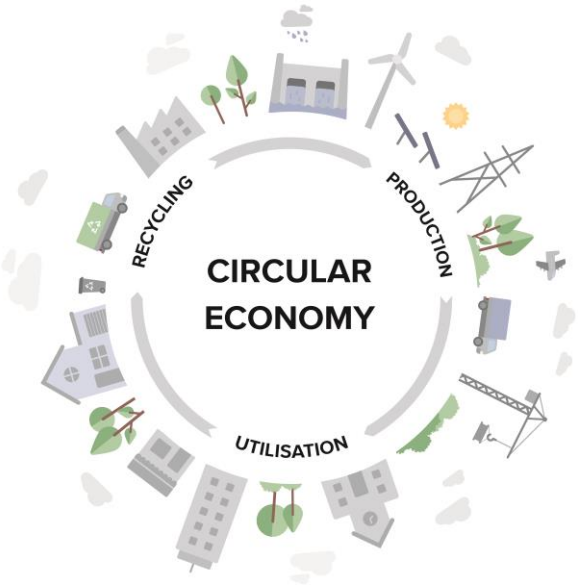
Construction and Operational Waste

A site waste management plan (SWMP) will be established for the proposed development. This will outline the methodologies for estimating waste quantities and streams generated during the demolition, excavation and construction stages of the site works, and set out recommended measures required to be adopted by the Main Contractor to minimise these as far as practically possible.

In line with Policy CC5 of the Camden Local Plan, the development aims to reduce the amount of waste produced, increase recycling and reuse of materials. The incorporation of an Operational Waste Management Plan will help to achieve the target of at least 50% of household waste to be recycled/composted, while aspiring to achieve 60% by 2031.

The proposed development will include sufficient facilities for the storage and collection of waste and recycling. Residential waste will be collected on street from Wicklow Street and Swinton Street, respectively. Bins will be presented in areas within 10m of the refuse vehicle on collection days in accordance with LBC requirements. It is proposed that the residential waste will be collected twice weekly by LBC's waste collection.

Further details can be found in the assessment by Steer, submitted in support of the application.



NATURE CONSERVATION & BIODIVERSITY

The ecology on site will be improved via the introduction of landscaped areas within the proposed communal courtyard and planting on land that is currently covered with hard surfacing or existing buildings. Native plant species will be introduced to these areas where possible. This will help to attract invertebrates, birds and other fauna to the area.

A preliminary ecological appraisal report for the proposed Gray's Inn Road development was undertaken. The resulting recommendations will be implemented to ensure the protection of ecological features and enhancement of biodiversity on the development site.

The report concluded that the survey area contained no rare species or habitats of conservation interest. It was recommended to retain existing mature trees where feasible and introduce soft landscaping into the development to encourage and support nesting birds. The rest of the site was considered to have no potential to support or encourage protected species.

For further details, refer to the Biodiversity report and Arboricultural Statement, submitted in support of the application.

CLIMATE CHANGE ADAPTION

Overheating

The potential risk of overheating will be mitigated by incorporating both passive and active design measures.

The space heating and hot water to both the domestic and non-domestic elements of the Gray's Inn Road development will be provided by a combination ASHPs and high efficiency electric boilers. All heat sources and pipe work will be sufficiently insulated to avoid excess heat loss into internal space.

Efficient lighting will be used to further minimise internal heat gains and reduce energy expenditure.

Appropriately sized windows have been designed to reduce solar heat gains. Internal blinds or external shading will be included in both the residential and commercial units to reduce the solar gains into occupied rooms where required. Glazing with low transmittance will be used to reduce solar gains.

Overheating risk in dwellings will be managed by the inclusion of air tempering in the MVHR system, ensuring thermal comfort, whist addressing noise and air quality site constraints. The dwellings will have openable windows as a secondary strategy for providing fresh air and dissipating heat, providing a choice to residents.

Surface Water and Flooding

The application site is found to be located in an area with low risk to flooding. A Flood Risk Assessment has been carried out for the development proposal and in accordance with Policy CC3 of the Camden Local Plan, site specific Sustainable urban drainage systems (SUDS) have been incorporated.

Further details on the drainage hierarchy strategy and the incorporation of SUDS and flood resilience measures for this scheme can be found in the Flood Risk and Drainage Assessment by WSP, submitted in support of the planning application.

The following figure depicts a flood zone map of the site and surrounding areas.

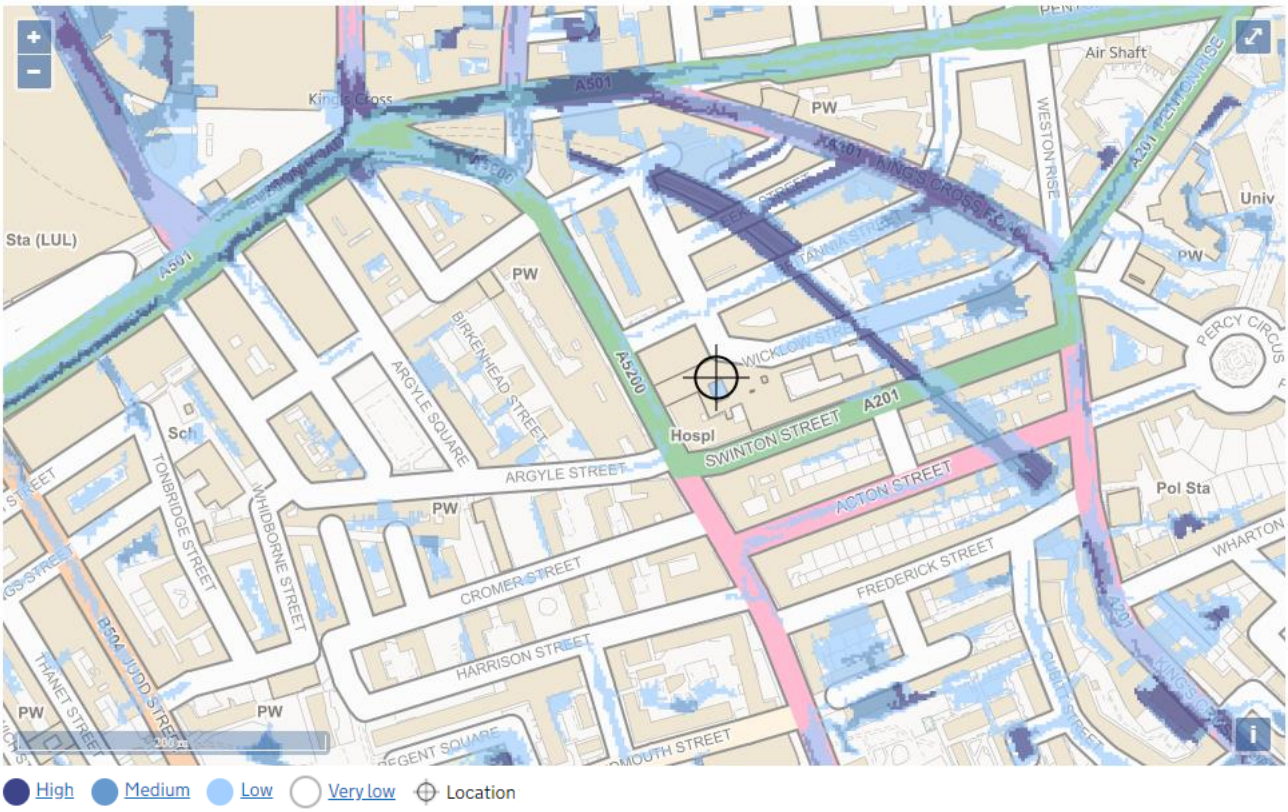


Figure 2: Location of application site within area of Low Flood Risk

AIR, NOISE AND LIGHT

Air Quality

Air pollution risks from construction and demolition activities on site will be minimal in line with the SPG 'The control of dust and emissions from construction and demolition' (July 2014) under the following categories:

- demolition;
- earthworks;
- construction;
- trackout; and,
- non-road mobile machinery (NRMM).

An air quality assessment has been carried out determine the impacts from dust and stationary plant emissions during the construction period and the potential impact from traffic flows on the local road network on both on-site and off-site receptors, during and after construction. Where necessary, mitigation measures are recommended to reduce any air quality impact.

During the operational phase of the development, there will be no combustion of fossil fuels and associated combustion emissions for heating due to the specification of ASHPs and electric boilers (for further details please refer to the accompanying *Energy Statement*).

To protect internal air quality, 'healthy' materials will be specified for the buildings' fabric and internal finishes, where feasible; these will be non-toxic, and low emitters of VOCs and formaldehyde.

In order to underpin the reduction of emissions from transport, the development has avoided the provision of car parking, except for Blue Badge parking for both residential blocks, to promote more sustainable means of transport instead. The development provides bicycle lifts and storage facilities for the residential and commercial units.

The energy strategy will be combustion-free, thereby reducing carbon emissions as well as NOx emissions, with an overall benefit to local air quality;

Refer to the Air Quality Assessment report by Air Quality Consultants for further details.

Noise

The development will incorporate design and building fabric measures to mitigate potential noise levels from the proposed development and ensure the impact of any external sources on internal ambient noise levels are within acceptable limits.

An Acoustic Assessment of the proposed development was carried out by Hann Tucker Associates. The site was shown to be suitable for the mixed-use development, if appropriate noise mitigation measures are incorporated.

For further detailed information, please refer to the Environmental Noise Survey and Acoustic design Statement by Hann Tucker Associates.

Light Pollution

The lighting design of the proposed development will follow the recommendations of the Institution of Lighting Engineers' Guidance Notes for the Reduction of Obtrusive Light (2005), to minimise light pollution.

Further mitigation measures will be implemented to ensure disturbance to wildlife is minimal, in line with the ecologist's recommendations.

Water Pollution

Water pollution to surrounding watercourses will be minimised by the increase in permeable ground, thereby reducing surface water runoff. In addition, contractors will adopt best practice policies to mitigate water pollution from construction activities on site.

The development will discharge domestic sewage via a connection to the public foul sewer or combined sewer network where it is reasonable to do so.

TRANSPORT

Alternative means of transportation

In order to underpin the reduction of emissions from transport, the development has been designed to encourage cycling by providing 124 cycle parking spaces and changing facilities. The provision of cycle parking is in accordance with guidelines set out by the Intend to Publish London Plan.

Except for the provision of disabled car parking, the proposed development will be car-free. The scheme will uplift the existing disabled parking provision by one space.

A Residential Travel Plan and Framework Travel Plan has been developed for the proposed scheme, to help encourage occupants to use sustainable methods of transportation.

Public Transport Accessibility

The proposed development will be accessible by public transport, being served by London buses (including night-time services), and national and underground rail services. The PTAL rating on the site is 6b, and an associated Accessibility Index of 77.34.

Proximity to Amenities

There are various amenities close to the site, which are accessible by walking, such as a supermarket, pharmacy, restaurants, cash machines and public parks.

For further details please refer to the Transport Assessment by Steer.

SUSTAINABILITY STANDARDS

Within the Camden Local Plan, the BREEAM standard of Excellent is expected for all non-residential developments over 500m^2 of floorspace. The following Pre-Assessment demonstrates compliance with the Local Authority's policies in relation to BREEAM assessments.

BREEAM NEW CONSTRUCTION 2018

BREEAM New Construction 2018 is a performance based environmental assessment method and certification scheme for new buildings. The primary aim of BREEAM New Construction is to mitigate the impacts of new developments on the environment over the entire life-cycle of the building in a comprehensive and cost-effective manner. This is achieved through the integration of the BREEAM scheme at key stages of the design and procurement process.

A BREEAM New Construction 2018 Shell and Core Pre-Assessment was carried out for the non-domestic portion of the development. The proposed commercial units have been assessed under various BREEAM building types. The office has been assessed under 'Office' and the hotel and gym have been assessed under 'Assembly and Leisure'.

The pre-assessment tool uses established benchmarks to evaluate a building's specification, design, construction and operation, over a broad range of categories and criteria:

- Management processes
- Health and wellbeing
- Energy use
- Transport
- Water use
- Materials
- Waste
- Land use and ecology
- Pollution
- Innovation

The outcome of the pre-assessment is expressed as a single certified BREEAM rating, ranging from Pass (30%) to Outstanding (85%).

Table 2: BREEAM Certification Thresholds

BREEAM 2018 Rating	Percentage of Credits Required
Outstanding	85%
Excellent	70%
Very Good	55%
Good	45%
Pass	30%

The following section discusses how the development addresses the BREEAM sustainability criteria required to meet BREEAM Excellent.

Each of the sustainability categories as set out in BREEAM are addressed; each sub-section highlights the sustainability measures that have been adopted to meet BREEAM Excellent.

MANAGEMENT

Man01 Project Brief and Design

Prior to completion of the Concept Design (RIBA Stage 2 or equivalent), a project delivery consultation meeting was held to identify and define their roles and responsibilities at each key stage of the project delivery.

In addition, relevant third-party stakeholders were consulted by the project team regarding various aspects of the design before the end of RIBA Stage 2 (Concept Design). The project team will demonstrate how these consultations have influenced the design and feedback will be given to the consultation groups before the end of RIBA Stage 4 (Technical Design).

A BREEAM AP is appointed to work with the project team throughout Concept and Design stage and at Developed Design stage.

Man02 Life Cycle Cost and Service Life Planning

At Stage 2 an Elemental LCC assessment is carried out in line with PD156865:2008. The elemental plan will provide an indication of future replacement, service life, maintenance and operation costs over a period of analysis determined by the client

The capital cost for the building will be reported via the BREEAM Assessment Scoring and Reporting Tool in pounds per square metre (£k/m^2).

Man03 Responsible Construction Practices

All timber used in the project will be 'legally harvested and traded' timber. This is a prerequisite for the following issues which will also be included for this project:

- The principal contractor will achieve compliance with the Considerate Constructors Scheme and go beyond best practice with a total CCS score of between 35-39 points, and a minimum score of 7 in each of the 5 sections.
- Energy use and water consumption from on-site construction processes will be monitored and recorded.
- The Principal Contractor will set targets, monitor and record the distance travelled by materials to and waste from the site.
- The Principal Contractor will be required to operate an Environmental Management System (EMS).
- The BREEAM AP will also assist throughout the Construction, Handover and Close Out stages.

Man04 Commissioning and Handover

Inspection of the building fabric via a thermographic survey and an airtightness test in accordance with the Building Regulations, BSRIA and CIBSE guidelines shall be undertaken.

A commissioning manager will be appointed to undertake design reviews, give advice and manage performance testing and handover/post-handover stages.

A schedule including a timescale for commissioning and testing of all building services and control systems in accordance the Building Regulations, BSRIA and CIBSE guidelines will be provided.

A Level 2 thermographic survey and an airtightness test will be completed, any defects identified will be rectified prior to completion.

A Building User Guide and a training schedule will be prepared for the building occupier and user, to ensure the efficient operation and maintenance of the building.

HEALTH & WELLBEING

Hea01 Visual Comfort

The relevant building areas will either meet good practice daylight factors or meet good practice average and minimum point daylight illuminance criteria and will have access to aesthetically pleasing views.

All lighting will be designed to give occupants the flexibility in achieving desired illuminance levels without excessive energy use. Appropriately maintained illuminance levels will be achieved in line with the SLL Code for Lighting 2012, CIBSE Lighting Guide 2009 and other relevant industry standards.

Internal Lighting should be zoned to allow for occupant control. In offices, the zones should consist of no more

than four workplaces and workstations in close proximity to windows or atria.

All external lighting will be designed to provide illuminance levels that enable the users to perform outdoor visual tasks efficiently at night. External lighting will be specified in accordance with BS 5489-1:2013 and BS EN 12464- 2:2014.

Hea02 Indoor Air Quality

An indoor air quality (IQA) plan will be produced, with the objective of facilitating actions to minimise indoor air pollution during occupation of the building.

HVAC systems will be designed in line with BS EN 13779:2007 and fresh air must be provided in accordance with the relevant standards for ventilation.

Hea04 Thermal Comfort

A thermal model will be built in accordance with CIBSE AM11 to inform the development of a thermal zoning and control strategy, which considers the influence of the projected climate change scenarios, or demonstrates how the building can be adapted in future using passive design solutions. The thermal strategy for the building will be informed by this modelling.

Hea05 Acoustic Performance

The building will be designed to meet the acoustic performance standards and internal ambient noise levels in compliance with the design ranges given in BS 8233:2014. A programme of pre-completion testing will be carried out by a compliant test body.

Hea06 Security

A suitably qualified security specialist (SQSS) should conduct a Security Needs Assessment (SNA) during the Concept Design stage (RIBA Stage 2) of the project, and the resulting set of recommendations implemented on site. For the external areas, safe access will be designed for cyclists and pedestrians.

Hea07 Safe and Healthy Surroundings

An outside space providing building users with an eternal amenity space will be included, in addition to a dedicated, safe cyclist and pedestrian route(s).

ENERGY

Ene01 Reduction of energy use and carbon emissions

An SBEM calculation was carried out to determine the energy demand and CO_2 emissions for the notional and actual buildings. The results were subsequently applied to the Ene01 calculator within the BREEAM 2018 Pre-assessment Scoring tool.

Ene02 Energy Monitoring

Energy sub-meters with pulsed or other open protocol communication outputs will be installed that enable at least 90% of the estimated annual energy consumption of each fuel to be assigned to the various end-use categories of energy consuming systems.

Sub-meters should be installed on the energy supply to each relevant function areas or departments within the building.

Ene03 External lighting

All external luminaries will be energy efficient and all light fittings are to be controlled for the presence of daylight. Daylight sensors will help to ensure that artificial lights are not used when daylight levels are sufficient.

The average initial luminous efficacy of the external light fittings within the construction zone will not be less than 60 luminaire lumens per circuit Watt.

Ene04 Low Carbon Design

A feasibility study will be carried out by the completion of the Concept Design stage (RIBA Stage 2) to establish the most appropriate (if any) low or zero carbon (LZC) energy source(s) for the building in addition to identifying opportunities for implementing passive design measures.

LZC technologies specified for the building should meet at least 5% of the overall building energy demand, unless considered unfeasible.

Project team to analyse building design at concept design stage (RIBA Stage 2) to identify the potential implementation of passive design measures, to reduce the overall building energy demand by at least 5%.

Ene06 Energy Efficient Transportation

Analysis will be undertaken of the transportation demand and usage patterns for the building to determine the optimum number and size of lifts.

Energy efficient lifts will be specified to include the following features:

- Lifts operate in standby mode during off-peak periods.
- Energy efficient lift car lighting (greater than 70 lamp lumens per circuit Watt).
- Variable speed, variable voltage and variable frequency (VVVF) control of drive motor.

TRANSPORT

Tra01 Transport Assessment and Travel Plan

A draft travel plan is developed as part of the design and feasibility stages, encouraging the use of sustainable modes of transport of people and goods during the buildings' operation and use. The travel plan accompanies the application submission.

Tra02 Sustainable Transport Measures

The proposed development will be accessible by public transport, being served by London buses (including night time services), and national and underground rail services. The PTAL rating on the site is 6b, and an associated Accessibility Index of 77.34.

WATER

Wat01 Internal Water Consumption

Sanitary fittings within each commercial unit will be specified and installed by the prospective tenants due to the shell and core nature of the scheme.

Where sanitary fittings are to be specified by the developer/landlord, water efficient fittings will be included.

Wat02 Water monitoring

A water meter with a pulsed or other open protocol output will be provided on the mains water supply to accurately monitor the building's water usage.

Building service systems with a significant water demand will have additional water monitoring equipment fitted to them. All water meters will be connected to the BMS if applicable.

Any water consuming plant or building areas installed by the tenant need not be assessed.

Wat03 Water leak detection and prevention

A leak detection system will be employed on the main water supply to each of the units.

Wat04 Water efficient equipment

Rainwater harvesting will be used for irrigation of landscaped areas.

MATERIALS

Mat01 Environmental impact materials

The materials specified for the main building elements will have a low environmental impact.

For this development, the external walls, windows, upper floor slabs, internal walls, roof and floor finishes will achieve Green Guide ratings of between A+ and C.

During concept design a building life cycle assessment (LCA) will be carried out on the superstructure design options. An LCA will also be carried out on the substructure to include an options appraisal of a combined total of at least six significantly different substructure of hard landscaping design options.

Mat03 Responsible sourcing of materials

Building materials used for the main construction elements will need to be 'responsibly sourced' with a documented Sustainable Procurement plan in place.

All timber and timber-based products specified will be legally harvested and traded timber (FSC or PEFC certified).

In addition, all major building materials will be required to carry a responsible sourcing certificate.

Mat05 Designing for Durability and Resilience

Suitable durability and protection measures or designed features will be incorporated into the building to prevent damage to vulnerable parts.

Mat06 Material Efficiency

At the end of each RIBA stage the project team will convene to examine opportunities to implement appropriate measures to ensure that the amount of materials used in the construction of the development are optimised and therefore reduce the amount of construction waste arising from site.

WASTE

Wst01 Construction waste management

A pre-demolition audit will be carried out for any existing buildings and structures or hard surfaces, to identify key refurbishment/demolition materials and highlight the potential issues in the reuse and recycling of these materials. This audit must be referenced in the RMP.

A Resource Management Plan (RMP) or Site Waste Management Plan (SWMP) covering non-hazardous construction waste and dedicated off-site manufacture will be developed, to ensure that the amount of waste generated is lower than or equal to 6.5m^3 per 100m^2 of gross internal floor area. In addition, 80% of non-demolition waste and 90% of demolition waste must be diverted from landfill.

Wst03 Operational waste

There will be dedicated space to cater for the segregation and storage of operational recyclable waste volumes generated by the assessed building/unit, its occupant(s) and activities. A minimum of 2m^2 of waste storage per 1,000m^2 of net floor area shall be provided.

Wst05 Adaption to climate change

During concept stage a climate change adaptation strategy appraisal for the structural and fabric resilience will be undertaken. Recommendations or solutions will be developed that aim to mitigate the identified impacts from the report.

Wst06 Design for disassembly and adaptability

The client and design team have developed a strategy that ensures the building design is flexible and can be easily modified to accommodate changes in working practices, change in-use, plant replacement and refurbishment and incorporated into the building design by the end of RIBA Stage 4 (Technical Design) where feasible. For further details please refer to the Circular Economy Statement.

LAND USE AND ECOLOGY

LE01 Site selection

The redevelopment of an existing urban plot reduces the need to develop greenfield sites. The footprint of this development is located entirely on previously developed land (100%).

LE02 Identifying and understanding the risks and opportunities for the project

The site will be evaluated using the BREEAM Ecological Risk Evaluation Checklist. During concept design stakeholders will liaise and collaborate with representative stakeholder to identify and consider ecological outcomes for the site.

The client or contractor will confirm that compliance is monitored against all relevant UK and EU legislation relating to the ecology of the site.

LE03 Managing negative impacts on ecology

As the development is replacing an existing development, no negative change in plant species richness is expected.

LE04 Change and enhancement of ecological value

Locally relevant ecological ensures have been implemented that enhance the site's ecological value, based on: recommendations from recognised 'local' ecological expertise and specialist input and guidance, and input from the project team in collaboration with representative stakeholders.

LE05 Long term ecology management and maintenance

The client or contractor will confirm that compliance is monitored against all relevant UK and EU legislation relating to the ecology of the site.

Measures have been implemented to manage and maintain ecology throughout the project. Handover documents will include a section on Ecology and Biodiversity to inform the owner or occupant of local ecological features, value and biodiversity on or near the site.

A landscape and ecology management plan, or similar, covering as a minimum the first five years after project completion.

POLLUTION

Pol01 Impact of refrigerants

HVAC systems using refrigerants will be specified so that the level of greenhouse gas emissions arising from the leakage of refrigerants is limited (Direct Effect Life Cycle CO_2 emissions - DELC $CO_2e \leq 1000$).

Pol02 Local air quality

The energy strategy for the scheme will be combustion free. T

Pol03 Flood risk and surface water run off

The Environmental Agency Flood Map shows that the development is located in an area with a low probability of flooding (Flood Zone 1. A site-specific flood risk assessment has been undertaken for the scheme.

Bespoke surface water run-off design solutions are developed and utilised. Peak rate of run-off from the site to the watercourses must show a 30% improvement for the developed site compared to the pre-developed site.

All maintenance agreements for the ownership and long-term operation of specified SUDs will be available and watercourse pollution will be minimised. All calculations will allow for the effects of climate change.

Pol04 Reduction of night time light pollution

External lighting will be confined to appropriate areas for security and safety purposes, and lighting will comply with the Institution of Lighting Engineers guidance notes for the reduction of obtrusive light.

All external lighting (except for safety and security lighting) will be fitted with timers to enable them to switch off automatically between the hours of 2300hrs and 0700hrs.

Pol05 Reduction of noise pollution

A noise impact assessment was carried out in compliance with BS7445 to determine the existing background noise levels at the nearest or most exposed noise sensitive development to the proposed development and the rating noise level resulting from the new noise source.

The noise level from the proposed site is a difference no greater than +5dB during the day and +3dB at night compared to background noise level.

In instances where the noise source from the proposed site is greater than the levels described above, measures will be installed to attenuate the noise at its source to a level where it will comply with the above.

BREEAM PRE-ASSESSMENT RESULTS

A BREEAM pre-assessment has been undertaken at pre-application stage which has shown that a score of 72.88% is feasible for the hotel, 72.98% for the office space and 75.47% for the gym.

The results for the pre-assessment are summarised in the tables below and include a breakdown of the currently targeted score for each issue and category.

Table 3: BREEAM Pre-Assessment Breakdown - Hotel

BREEAM Category	Total Credits Available	Score Assessment		
		Sub-total	Weighting	Score (%)
Management	18	17	11.0%	10.39%
Health & Wellbeing	10	10	8.0%	8.00%
Energy	21	15	14.0%	10.00%
Transport	12	10	11.5%	9.58%
Water	8	5	7.0%	3.89%
Materials	14	10	17.5%	12.50%
Waste	10	8	7.0%	5.60%
Land Use & Ecology	13	6	15.0%	6.92%
Pollution	12	8	9.0%	6.00%
Innovation	10	0	10.0%	0.00%
BREEAM Excellent		**Total Points Scored: 72.88%**		

Table 4: BREEAM Pre-Assessment Breakdown - Offices

BREEAM Category	Total Credits Available	Score Assessment		
		Sub-total	Weighting	Score (%)
Management	18	17	11.0%	10.39%
Health & Wellbeing	11	10	8.0%	7.27%
Energy	21	17	14.0%	11.33%
Transport	12	10	11.5%	9.58%
Water	8	5	7.0%	3.89%
Materials	14	10	17.5%	12.50%
Waste	11	8	7.0%	5.09%
Land Use & Ecology	13	6	15.0%	6.92%
Pollution	12	8	9.0%	6.00%
Innovation	10	0	10.0%	0.00%
BREEAM Excellent		**Total Points Scored: 72.98%**		

Table 5: BREEAM Pre-Assessment Breakdown - Gym

BREEAM Category	Total Credits Available	Score Assessment		
		Sub-total	Weighting	Score (%)
Management	18	17	11.0%	10.39%
Health & Wellbeing	10	10	8.0%	8.00%
Energy	21	17	14.0%	11.33%
Transport	12	10	11.5%	9.58%
Water	8	5	7.0%	3.89%
Materials	14	11	17.5%	13.75%
Waste	10	8	7.0%	5.60%
Land Use & Ecology	13	6	15.0%	6.92%
Pollution	12	8	9.0%	6.00%
Innovation	10	0	10.0%	0.00%
BREEAM Excellent		**Total Points Scored: 75.47%**		

As set out in CPG 'Energy Efficiency and Adaptation', the proposed development is required to meet at least 60% of the available Energy and Water credits and at least 40% of all available Materials credits. The following table outlines that the percentage of credits targeted for each building use exceeds the requirements in all categories.

Table 6: Percentage Credits Achieved in Energy, Water and Materials

BREEAM Category	Minimum Percentage Required	Percentage of Credits Targeted		
		Hotel	Offices	Gym
Energy	60%	71%	81%	81%
Water	60%	63%	63%	63%
Materials	40%	71%	71%	79%

HOME QUALITY MARK

The design of all dwellings for the proposed scheme aims to be in line with Home Quality Mark (HQM) principles where possible and a pre-assessment has demonstrated that an overall 3.5 rating could be achieved.

The Home Quality Mark (HQM), developed by the BRE, provides a measure on a new home's quality and sustainability. The certification scheme builds on best practice guidance within the housing sector, providing a credible and achievable performance label for new homes that reflects industry and occupiers' expectations.

Policy CC2 of the Camden Local Plan, the council will encourage new build residential development to use the Home Quality Mark to demonstrate sustainable design measures. The design of all dwellings for the proposed scheme aims to be in line with Home Quality Mark (HQM) principles where possible.

A HQM One 2018 pre-assessment was carried out to outline the potential rating that could be achieved. The pre-assessment demonstrated that an overall 3.5-star rating could be possible, if considered by the design team after planning stages. This potential rating demonstrates the high quality of the future homes that will be offered to the residents.

The technical and financial feasibility of achieving HQM will be further investigated post planning.

Table 7: HQM Assessment Summary

HQM Section	Total Credits Available	Score Assessment		
		Sub-total	Weighting	Score (%)
Transport and Movement	48	31	9.6%	6.20%
Outdoors	58	34	11.6%	6.80%
Safety and Resilience	47	37	9.4%	7.40%
Comfort	68	47	13.6%	9.40%
Energy	83	27	16.6%	5.40%
Materials	69	26	13.8%	5.20%
Space	24	10	4.8%	2.00%
Water	17	5	3.4%	1.00%
Quality Assurance	33	4	6.6%	0.80%
Construction Impacts	31	16	6.2%	3.20%
Customer Experience	22	2	4.4%	0.40%
	Rating: 3.5 star		**Total Points Scored: 47.08%**	

OTHER SUSTAINABILITY MEASURES

The design team has also considered incorporating other sustainability standards for the proposed development. Pre-assessments for LEED and WELL have been carried out to determine the potential benefit to the proposed scheme.

LEED

The Leadership in Energy and Environmental Design standard is the most widely known certification system in the world with certified buildings across 176 countries.

A LEED Pre-assessment has been carried out for the office building of the proposed development at 330 Gray's Inn Road. Given that the project will be fitted out to a Cat A standard, the building falls under the LEED Rating System Building Design and Construction: Core & Shell.

The pre-assessment demonstrates that a score of 62 points, corresponding to achieving a Gold level certification is possible for the proposed development. However, the technical and financial feasibility of achieving LEED certification will be further investigated post planning.

Table 8: LEED Pre-Assessment Summary

Credit Summary	Target Score
Integrative Process	1
Location and Transport	16
Sustainable Sites	5
Water Efficiency	4
Energy and Atmosphere	17
Material and Resources	6
Indoor Environmental Quality	7
Innovation	2
Regional Priority	4
	Total : 62 (Gold)

WELL

The WELL Building Standard focuses on the health and well-being of building occupants. It consists of ten concepts which are broken down into features, these features are categorised as preconditions, which are mandatory, or optimisations, which are optional strategies which can be targeted to achieve points.

A WELL pre-assessment was carried out to determine the potential score for the office building proposed development. The building falls under the WELL Core category as more than 75% of the project area will be occupied by one or more tenants, additionally at least 2.5% of the total building floor area should be available for performance testing (common areas and spaces under owner control).

The accompanying WELL Scorecard shows that the building could achieve a Silver level with the potential of achieving a Platinum level. However, the technical and financial feasibility of achieving WELL certification will be further investigated post planning.

Table 9: WELL Pre-Assessment Summary

BREEAM Category	Total Points Available	Score Assessment	
		Targeted	Potential
Air	12	6	12
Water	9	4	8
Nourishment	12	2	11
Light	12	7	9
Movement	12	9	12
Thermal Comfort	12	1	4
Sound	11	4	5
Materials	12	4	10
Mind	12	5	10
Community	12	5	11
TOTAL	**100**	**53 (Silver)**	**99 (Platinum)**

CONCLUSION

The sustainability strategy for the proposed development at 330 Gray's Inn Road has been developed with the design team to comply with the relevant environmental policies from the London Borough of Camden and the London Plan. Relevant energy policies have been addressed in the accompanying Energy Statement. The proposed development is targeting the achievement of BREEAM 'Excellent' and expected to reduce on-site regulated carbon emissions by 40.9% with SAP 10 emission factors.

The key sustainable design and construction measures incorporated in the proposals are summarised below, following the London Plan Sustainable Design and Construction SPG structure:

Sustainable design and layout

- The proposed site is the former location of the Royal National Throat, Nose and Ear Hospital. The proposed development provides a new use for the site, with an effective layout and suitable scale;
- The design of the proposed development showcases consideration of the surrounding context by reconfiguring the site. The masterplan enhances the pedestrian network in the area, by providing a new pedestrian connection directly across the site between Wicklow Street and Swinton Street, and introduces a new public access way from Gray's Inn Road to a 775m^2 public courtyard;
- Adequate levels of ventilation will be ensured through the specification of Mechanical Ventilation with Heat Recovery (MVHR) for improved energy efficiency;
- The development will incorporate industry leading renewable technologies such as air source heat pumps (ASHPs) and photovoltaics (PV);
- The energy strategy will be combustion-free, thereby reducing carbon emissions as well as NOx emissions, with an overall benefit to local air quality;
- The proposed development aims to reduce water consumption to less than 105 litres per person per day. Water consumption will also be offset through the provision of rainwater collection for irrigation purposes across the development;
- The buildings within the proposed development are thoughtfully designed to reduce energy demand through improved U-values and air permeability with carefully designed glazing to maximise daylight. Low energy lighting will be utilised to reduce reliance on artificial lighting; and
- The proposed development will seek to include responsibly sourced materials with low embodied carbon and incorporate circular economy principles.

Climate change adaption

- A comprehensive Sustainable Urban Drainage Strategy has been prepared for the site, from the provision of permeable paving, green roofs and attenuation tanks;
- The proposal will seek to introduce soft landscaping with a range of native plant and shrub species to attract invertebrates, birds and other fauna to the area;
- The scheme aims to maximise the Urban Green Factor (UGF) through the combination of measures such as extensive green roofs, green walls, flower-rich perennial plants, and standard tree planting throughout the landscaped areas; and
- The potential risk of overheating and demand for active cooling will be mitigated by incorporating passive and active design measures.

Waste & Pollution Management

- Air pollution from construction and demolition activities on site will be kept to a minimum where possible;
- The development will take measures to reduce waste and pollution on site during construction and operation, and provide adequate waste and recycling storage;
- By avoiding the provision of car parking spaces, the development aims to encourage residents and employees to travel by non-car methods, in particular cycling, walking and public transport;
- The development will integrate adequate measures to mitigate noise from the nearby railway to adequate levels; and
- Water pollution to surrounding watercourses will be minimised by the increase in permeable ground, thereby reducing surface water runoff. In addition, contractors will adopt best practice policies to mitigate water pollution from construction activities on site. The proposed development will discharge domestic sewage via a connection to the public foul sewer or combined sewer network where it is reasonable to do so.

In summary, the proposed development at 330 Gray's Inn Road meets the targets set out by the Borough of Camden and the Greater London Authority (GLA). The commercial areas of the scheme could achieve a BREEAM score varying between 73% and 75%, exceeding the BREEAM 'Excellent' target of 70%.

The number of credits obtained in the BREEAM pre-assessment reflect the client and design team's aspirations in integrating sustainability measures and demonstrates that the project is designed to exceed the planning policy sustainability requirements.

APPENDIX A – URBAN GREENING FACTOR

www.xco2.com
mail@xco2.com
+44 (0)20 7700 1000
56 Kingsway Place, Sans Walk
London, EC1R 0LU

URBAN GREENING FACTOR

9370 – 330 GRAY'S INN ROAD

This design note presents Urban Greening Factor calculations for 330 Grays' Inn Road, based on the drawings from AHMM and East. The ecological value of the development was calculated using the Urban Greening Factor methodology within the draft London Plan.

The results demonstrate that a site-wide Urban Greening Factor of 0.22 is achievable if urban greening measures such as extensive green roofs, green walls and increased planting in and around the site boundary are incorporated.

INTRODUCTION

POLICY G5 URBAN GREENING

The Policy G5 from the Intend to Publish London Plan (2019) encourages the inclusion of urban greening measures in new developments, in order to increase their ecological value and contribute to the greening of London. As described in the policy, *urban greening covers a wide range of options including, but not limited to, street trees, green roofs, green walls, and rain gardens*.

The ecological value of the site can be measured by subdividing the site in different habitats areas, each area having a certain weight indicating its ecological contribution. The factor used to assess the site green cover is the Urban Greening Factor (UGF), introduced by the Mayor of London. The UGF ranges between 0 and 1 (in increments of 0.1) and is based on the Green Space Factor used at an international level for cities. An impermeable surface such as concrete will have a factor of 0 whereas a natural surface with high environmental benefit, such as a mature tree in deep soil, will have a factor closer to 1.

For a proposed development, the UGF is calculated in function of each green area type and its associated factor. Assuming there are three types of surfaces onsite, A, B and C, the UGF will be calculated as follows:

$$UGF = \frac{Factor\ A\ x\ Area(A) + Factor\ B\ x\ Area(B) + Factor\ C\ x\ Area(C)}{Total\ Site\ Area}$$

According to Policy G5, the proposed scheme is recommended to achieve a target score of 0.4 for the residential portion, and a target score of 0.3 for the commercial portion of the development.

Table 1: Urban Greening Factors (Extract from the Intend to Publish London Plan 2019)

Urban Greening Factors	
Surface Cover Type	**Factor**
Semi-natural vegetation (e.g. trees woodland, species flower-rich grassland) maintained or established created on site.	1
Wetland or open water (semi-natural; not chlorinated) maintained or established created on site.	1
Intensive green roof or vegetation over structure. Vegetated sections only. Substrate minimum settled depth of 150mm	0.8
Standard trees planted in natural soils or in connected tree pits with a minimum soil volume equivalent to at least two thirds of the projected canopy area of the mature tree	0.8
Extensive green roof with substrate of minimum settled depth of 80mm (or 60mm beneath vegetation blanket) - meets the requirements of GRO Code 2014.	0.7
Flower-rich perennial planting.	0.7
Rain gardens and other vegetated sustainable drainage elements	0.7
Hedges (line of mature shrubs one or two shrubs wide)	0.6
Standard trees planted in pits with soil volumes less than two thirds of the projected canopy area of the mature tree.	0.6
Green wall -modular system or climbers rooted in soil	0.6
Groundcover planting	0.5
Amenity grassland (species-poor, regularly mown lawn).	0.4
Extensive green roof of sedum mat or other lightweight systems that do not meet GRO Code 2014.	0.3
Water features (chlorinated) or unplanted detention basins.	0.2
Permeable paving.	0.1
Sealed surfaces (e.g. concrete, asphalt, waterproofing, stone).	0

SITE SPECIFIC CALCULATIONS

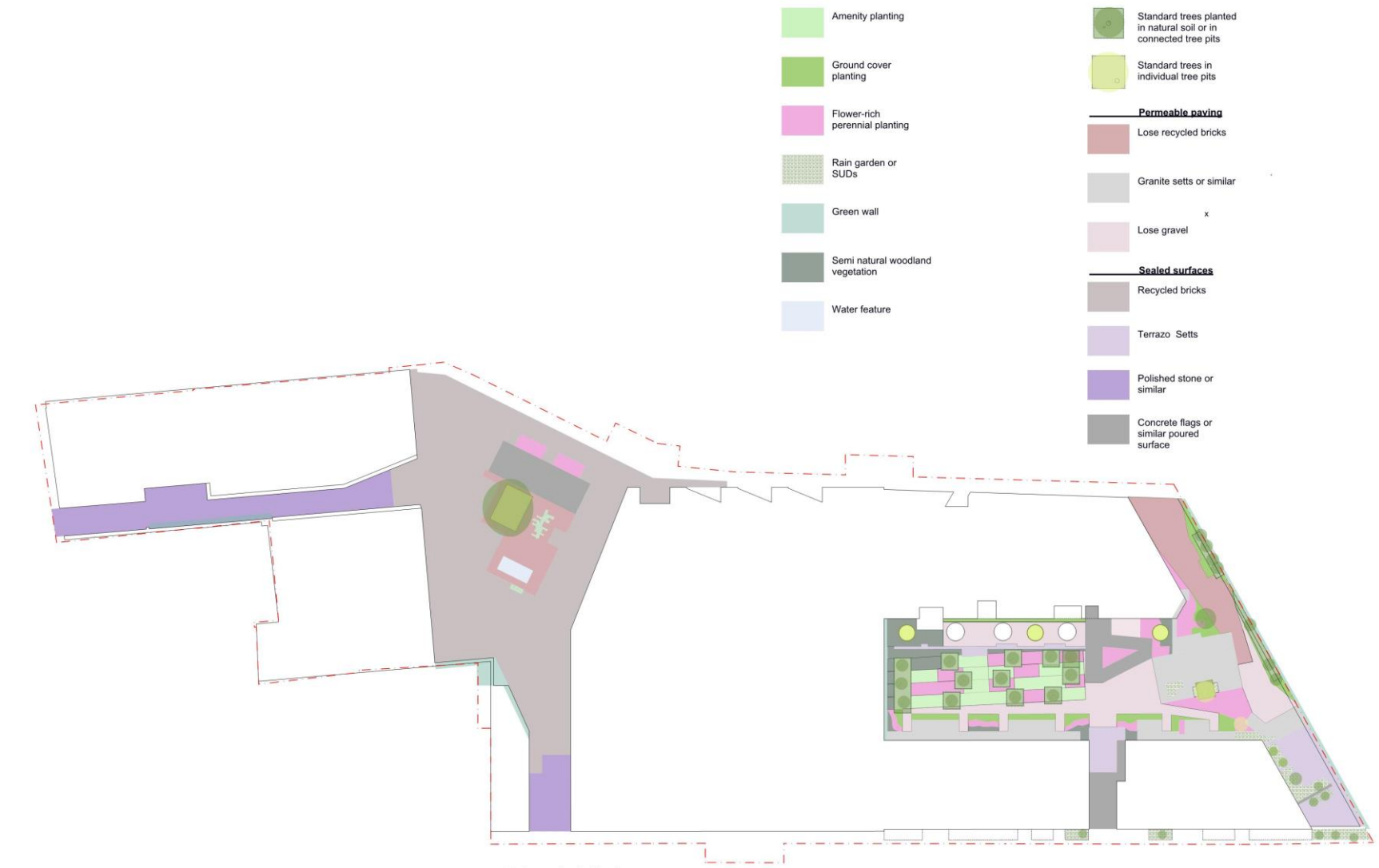
The site layout plan by AHMM and East Landscape Architects has been used for the calculations within this report. All small pockets of site area within the boundary have been included in the calculations and the labelled areas can be found in the following section.

RESULTS

According to Policy G5, the proposed scheme is recommended to achieve a target score of 0.4 for the residential portion, and a target score of 0.3 for the commercial portion of the development. Urban greening measures have been introduced to the proposed scheme to increase green cover of the site as far as is considered feasible by the design team. With the inclusion of all practical measures, the residential part of the development achieves a UGF of 0.34, while the commercial part of the development achieves a UGF of 0.15. The UGF is maximised through the specification of an extensive green roof area, green walls and increased planting along Swinton Street.

Table 2: Results and Calculations

Urban Greening Factors			
Surface Cover Type	**Area (m^2)**	**Factor**	**Score**
Semi-natural vegetation (e.g. trees woodland, species flower-rich grassland) maintained or established created on site.	58	1	**58**
Wetland or open water (semi-natural; not chlorinated) maintained or established created on site.		1	**0**
Intensive green roof or vegetation over structure. Vegetated sections only. Substrate minimum settled depth of 150mm.	38	0.8	**31**
Standard trees planted in natural soils or in connected tree pits with a minimum soil volume equivalent to at least two thirds of the projected canopy area of the mature tree	-	0.8	**0**
Extensive green roof with substrate of minimum settled depth of 80mm (or 60mm beneath vegetation blanket) - meets the requirements of GRO Code 2014.	776	0.7	**544**
Flower-rich perennial planting - see Centre for Designed Ecology for case-studies.	439	0.7	**307**
Rain gardens and other vegetated sustainable drainage elements	-	0	**0**
Hedges (line of mature shrubs one or two shrubs wide) - see RHS for guidance.	-	0.6	**0**
Standard trees planted in pits with soil volumes less than two thirds of the projected canopy area of the mature tree.	57	0.6	**35**
Green wall -modular system or climbers rooted in soil	195	0.6	**117**
Groundcover planting	70	0.5	**36**
Amenity grassland (species-poor, regularly mown lawn).	46	0.4	**19**
Extensive green roof of sedum mat or other lightweight systems that do not meet GRO Code 2014.	-	0.3	**0**
Water features (chlorinated) or unplanted detention basins.	7	0.2	**2**
Permeable paving	357	0.1	**36**
Sealed surfaces (e.g. concrete, asphalt, waterproofing, stone).	828	0	**0**
Total Score	**1185**		
Site Area (m^2)	**5300**		
Urban Greening Factor (Sitewide)	**0.22**		
Urban Greening Factor (Residential)	**0.31**		
Urban Greening Factor (Commercial)	**0.15**		


Amenity planting
Ground cover planting
Flower-rich perennial planting
Rain garden or SUDs
Green wall
Semi natural woodland vegetation
Water feature
Standard trees planted in natural soil or in connected tree pits
Standard trees in individual tree pits
Permeable paving
Lose recycled bricks
Granite setts or similar
Lose gravel
Sealed surfaces
Recycled bricks
Terrazo Setts
Polished stone or similar
Concrete flags or similar poured surface
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East
Architecture, landscape urban design
Unit 3.3
Bayford Street Industrial Centre
London E8 3SE
T 020 7490 3190
E mail@east.uk.com
Client
Groveworld
Project Name
Gray's Inn Road
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XCO2
56 Kingsway Place, Sans Walk
London EC1R 0LU

+44 (0)20 7700 1000
mail@xco2.com
xco2.com