

RAVENS COURT PARK

FORMER ROYAL MASONIC HOSPITAL



Cudd Bentley Consulting

Sustainability
Statement

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RECORD OF REVISIONS.

Date.	Revision.	Description of change.
27/11/2023	1	Final Issue.

1.0 EXECUTIVE SUMMARY

This report considers the sustainability measures to be incorporated within the proposed Ravenscourt Park Hospital, London W6 0TN development in Hammersmith and Fulham, hereafter referred to as the 'development'. This document reviews the requirements at both National and Local level, as set out in the National Planning Policy Framework (2021), The London Plan (March 2021) and the London Borough of Hammersmith and Fulham Local Plan (February 2018).

An energy model of the development will inform the recommended sustainability features and calculate the CO₂ emissions reduction at the proposed development from a base Part L 2021 compliant build. The passive design and energy efficiency measures to be incorporated within the design are features such as energy efficient lighting, occupancy, and daylight sensing in relative areas, as well as the upgrading of 'U' values. The building will comply with Part L 2021 through energy efficiency and passive measures alone before the introduction of any renewable or low zero carbon technology. It is proposed that ASHP and GSHP will be incorporated into the development to provide both heating and hot water demands.

The development has an anticipated CO₂ improvement of 56% from a base Part L 2021 compliant build; this is achieved through an Energy Strategy consisting of passive design and energy efficient measures, Ground Source Heat Pump, Air Source Heat Pumps, and a Photovoltaic array. A total of 39 kWp of PV has been proposed for the Block F to comply with building regulation's part L 2021.

It is anticipated that various measures will be adopted as a means of reducing carbon emissions associated with the development such as using construction materials that will be responsibly and legally sourced, as well as having Green Guide ratings between A+ and D. In addition to this, it is anticipated any new insulation materials specified, for both the structure and building services, will be assessed under the Green Guide to Specification and also be responsibly sourced.

To reduce the energy demand of the development as well as help to conserve water resources within the local area, it is anticipated that the fit-out works will provide for sanitary fittings which will be water efficient through measures such as dual flush toilets and low flow taps.

The development is located within Hammersmith and as such is in proximity to a number of public transport nodes including Ravenscourt Park station as well as a range of primary local amenities such as postal services, cash points and food outlets. These features allow for the reduction of car based travel and transport related pollution.

Noise maps highlight that the development site is not subject to noise pollution from surrounding roads and railway lines. An Acoustician has been appointed to provide recommendations for attenuation measures which will be incorporated into the design to meet Part E of the Building Regulations. A Noise Report was undertaken by NoiseConsultants, which should be read in conjunction with this report.

The incorporation of these sustainability measures allow for the proposed development to be deemed sustainable and compliant with local and national policy.

A summary of sustainability features proposed for this development are as follows:

- A total of 39 kWp PV has been proposed for the Block F Care Home development.
- Development annual load will be met by the use of ASHP and GSHP.



- In line with Policy SI 3 of London Plan 2021, a connection to the District Heating Network was prioritized and investigated to comply with the GLA Energy Hierarchy, but a connection was not available at this stage. However, provision for a future connection has been allowed for within the design.
- The development has achieved an overall carbon saving of 56% beyond baseline, which is over and above the minimum 35% target set out within London Plan 2021.
- Use of water efficient fittings has been proposed for the development and the residential water use is limited to 105 l/day.
- The scheme has been designed to meet the current London Plan requirement for cycle parking space. All residents of residential blocks will be provided with access to secure cycle parking areas (total of 253 long stay provision and 5 short stay provision). The care home also contains (total of 13 long stay and 4 short stay) secure cycle parking area for staff and visitors. A total of 66 cycle spaces has been proposed for the community and commercial use of Block A.
- A total of 39 car park spaces will be provided for the development with electric vehicle charging points (20% active and 80% passive) will be provided to encourage sustainable modes of transport.
- A BREEAM rating of Excellent has been targeted for the newly built Care Home and BREEAM very good rating for the existing building community use.
- A total of 43 new trees and 1,608 sqm green roof has been proposed for the development.
- The Design Team has calculated the Urban Greening Factor score as 0.40 through use of Urban Greening Factor model developed by Mayor of London.
- The biodiversity net gain has been calculated by Logika as 33.42% in habitat units.
- Waste minimization through reuse and recycle has been prioritized through incorporation of sustainable waste strategies in order to minimise waste sent to landfill. Pre-Demolition Audit, prepared by Southern Demolition, targets 98% diversion of key materials from landfill
- Energy efficient LED lighting has been proposed for the development to reduce energy consumption, complying with Policy SI 2 of the London Plan 2021 by reducing energy use through passive measures.

2.0 INTRODUCTION

This report has been prepared by the Cudd Bentley Consulting Sustainability Team to investigate the issues of energy and sustainability surrounding the proposed construction of Ravenscourt Park Hospital development taking into account up to date policies and Building Regulations requirements. The proposals include the Part demolition, part extension and alteration of the existing buildings and structures, change of use of the existing buildings and the erection of a new building including provision of a basement, to provide residential units (Use Class C3) and associated ancillary communal floorspace, a Care Home (Use Class C2) and flexible non-residential floorspace (Classes E, F1 and F2), together with associated roof top installations and structures, private and communal amenity space, landscaping, access, refuse storage, parking and associated works.”

The Site is located within the London Borough of Hammersmith and Fulham (‘LBR’), situated at a highly accessible location near Hammersmith Town Centre, well-suited for both conventional housing and commercial areas. The site comprises a hospital site that has been vacant for the past 17 years, since 2006 when the hospital use on the site ceased. Prior to its vacancy, the site operated as an in-patient hospital and, as confirmed in the planning history section below, there have been no changes of use approved on the site. As such, the site is considered to fall within Use Class C2.

The property is Grade II* listed (1192740) and is constructed in the Art-Deco architectural style, constructed and completed between 1931- 1933. The listed hospital buildings comprise four interconnecting blocks: the T-shaped three-storey administrative block facing Ravenscourt Park (Block A); a south-facing, U-shaped, five-storey ward block to the west (Block B); a five-storey annex block with a projecting ground floor with bowed ends to the north of this (Block C); and, further north again, a three-storey surgical block (Block D).

Later additions include Block E to the north (1978), connected to the building by a raised walkway, and the Wakefield Wing to the west (1959) (beyond the site boundary), now unconnected to the building, but historically joined by a bridge; these are considered by Historic England to lack special interest and are not included in the listing.

A ground floor layout and a typical residential floor layout for the development are shown in Figures 2.1 and 2.2.



Figure 2.1 Proposed Ground Floor Plan of the development



Figure 2.2 Proposed level 01 Floor Layout



3.0 DRIVERS OF SUSTAINABILITY

The term *Sustainable Development*, is defined by the Department for the Environment, Food and Rural Affairs as:

'... making sure people throughout the world can satisfy their basic needs now, while making sure that future generations can also look forward to the same quality of life. It recognises that the "three pillars" – economy, society and environment – are interconnected.'



To achieve this objective of sustainable development in any industry, sector strict regulations have been put in place that have filtered down through EU Directives from the European Climate Change Programme, to National UK Acts such as the Climate Change Act

2008, to Local Policy in the form of Core Strategies. However, there are larger drivers behind the concept of sustainable development.

Kyoto Protocol

In 1997, the Kyoto Protocol was adopted as part of the United Nations Framework Convention on Climate Change, to which the UK is a signatory. The key feature of the protocol was the binding targets that were set for industrialised countries to reduce their Green House Gas emissions by 12.5% below 1990 levels by 2008-2012.

Cancun Agreements

Since the initial adoption of the Kyoto Protocol, extensive research has been put forward as to the causes and markers of climate change from the Intergovernmental Panel on Climate Change, which has led to new targets and objectives being made. In 2012, the international community met to discuss new directions for responding to climate change by adopting new agreements. The key objectives of the Cancun Agreements are:

- Establish clear objectives for reducing human-generated greenhouse gas emissions over time to keep the global average temperature rise below two degrees
- Mobilise the development and transfer of clean technology to boost efforts to address climate change, getting it to the right place at the right time and for the best effect
- Assist the particularly vulnerable people in the world to adapt to the inevitable impacts of climate change
- Protect the world's forests, which are a major repository of carbon
- Establish effective institutions and systems which will ensure these objectives are implemented successfully.

COP21: Paris Global Climate Agreement

In December 2015, a global climate deal was reached in a summit involving all of the world's nations. The targets of this aimed principally to curb the dangerous levels of climate change and drive an increase low-carbon infrastructure investment. Numerous organisations and corporations also committed to helping create a greener future by making their own pledges through the course of the summit. The key elements of the agreement are:

- To keep global temperatures "well below" 2.0C above pre-industrial times and "endeavour to limit" them even more, to 1.5°C



- To limit the amount of greenhouse gases emitted by human activity to the same levels that trees, soil and oceans can absorb naturally, beginning at some point between 2050 and 2100
- To review each country's contribution to cutting emissions every five years so they scale up to the challenge
- For rich countries to help poorer nations by providing "climate finance" to adapt to climate change and switch to renewable energy.

BRE's COP21 Climate Pledge (December 2015)

"We commit to continue to drive best practice and carbon reduction, as we have through the use of BREEAM for the past 25 years. By reaching over 9,000 BREEAM rated buildings we predict emissions savings will be in excess of 900,000 tonnes of CO₂, compared to regulatory minimum performance requirements, by 2020. Saving not only carbon but bringing wider benefits to both the owner and occupiers."

BRE's COP25 Climate Pledge (December 2019)

Governments met for two weeks of talks in Madrid aimed at forging a new response to the climate crisis. More than 190 nations and blocs, from the US, China and the EU to the smallest island states, were represented. Ambitions for this conference were restricted because many countries were focused on narrow technical details such as the workings of the global carbon markets, by which countries can buy and sell carbon credits based on their emissions-cutting efforts.

4.0 NATIONAL POLICY

National Planning Policy

An effective planning system is required to contribute to achieving sustainable development. The **National Planning Policy Framework (NPPF)**, 2023, outlines what the government deems as sustainable development in England.

Sustainable development is defined as having the following three overarching objectives which are interdependent and need to be pursued in mutually supportive ways: an economic objective, a social objective, and an environmental objective.

1. Economic objective – to help build a strong, responsive and competitive economy, by ensuring that sufficient land of the right types is available in the right places and at the right time to support growth, innovation and improved productivity; and by identifying and coordinating the provision of infrastructure;
2. Social objective – to support strong, vibrant and healthy communities, by ensuring that a sufficient number and range of homes can be provided to meet the needs of present and future generations; and by fostering a well-designed and safe built environment, with accessible services and open spaces that reflect current and future needs and support communities' health, social and cultural well-being; and
3. Environmental objective – to contribute to protecting and enhancing our natural, built and historic environment; including making effective use of land, helping to improve biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy.

The above objectives can be described as an energy trilemma, this is demonstrated in Figure 4.1 below. Each dimension is dependent on each other and sustainable development proposals should adhere to each role. This energy statement shall ensure the proposed Development is one that contributes economically, socially and environmentally in accordance with the NPPF, 2023.

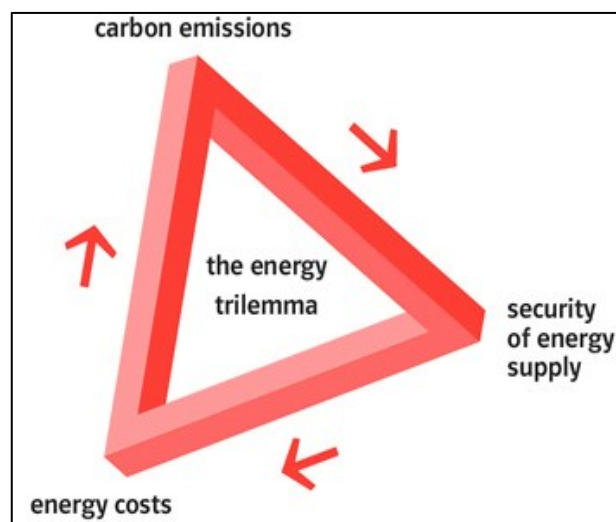


Figure 4.1 The Energy Trilemma

Guidance has been followed from the (NPPF), 2023, to provide an energy strategy which reduces energy use and carbon emissions, in line with best practice. This will provide a balanced scheme which focuses on optimal use of non-renewable resources (energy efficiency measures) whilst providing a renewable energy strategy best suited to the sites and their building uses. Below are some key extracts relevant to the development from Chapter fourteen 'Meeting the Challenge of Climate Change, Flooding & Coastal Change':

Paragraph 153

Plans should take a proactive approach to mitigating and adapting to climate change, taking into account the long-term implications for flood risk, coastal change, water supply, biodiversity and landscapes, and the risk of overheating from rising temperatures. Policies should support appropriate measures to ensure the future resilience of communities and infrastructure to climate change impacts, such as providing space for physical protection measures, or making provision for the possible future relocation of vulnerable development and infrastructure.

Paragraph 154

New development should be planned for in ways that:

- a. avoid increased vulnerability to the range of impacts arising from climate change. When new development is brought forward in areas which are vulnerable, care should be taken to ensure that risks can be managed through suitable adaptation measures, including through the planning of green infrastructure; and
- b. can help to reduce greenhouse gas emissions, such as through its location, orientation and design. Any local requirements for the sustainability of buildings should reflect the Government's policy for national technical standards.

Paragraph 155

To help increase the use and supply of renewable and low carbon energy and heat, plans should:

- a. provide a positive strategy for energy from these sources, that maximises the potential for suitable development, while ensuring that adverse impacts are addressed satisfactorily (including cumulative landscape and visual impacts);
- b. consider identifying suitable areas for renewable and low carbon energy sources, and supporting infrastructure, where this would help secure their development; and
- c. identify opportunities for development to draw its energy supply from decentralised, renewable or low carbon energy supply systems and for collocating potential heat customers and suppliers.

Paragraph 156

Local planning authorities should support community-led initiatives for renewable and low carbon energy, including developments outside areas identified in local plans or other strategic policies that are being taken forward through neighbourhood planning.

Paragraph 157

In determining planning applications, local planning authorities should expect new development to:



- a. comply with any development plan policies on local requirements for decentralised energy supply unless it can be demonstrated by the applicant, having regard to the type of development involved and its design, that this is not feasible or viable; and
- b. take account of landform, layout, building orientation, massing and landscaping to minimise energy consumption.



5.0 LONDON, HAMMERSMITH AND FULHAM LOCAL PLAN POLICIES

This section aims to highlight guidance available and the minimum requirements at local level from the Greater London Authority, Hammersmith and Fulham Council, which states the Council's vision, spatial strategy and policies for the future development of the area.

The London Plan (March 2021)

The following policies outline requirements made by the Greater London Authority in relation to climate change, pollution, energy use and all other sustainable aspects of a development.

Policy D14 Noise

- A. In order to reduce, manage and mitigate noise to improve health and quality of life, residential and other non-aviation development proposals should manage noise by:
 1. avoiding significant adverse noise impacts on health and quality of life
 2. reflecting the Agent of Change principle as set out in Policy D13 Agent of Change
 3. mitigating and minimising the existing and potential adverse impacts of noise on, from, within, as a result of, or in the vicinity of new development without placing unreasonable restrictions on existing noise-generating uses
 4. improving and enhancing the acoustic environment and promoting appropriate soundscapes (including Quiet Areas and spaces of relative tranquillity)
 5. separating new noise-sensitive development from major noise sources (such as road, rail, air transport and some types of industrial use) through the use of distance, screening, layout, orientation, uses and materials – in preference to sole reliance on sound insulation
 6. where it is not possible to achieve separation of noise-sensitive development and noise sources without undue impact on other sustainable development objectives, then any potential adverse effects should be controlled and mitigated through applying good acoustic design principles
 7. promoting new technologies and improved practices to reduce noise at source, and on the transmission path from source to receiver.

Policy SI 1 Improving Air Quality

- A. Development Plans, through relevant strategic, site-specific and area based policies, should seek opportunities to identify and deliver further improvements to air quality and should not reduce air quality benefits that result from the Mayor's or boroughs' activities to improve air quality.
- B. To tackle poor air quality, protect health and meet legal obligations the following criteria should be addressed:
 1. Development proposals should not:
 - a. lead to further deterioration of existing poor air quality
 - b. create any new areas that exceed air quality limits, or delay the date at which compliance will be achieved in areas that are currently in exceedance of legal limits
 - c. create unacceptable risk of high levels of exposure to poor air quality.



2. In order to meet the requirements in Part 1, as a minimum:
 - a. development proposals must be at least Air Quality Neutral
 - b. development proposals should use design solutions to prevent or minimise increased exposure to existing air pollution and make provision to address local problems of air quality in preference to post-design or retro-fitted mitigation measures
 - c. major development proposals must be submitted with an Air Quality Assessment. Air quality assessments should show how the development will meet the requirements of B1
 - d. development proposals in Air Quality Focus Areas or that are likely to be used by large numbers of people particularly vulnerable to poor air quality, such as children or older people should demonstrate that design measures have been used to minimise exposure.

Policy SI 2 Minimising Greenhouse Gas Emissions

- A. Major development should be net zero-carbon. This means reducing greenhouse gas emissions in operation and minimising both annual and peak energy demand in accordance with the following energy hierarchy:
 1. be lean: use less energy and manage demand during operation
 2. be clean: exploit local energy resources (such as secondary heat) and supply energy efficiently and cleanly
 3. be green: maximise opportunities for renewable energy by producing, storing and using renewable energy on-site
 4. be seen: monitor, verify and report on energy performance.
- B. Major development proposals should include a detailed energy strategy to demonstrate how the zero-carbon target will be met within the framework of the energy hierarchy.
- C. A minimum on-site reduction of at least 35 per cent beyond Building Regulations is required for major development. Residential development should achieve 10 per cent, and non-residential development should achieve 15 per cent through energy efficiency measures. Where it is clearly demonstrated that the zero-carbon target cannot be fully achieved on-site, any shortfall should be provided, in agreement with the borough, either:
 1. through a cash in lieu contribution to the borough's carbon offset fund, or
 2. off-site provided that an alternative proposal is identified and delivery is certain.

Policy SI 4 Managing Heat Risk

- A. Development proposals should minimise adverse impacts on the urban heat island through design, layout, orientation, materials and the incorporation of green infrastructure.
- B. Major development proposals should demonstrate through an energy strategy how they will reduce the potential for internal overheating and reliance on air conditioning systems in accordance with the following cooling hierarchy:
 1. reduce the amount of heat entering a building through orientation, shading, high albedo materials, fenestration, insulation and the provision of green infrastructure

2. minimise internal heat generation through energy efficient design
3. manage the heat within the building through exposed internal thermal mass and high ceilings
4. provide passive ventilation
5. provide mechanical ventilation
6. provide active cooling systems.

Policy SI 5 – Water Infrastructure

- A. In order to minimise the use of mains water, water supplies and resources should be protected and conserved in a sustainable manner.
- B. Development Plans should promote improvements to water supply infrastructure to contribute to security of supply. This should be done in a timely, efficient and sustainable manner taking energy consumption into account.
- C. Development proposals should:
 1. through the use of Planning Conditions minimise the use of mains water in line with the Optional Requirement of the Building Regulations (residential development), achieving mains water consumption of 105 litres or less per head per day (excluding allowance of up to five litres for external water consumption)
 2. achieve at least the BREEAM excellent standard for the ‘Wat 01’ water category¹⁶⁰ or equivalent (commercial development)
 3. incorporate measures such as smart metering, water saving and recycling measures, including retrofitting, to help to achieve lower water consumption rates and to maximise future-proofing.
- D. In terms of water quality, Development Plans should:
 1. promote the protection and improvement of the water environment in line with the Thames River Basin Management Plan, and should take account of Catchment Plans
 2. support wastewater treatment infrastructure investment to accommodate London’s growth and climate change impacts. Such infrastructure should be constructed in a timely and sustainable manner taking account of new, smart technologies, intensification opportunities on existing sites, and energy implications. Boroughs should work with Thames Water in relation to local wastewater infrastructure requirements.
- E. Development proposals should:
 1. seek to improve the water environment and ensure that adequate wastewater infrastructure capacity is provided.
 2. take action to minimise the potential for misconnections between foul and surface water networks.
- F. Development Plans and proposals for strategically or locally defined growth locations with particular flood risk constraints or where there is insufficient water infrastructure capacity should be informed by Integrated Water Management Strategies at an early stage.

Policy SI 7 – Reducing Waste and Supporting the Circular Economy

- A. Resource conservation, waste reduction, increases in material re-use and recycling, and reductions in waste going for disposal will be achieved by the Mayor, waste planning authorities and industry working in collaboration to:



- 1) promote a more circular economy that improves resource efficiency and innovation to keep products and materials at their highest use for as long as possible
 - 2) encourage waste minimisation and waste prevention through the reuse of materials and using fewer resources in the production and distribution of products
 - 3) ensure that there is zero biodegradable or recyclable waste to landfill by 2026
 - 4) meet or exceed the municipal waste recycling target of 65 per cent by 2030
 - 5) meet or exceed the targets for each of the following waste and material streams: a) construction and demolition – 95 per cent reuse/recycling/recovery b) excavation – 95 per cent beneficial use
 - 6) design developments with adequate, flexible, and easily accessible storage space and collection systems that support, as a minimum, the separate collection of dry recyclables (at least card, paper, mixed plastics, metals, glass) and food.
- B. Referable applications should promote circular economy outcomes and aim to be net zero-waste. A Circular Economy Statement should be submitted, to demonstrate:
- 1) how all materials arising from demolition and remediation works will be re-used and/or recycled
 - 2) how the proposal's design and construction will reduce material demands and enable building materials, components and products to be disassembled and re-used at the end of their useful life
 - 3) opportunities for managing as much waste as possible on site
 - 4) adequate and easily accessible storage space and collection systems to support recycling and re-use
 - 5) how much waste the proposal is expected to generate, and how and where the waste will be managed in accordance with the waste hierarchy
 - 6) how performance will be monitored and reported.
- C. Development Plans that apply circular economy principles and set local lower thresholds for the application of Circular Economy Statements for development proposals are supported.

Policy SI 9 – Safeguarded Waste Sites

- A. Existing waste sites should be safeguarded and retained in waste management use.
- B. Waste facilities located in areas identified for non-waste related development should be integrated with other uses as a first principle where they deliver clear local benefits.
- C. Waste plans should be adopted before considering the loss of waste sites. The proposed loss of an existing waste site will only be supported where appropriate compensatory capacity is made within London that must be at or above the same level of the waste hierarchy and at least meet, and should exceed, the maximum achievable throughput of the site proposed to be lost.
- D. Development proposals that would result in the loss of existing sites for the treatment and/or disposal of hazardous waste should not be permitted unless compensatory hazardous waste site provision has been secured in accordance with this policy.
- E. Development proposals for the relocation of waste sites within London are supported where strategic waste management outcomes are achieved.



Policy SI 12 – Flood Risk Management

- A. Current and expected flood risk from all sources (as defined in paragraph 9.2.12) across London should be managed in a sustainable and cost-effective way in collaboration with the Environment Agency, the Lead Local Flood Authorities, developers and infrastructure providers.
- B. Development Plans should use the Mayor’s Regional Flood Risk Appraisal and their Strategic Flood Risk Assessment as well as Local Flood Risk Management Strategies, where necessary, to identify areas where particular and cumulative flood risk issues exist and develop actions and policy approaches aimed at reducing these risks. Boroughs should cooperate and jointly address cross-boundary flood risk issues including with authorities outside London.
- C. Development proposals should ensure that flood risk is minimised and mitigated, and that residual risk is addressed. This should include, where possible, making space for water and aiming for development to be set back from the banks of watercourses.
- D. Developments Plans and development proposals should contribute to the delivery of the measures set out in Thames Estuary 2100 Plan. The Mayor will work with the Environment Agency and relevant local planning authorities, including authorities outside London, to safeguard an appropriate location for a new Thames Barrier.
- E. Development proposals for utility services should be designed to remain operational under flood conditions and buildings should be designed for quick recovery following a flood.

Policy SI 13 – Sustainable Drainage

- A. Lead Local Flood Authorities should identify – through their Local Flood Risk Management Strategies and Surface Water Management Plans – areas where there are particular surface water management issues and aim to reduce these risks. Increases in surface water run-off outside these areas also need to be identified and addressed.
- B. Development proposals should aim to achieve greenfield run-off rates and ensure that surface water run-off is managed as close to its source as possible. There should also be a preference for green over grey features, in line with the following drainage hierarchy:
 - 1) rainwater use as a resource (for example rainwater harvesting, blue roofs for irrigation)
 - 2) rainwater infiltration to ground at or close to source
 - 3) rainwater attenuation in green infrastructure features for gradual release (for example green roofs, rain gardens)
 - 4) rainwater discharge direct to a watercourse (unless not appropriate)
 - 5) controlled rainwater discharge to a surface water sewer or drain
 - 6) controlled rainwater discharge to a combined sewer
- C. Development proposals for impermeable surfacing should normally be resisted unless they can be shown to be unavoidable, including on small surfaces such as front gardens and driveways.

- D. Drainage should be designed and implemented in ways that promote multiple benefits including increased water use efficiency, improved water quality, and enhanced biodiversity, urban greening, amenity and recreation.

Policy T1 – Strategic Approach to Transport

- A. Development Plans should support, and development proposals should facilitate:
 - 1) the delivery of the Mayor’s strategic target of 80 per cent of all trips in London to be made by foot, cycle or public transport by 2041
- B. All development should make the most effective use of land, reflecting its connectivity and accessibility by existing and future public transport, walking and cycling routes, and ensure that any impacts on London’s transport networks and supporting infrastructure are mitigated.

Policy T4 – Assessing and Mitigating Transport Impacts

- A. Development Plans and development proposals should reflect and be integrated with current and planned transport access, capacity and connectivity.
- B. When required in accordance with national or local guidance, transport assessments/statements should be submitted with development proposals to ensure that impacts on the capacity of the transport network (including impacts on pedestrians and the cycle network), at the local, network-wide and strategic level, are fully assessed. Transport assessments should focus on embedding the Healthy Streets Approach within, and in the vicinity of, new development. Travel Plans, Parking Design and Management Plans, Construction Logistics Plans and Delivery and Servicing Plans will be required having regard to Transport for London guidance.
- C. Where appropriate, mitigation, either through direct provision of public transport, walking and cycling facilities and highways improvements or through financial contributions, will be required to address adverse transport impacts that are identified.
- F. Development proposals should not increase road danger.

Policy T5 - Cycling

- A. Development Plans and development proposals should help remove barriers to cycling and create a healthy environment in which people choose to cycle. This will be achieved through:
 - 1) supporting the delivery of a London-wide network of cycle routes, with new routes and improved infrastructure
 - 2) securing the provision of appropriate levels of cycle parking which should be fit for purpose, secure and well-located.
- B. Cycle parking should be designed and laid out in accordance with the guidance contained in the London Cycling Design Standards. Development proposals should demonstrate how cycle parking facilities will cater for larger cycles, including adapted cycles for disabled people.
- C. Development Plans requiring more generous provision of cycle parking based on local evidence will be supported.



Greater London Authority Sustainable Design and Construction Supplementary Planning Guidance (2014)

2.4 Energy and Carbon Dioxide Emissions

In line with The London Plan Policy 5.2 the following carbon savings are required:

Residential:

- 2013 – 2016 40% improvement beyond 2010 Building Regulations;
- 2016 – 2031 Zero carbon.

Non-domestic:

- 2013 – 2016 40% improvement beyond 2010 Building Regulations;
- 2016 – 2019 As per the Building Regulations requirements;
- 2019 – 2031 Zero carbon.

Hammersmith and Fulham Local Plan (February 2018)

Policy CC1 – Reducing Carbon Dioxide Emissions

The council will require all major developments to implement energy conservation measures by:

- a) implementing the London Plan (2016) sustainable energy policies and meeting the associated carbon dioxide (CO₂) reduction targets;
- b) ensuring developments are designed to make the most effective use of passive design measures, and where an assessment such as BREEAM (or equivalent) is used to determine a development's environmental performance, this must be supplemented with a more detailed Energy Assessment in order to show compliance with the London Plan's CO₂ reduction targets;
- c) requiring energy assessments for all major developments to demonstrate and quantify how the proposed energy efficiency measures and low/zero carbon technologies will reduce the expected energy demand and CO₂ emissions;
- d) requiring major developments to demonstrate that their heating and/or cooling systems have been selected to minimise CO₂ emissions. This includes the need to assess the feasibility of connecting to any existing decentralised energy systems or integrating new systems such as Combined (Cooling) Heat and Power units or communal heating systems, including heat networks if this can be done without having an unacceptable impact on air quality; and
- e) using on-site renewable energy generation to further reduce CO₂ emissions from major developments, where feasible.

Where it is not feasible to make the required CO₂ reductions by implementing these measures on-site or off-site as part of the development, a payment in lieu contribution should be made to the council which will be used to fund CO₂ reduction measures in the borough or elsewhere in London.

Encouraging energy efficiency and other low carbon measures in all other (i.e. non-major) developments, where feasible. The council will also encourage developers to use energy performance standards such as Passivhaus to guide development of their Energy Strategies.

Hammersmith and Fulham Local Plan (February 2018)

Policy T1 – Transport

To work with strategic partners to improve transportation provision, accessibility, and air quality in the borough, by improving and increasing the opportunities for cycling and walking, and by improving connections for bus services, underground, national and regional rail by:

- seeking and promoting the routing of Crossrail 2 via South Fulham, with an interchange to the Overground line at Imperial Wharf;
- supporting the implementation of a HS2 Crossrail/Great Western interchange at Old Oak with interchanges with the West London Line and underground services, a new and enhanced station at Willesden Junction and connect development in the north of the borough with the stations at Old Oak;
- seeking a road tunnel replacing all or parts of the A4, including the Flyover through Hammersmith allowing for major new housing, community facilities and office developments within the town centre and improved links to the Thames;
- continuing to promote major improvements with new stations and enhanced local and sub-regional passenger services on the West London Line;
- seeking the increased capacity and reliability of the Piccadilly and District Lines;
- seeking increased use of the River Thames for passenger services and freight use where this is compatible with the capacity of the connecting road network and meets environmental concerns;
- increasing the opportunities for walking, for example by extending the River Thames Path National Trail, and for cycling by supporting the Mayor’s Cycling Vision; and
- seeking localised improvements to the highway network to reduce congestion on north-south routes in the borough.

Borough wide Targets:

- promoting and supporting the continued development of initiatives designed to encourage modal shift away from private vehicles, in order to improve congestion and air quality within the borough;
- developing and promoting safe environments for cyclist and pedestrians to encourage residents and businesses to consider these modes;
- extending the Mayor’s Bike Hire scheme throughout the borough;
- working with Transport for London and bus operators to develop zero exhaust emission bus services and routes across the borough;
- securing access improvements for all, particularly people with disabilities, as part of planning permissions for new developments in the borough;
- ensuring that there are adequate levels of provision of electric charging infrastructure to support local residents and visitors;
- working towards changing the behaviour patterns and vehicle types of private hire vehicles and taxis;
- ensuring that traffic generated by new development is minimised so that it does not add to parking pressures on local streets or congestion, or worsen air quality; and
- relating the intensity of development to public transport accessibility and highway capacity.

Policy T3 - Increasing and Promoting Opportunities for Cycling and Walking

The council will encourage and support the increasing use of bicycles by requiring:



- new developments to include the provision of convenient accessible and safe secure cycle parking within the boundary of the site
- the provision of suitable changing and showering facilities, following the guidance outlined in the Hammersmith and Fulham Cycling Strategy 2015
- developer contributions for improvements to cycling infrastructure, including contributions to the extension of TfL or other Cycle Hire schemes to mitigate their impact on the existing network.

Policy CC4 – Minimising Surface Water runoff with Sustainable Drainage Systems

All proposals for new development must manage surface water run-off as close to its source as possible and on the surface where practicable, in line with the London Plan drainage hierarchy.

Policy CC2 – Ensuring Sustainable Design and Construction

The council will require the implementation of sustainable design and construction measures in all major developments by:

- a) Implementing the London Plan sustainable design and construction policies to ensure developments incorporate sustainability measures.
- b) Requiring Sustainability Statements (or equivalent assessments such as BREEAM) for all major developments to ensure the full range of sustainability issues has been taken into account during the design stage.

Policy CC3 – Minimising Flood risk and reducing water use

The council will require developments to reduce the use of water and minimise current and future flood risk by implementing the following measures:

- A site-specific Flood Risk Assessment (FRA) will be required for the following development proposals:
 - all proposals for developments in the Environment Agency’s Flood Zones 2 and 3;
 - all proposals for new developments over 1 hectare in size in Flood Zone 1;
 - all proposals for new development in areas identified in the council’s Surface Water Management Plan (SWMP) as being susceptible to surface water flooding – i.e. those located in a flooding hotspot; and
 - all proposals for new development which includes a subterranean element in areas identified in the council’s SWMP as being at risk from elevated groundwater levels.
- All developments must include water efficient fittings and appliances, where provided, in line with London Plan water consumption targets. In addition, major developments and high water use developments must include other measures such as rainwater harvesting and greywater re-use.
- All developments that include a subterranean element must provide details of the structural waterproofing measures to be integrated to prevent any increase in on or off-site groundwater flood risk;
- in line with the requirements of the Thames Estuary 2100 Plan, developments adjoining the River Thames must maintain and where necessary enhance or raise flood defences (or show how they could be raised in the future), demonstrating that they will continue to provide adequate flood protection for the lifetime of the development.

Policy CC11 – Noise

Noise (including vibration) impacts of development will be controlled by implementing the following measures:

- a) noise and vibration sensitive development should be located in the most appropriate locations and protected against existing and proposed sources of noise and vibration through careful design, layout and use of materials, and by ensuring adequate insulation of the building envelope and internal walls, floors and ceilings as well as protecting external amenity areas;
- b) housing, schools, nurseries, hospitals and other noise-sensitive development will not normally be permitted where the occupants/users would be affected adversely by noise, both internally and externally, from existing or proposed noise generating uses. Exceptions will only be made if it can be demonstrated that adequate mitigation measures will be taken, without compromising the quality of the development; and
- c) noise generating development will not be permitted, if it would be liable to materially increase the noise experienced by the occupants/users of existing or proposed noise sensitive uses in the vicinity.

Where necessary, applicants will be expected to carry out noise assessments and provide details of the noise levels on the site. Where noise mitigation measures will be required to enable development to take place, an outline application will not normally be acceptable.

Policy OS1 – Parks and Open Spaces

The council will meet requirements for open space and green infrastructure by:

The council will protect, enhance and increase provision of parks, open spaces and biodiversity in the borough by:

- a) Designating a hierarchy of open space that includes metropolitan open land (MOL), open space of borough wide importance and open space of local importance (see Appendix 3) as well as a hierarchy of nature conservation areas of metropolitan, borough and local importance, and green corridors along the borough's railway lines (see Appendix 4);
- b) Requiring a mix of new public and private open space in the White City and Earls Court and West Kensington Opportunity Areas and the South Fulham Riverside Regeneration Area and in any new major development; and
- c) Improving existing parks, open spaces and recreational facilities throughout the borough.

Policy CC2 – Ensuring Sustainable Design and Construction

The council will require the implementation of sustainable design and construction measures in all major developments by:

- a. implementing the London Plan sustainable design and construction policies to ensure developments incorporate sustainability measures, including:
 - minimising energy use;
 - making the most effective use of resources such as water and aggregates;
 - sourcing building materials sustainably;
 - using prefabrication construction methods where appropriate;
 - reducing pollution and waste;
 - promoting recycling and conserving and promoting biodiversity and the natural environment;
 - ensuring developments are comfortable and secure for users and avoiding impacts from natural hazards (including flooding); and

- b. Requiring Sustainability Statements (or equivalent assessments such as BREEAM) for all major developments to ensure the full range of sustainability issues has been taken into account during the design stage.

The integration of sustainable design and construction measures will be encouraged in all other (i.e. non-major) developments, where feasible.

Climate Change Supplementary Planning Document (SPD) October 2023:

This Planning document sets out must do and good practice principles for the developments seeking planning permission.

KPC7 - Key principles – What you MUST do:

Major Developments

- Provide an Energy Assessment with your application demonstrating how renewable energy generation will contribute to meeting the London Plan requirement to be net zero carbon.
- Follow the London Plan “Energy Hierarchy” in designing an Energy Strategy for your building(s)
- Prioritise minimising energy demand first, then look at how energy will be supplied on-site by renewables.
- Maximise available opportunities to integrate low/zero carbon heating renewable energy generation, such as solar PV panels and Ground or Air Source Heat Pumps, which are the most common renewable technologies being installed in the borough.
- Include energy storage facilities where possible.
- Use communal systems rather than individual installations for each dwelling and demonstrate how they can be integrated into wider local networks in the future.
- Achieve a minimum 35% reduction in CO2 emissions through on-site measures compared to the 2021 Building Regulation baseline.

KPC8 - Key principles – What you CAN do:

All Developments

- Consider working towards achieving an “energy balance” for your site i.e., use on-site low carbon heating and renewable energy generation in conjunction with energy efficiency measures to provide all of your energy consumption, including heating, hot water and electricity.
- If this is not possible, the development should seek to achieve renewable energy generation of at least 120 kWh/ m2 footprint/yr – see key performance indicators.
- Generate surplus energy and store this on-site for later use or sell into the national grid.
- Use Heat Pumps with the best Coefficient of Performance ratings and PV panels with the highest efficiency - i.e., state of the art technology – in the interests of maximising on-site CO2 reductions. Heat Pumps with lower Global Warming Potential refrigerants (i.e., those with a GWP value of <150) are also preferred.
- Where new hot water systems are installed, consider including a “heat pump ready” hot water cylinder.
- PV panels are suitable for both new and existing buildings.
- Heat pumps are also suitable for both, but achieve better performance in more energy efficient buildings, so insulation and energy efficient glazing should be optimised.

- Achieve a minimum 50% reduction in CO2 emissions through on-site measures compared to the 2021 Building Regulation baseline.

KPC10 - Key principles – What you MUST do

All Development

- Demonstrate adequate water and waste water capacity and include water efficient fitting/appliances in line with London Plan Policy S15.
- Meet Part G Optional Building Requirements in the Building Regulations (residential development), achieving internal mains water consumption of 105 litres or less per head per day.

Commercial Development

- Achieve at least the BREEAM excellent standard for the 'Wat 01' water category or equivalent which is at least a 12.5% improvement over defined baseline performance standard. Major Developments
- Major developments and high water use developments must include other measures such as rainwater harvesting and greywater re-use. Aim to maximise the score on water credits in a BREEAM assessment, or best practice level Association of Environment Conscious Building (AECB) water standards (see table above)

KPC12 - Key principles – What you MUST do

All Development

- Prioritise reducing the need to travel.
- Focus on achieving high-quality public realm which:
- embeds Healthy Streets principles.
- facilitates Active Travel; and
- takes on board Healthy Streets Approach 'Access for All', walking and cycling in line with the London Plan
- Make the most effective use of land, reflecting its connectivity and accessibility by existing and future public transport, walking, and cycling routes.
- Ensure that any impacts on London's transport networks and supporting infrastructure are mitigated.
- All development to align with London Plan car and cycle parking standards.

KPC14 - Key Principles – What You MUST Do

Major developments

- Carry out a preliminary Air Quality Assessment before designing the development to inform the design process

All developments

- Take on board London Plan policy S11.
- Be at least Air Quality Neutral.
- Be designed to avoid increased exposure to existing air pollution and make provision to address local problems of air quality.
- Demonstrate that heating and/or cooling systems have been selected to minimise CO2 emissions.



KPC16 - Key Principles - What You MUST Do

All Development

- Include urban greening as a fundamental element of site and building design, and by incorporating measures such as high-quality landscaping (including trees), green roofs, green walls, and nature-based sustainable drainage.
- Riverside developments should enhance river related biodiversity and avoid, minimise or mitigate significant adverse impacts.

Major Developments

- Submit an assessment showing the UGF score. Higher standards are required for residential development. Align with the London Plan Policy G5 recommended target UGF score of 0.4 in residential developments, and 0.3 in commercial developments.

KPC19 - Key Principles – What you MUST do.

- All planning applications must include a Flood Risk Assessment (FRA) where the site in question is located in an area identified as being at risk of flooding in Policies CC3 and CC4 of the Local Plan
- FRAs should take account of the impacts of climate change on sea level rises and rainfall. For the latter, a climate change factor of +40% should be used when assessing future storm scenarios.
- Sufficient information on the risks and mitigation measures to be included to demonstrate that national, regional, and local planning requirements will be met.
- Details of appropriate mitigation measures such as structural waterproofing and sewer surcharge protection measures for basement/ lower ground floor development should be provided alongside other mitigation measures. Examples of these are provided in the council's Planning Guidance SPD.
- Reduce any discharges of surface water to the sewer to the greenfield rate (majors). All other schemes should minimise discharges.
- Include rainwater harvesting systems to collect rainwater for re-use such as for toilet flushing or for irrigation of landscaped areas.
- Plant trees and other soft landscaping features such as rain gardens and green walls to intercept rainwater and allow it to drain into the soil below.

6.0 ENERGY USAGE AND CARBON EMISSIONS

Government policies require significant energy reductions from buildings. Building a Greener Future sets a planned trajectory (delivered via Part L of the building regulations 2021) that all new homes should be zero carbon emitting from 2016, and is supported by an aspiration for all non-domestic new buildings to be zero carbon by 2020. The Climate Change Act (Nov 2008) sets the UK targets of; CO₂ reduction of 26% by 2020 and CO₂ reduction of 100% by 2050.

6.1 POLICY REVIEW

National Planning Policy Framework (2021)

Section 14- Meeting the Challenge of Climate Change, Flooding and Coastal Change

To help increase the use and supply of renewable and low carbon energy and heat, plans should:

- a. provide a positive strategy for energy from these sources, that maximises the potential for suitable development, while ensuring that adverse impacts are addressed satisfactorily (including cumulative landscape and visual impacts)
- d. consider identifying suitable areas for renewable and low carbon energy sources, and supporting infrastructure, where this would help secure their development

The London Plan (March 2021)

Policy SI 2 Minimising Greenhouse Gas Emissions

- C. A minimum on-site reduction of at least 35 per cent beyond Building Regulations is required for major development. Residential development should achieve 10 per cent, and non-residential development should achieve 15 per cent through energy efficiency measures. Where it is clearly demonstrated that the zero-carbon target cannot be fully achieved on-site, any shortfall should be provided, in agreement with the borough, either:
 1. through a cash in lieu contribution to the borough's carbon offset fund, or
 2. off-site provided that an alternative proposal is identified and delivery is certain.

Hammersmith and Fulham Local Plan (February 2018)

Policy CC1 – Reducing Carbon Dioxide Emissions

The council will require all major developments to implement energy conservation measures by:

- a) implementing the London Plan (2016) sustainable energy policies and meeting the associated carbon dioxide (CO₂) reduction targets;
- b) ensuring developments are designed to make the most effective use of passive design measures, and where an assessment such as BREEAM (or equivalent) is used to determine a development's environmental performance, this must be supplemented with a more detailed Energy Assessment in order to show compliance with the London Plan's CO₂ reduction targets;
- c) requiring energy assessments for all major developments to demonstrate and quantify how the proposed energy efficiency measures and low/zero carbon technologies will reduce the expected energy demand and CO₂ emissions;

d) requiring major developments to demonstrate that their heating and/or cooling systems have been any existing decentralised energy systems or integrating new systems such as Combined (Cooling) Heat and Power units or communal heating systems, including heat networks if this can be done without having an unacceptable impact on air quality; and

e) using on-site renewable energy generation to further reduce CO₂ emissions from major developments, where feasible.

Where it is not feasible to make the required CO₂ reductions by implementing these measures on-site or off-site as part of the development, a payment in lieu contribution should be made to the council which will be used to fund CO₂ reduction measures in the borough or elsewhere in London.

Encouraging energy efficiency and other low carbon measures in all other (i.e. non-major) developments, where feasible. The council will also encourage developers to use energy performance standards such as Passivhaus to guide development of their Energy Strategies.

Climate Change Supplementary Planning Document (SPD) October 2023:

KPC7 - Key principles – What you MUST do:

Major Developments

- Provide an Energy Assessment with your application demonstrating how renewable energy generation will contribute to meeting the London Plan requirement to be net zero carbon.
- Follow the London Plan “Energy Hierarchy” in designing an Energy Strategy for your building(s)
- Prioritise minimising energy demand first, then look at how energy will be supplied on-site by renewables.
- Maximise available opportunities to integrate low/zero carbon heating renewable energy generation, such as solar PV panels and Ground or Air Source Heat Pumps, which are the most common renewable technologies being installed in the borough.
- Include energy storage facilities where possible.
- Use communal systems rather than individual installations for each dwelling and demonstrate how they can be integrated into wider local networks in the future.
- Achieve a minimum 35% reduction in CO₂ emissions through on-site measures compared to the 2021 Building Regulation baseline.

6.2 DEVELOPMENT SUSTAINABILITY FEATURES

The energy requirements of the development have been modelled in compliance with Part L1 and L2 the Building Regulations 2021 and are based on the site layout plans provided by SPPARC Architects. Full details of the energy strategy can be found within the Cudd Bentley Consulting Energy Statement.

This report includes annualised baseline calculations which predict the likely energy consumption and associated CO₂ emissions for this development. The total baseline energy and carbon emissions for the development, taking into account regulated energy demands are:

- **17,929,373.63 kWh/annum**
- **87.4 Tonnes CO₂/annum**

Unregulated energy use is not covered by existing regulations and includes energy consumed by the occupants through activities and appliances; in this case it would typically be cooking and small power usage (appliances, computers, equipment etc.). The following unregulated energy use for the development was calculated:

- **8,964,686.8 kWh/annum**
- **43.7 Tonnes CO₂/annum**

The following energy hierarchy has been adhered to in order to determine the most appropriate strategy for the development in accordance with The London Plan 2021, Hammersmith and Fulham Local Plan (February 2018):

1. **Be Lean**, Reduce energy and carbon emissions through the use of passive design and energy efficiency measures;
2. **Be Clean**, Reduce energy and carbon emissions by investigating the possibility of installing a site wide Combined Heat and Power (CHP) system or connecting to an existing decentralised CHP network;
3. **Be Green**, Reduce energy and carbon emissions by installing Low or Zero Carbon Technologies such as Air Source Heat Pumps (ASHP), Solar panels, Photovoltaics (PV), Wind Turbines etc.

Proposed Energy Strategy for the Development:

In summary the energy strategy comprises of:

1. Passive Design and Energy Efficient Measures;
2. Air Source Heat Pump and Ground Source Heat Pump
3. Photovoltaic Panels (PVs)

This review has resulted in the formulation of an Energy Strategy to be adopted for the development involving the use of passive design and energy efficiency measures, the installation of ASHP, GSHP and PV; which achieves compliance with Part L2 and L1 2021, Hammersmith and Fulham Local Plan, and targets compliance with The London Plan 2021 requirements. The following Tables 6.1 and 6.2 highlight the carbon savings that are currently anticipated for the development from a base Part L1 and L2 2021 compliant build.

	Carbon Dioxide Emissions (Tonnes CO ₂ per annum)	
	Regulated	Unregulated
Baseline : Part L 2021 of the Building Regulations Compliant Development	87.4	43.7
After Energy Demand Reduction	68.8	It is anticipated that a circa 3% saving can be achieved through the use of energy efficient equipment, for example A or A+ appliances. This would reduce the unregulated carbon emissions to: 42.4

Table 6.1 Carbon Dioxide Emissions



	Regulated Carbon Dioxide Savings	
	Tonnes CO ₂ per annum	%
Savings from energy demand reduction	18.6	21
Savings from Renewable Energy	30.6	35
Total Cumulative Savings	49.2	56
Total Target Savings	30.59	35.00%
Policy Exceedance	18.61	21%

Table 6.2 Regulated Carbon Savings

6.3 SUMMARY

The recommended scheme takes into consideration the site layout and requirements for the building type to produce a design that incorporates the most appropriate technologies available to the site. This provides a scheme that is commercially viable whilst targeting compliance with all policies applicable to this development.

The London Plan requires all major developments to achieve a minimum on-site carbon reduction of 35% beyond Part L 2021 with a target of net-zero carbon. Through energy efficiency measures residential development is required to achieve 10% CO₂ reduction, and non-residential development is required to achieve 15% CO₂ reduction. The London Plan Policy SI 2 requires a cash in lieu contribution if the net-zero carbon target is not achieved, the cash in lieu contribution is calculated using a carbon off-set price of £95 per tonne of carbon dioxide for a period of 30 years. As a result of the zero-carbon target having not been achieved in line with The London Plan Policy SI 2, the cash in lieu contribution required has been calculated as £108,945. The overall development has an anticipated on-site CO₂ improvement of 56% beyond Part L 2021, with the net-zero carbon shortfall being met via the cash-in-lieu contribution.

The use of further/emerging technologies may be included for use within this development if their feasibility increases in the future, in line with best practice.

7.0 WATER CONSUMPTION

The ever-increasing impacts of climate change are continuously inflating demand for water, as well as increasing a need for awareness towards water usage. The South of England is already under a large amount of pressure regarding water resources. To contribute towards mitigating this issue, the development will consider various means of being economical with water consumption.

7.1 POLICY REVIEW

The London Plan (March 2021)

Policy SI 5 Water Infrastructure

- A. In order to minimise the use of mains water, water supplies and resources should be protected and conserved in a sustainable manner.
- B. Development Plans should promote improvements to water supply infrastructure to contribute to security of supply. This should be done in a timely, efficient and sustainable manner taking energy consumption into account.
- C. Development proposals should:
 - 1) through the use of Planning Conditions minimise the use of mains water in line with the Optional Requirement of the Building Regulations (residential development), achieving mains water consumption of 105 litres or less per head per day (excluding allowance of up to five litres for external water consumption)
 - 2) achieve at least the BREEAM excellent standard for the 'Wat 01' water category or equivalent (commercial development)
 - 3) incorporate measures such as smart metering, water saving and recycling measures, including retrofitting, to help to achieve lower water consumption rates and to maximise future-proofing.

Climate Change Supplementary Planning Document (SPD) October 2023:

KPC10 - Key principles – What you MUST do

All Development

- Demonstrate adequate water and waste water capacity and include water efficient fitting/appliances in line with London Plan Policy SI5.
- Meet Part G Optional Building Requirements in the Building Regulations (residential development), achieving internal mains water consumption of 105 litres or less per head per day.

Commercial Development

- Achieve at least the BREEAM excellent standard for the 'Wat 01' water category or equivalent which is at least a 12.5% improvement over defined baseline performance standard. Major Developments
- Major developments and high water use developments must include other measures such as rainwater harvesting and greywater re-use. Aim to maximise the score on water credits in a BREEAM assessment, or best practice level Association of Environment Conscious Building (AECB) water standards (see table above)



7.2 DEVELOPMENT SUSTAINABILITY FEATURES

In order to ensure the reduction and management of water consumption within the proposed development, it is anticipated that various measures shall be undertaken and specific features installed during the fit out works to minimise the building's potable water consumption. For the residential element of the development the water consumption shall be limited to a target of 105 litres/day.

It is anticipated that improvements in the consumption of potable water will be achieved through the specification of water efficient components within sanitary areas during the fit out works. Such features include the specification of low flow taps as well as dual flush toilets with reduced flush volumes.

It is also anticipated that water meters shall be specified on the mains supply of the unit. Water meters should have a pulsed output to allow connection to a Building Management System should one be installed at a later date. The following measures will be incorporated:

Water Consumption

It is anticipated to reduce use of water for sanitary use, water efficient fixtures will be incorporated such as low flow taps and dual flush toilets.

Water Monitoring

It is anticipated water meters with a pulsed output will be supplied on the mains water supply to the commercial element of the development. Meters should be pulsed to allow future occupants to monitor water consumption.

Water Leak Detection

It is anticipated a water leak detection system shall be installed on the buildings mains water supply.

Water Efficient Equipment

It is anticipated that water efficient irrigation methods shall be installed. Alternatively, any landscaping will be naturally irrigated through rain water, resulting in a reduction of potable water consumption.

7.4 SUMMARY

To ensure the sustainability of the development it is anticipated that water efficient fixtures will be incorporated into the design, such as low flow taps and showers as well as dual flush toilets with reduced effective flush volumes.

To be more sustainable, it is anticipated that a water leak detection system and pulsed water meters will be installed on the mains water supply, to effectively monitor water consumption.

The inclusion of the above sustainability features allow for the proposed development to be deemed sustainable with regard to water consumption.



8.0 TRANSPORT

Transport produces a large proportion of the country's greenhouse gas emissions, something which government at both national and local level are striving to combat, especially through planning frameworks for new developments. Solutions to transport issues are to be incorporated into the design of the proposed development.

8.1 POLICY REVIEW

National Planning Policy Framework (2021)

Section 9 – Promoting Sustainable Transport

Transport issues should be considered from the earliest stages of plan-making and development proposals, so that:

- a. the potential impacts of development on transport networks can be addressed;
- b. opportunities from existing or proposed transport infrastructure, and changing transport technology and usage, are realised – for example in relation to the scale, location or density of development that can be accommodated;
- c. opportunities to promote walking, cycling and public transport use are identified and pursued;
- d. the environmental impacts of traffic and transport infrastructure can be identified, assessed and taken into account – including appropriate opportunities for avoiding and mitigating any adverse effects, and for net environmental gains.

The London Plan (March 2021)

Policy T1 Strategic Approach to Transport

- A. Development Plans should support, and development proposals should facilitate:
 - 1) the delivery of the Mayor's strategic target of 80 per cent of all trips in London to be made by foot, cycle or public transport by 2041
- B. All development should make the most effective use of land, reflecting its connectivity and accessibility by existing and future public transport, walking and cycling routes, and ensure that any impacts on London's transport networks and supporting infrastructure are mitigated.

Hammersmith and Fulham Local Plan (February 2018)

Policy T1 – Transport

To work with strategic partners to improve transportation provision, accessibility, and air quality in the borough, by improving and increasing the opportunities for cycling and walking, and by improving connections for bus services, underground, national and regional rail by:

Borough wide Targets:

- promoting and supporting the continued development of initiatives designed to encourage modal shift away from private vehicles, in order to improve congestion and air quality within the borough;
- developing and promoting safe environments for cyclist and pedestrians to encourage residents and businesses to consider these modes;
- extending the Mayor's Bike Hire scheme throughout the borough
- securing access improvements for all, particularly people with disabilities, as part of planning permissions for new developments in the borough;
- ensuring that there are adequate levels of provision of electric charging infrastructure to support local residents and visitors;

- ensuring that traffic generated by new development is minimised so that it does not add to parking pressures on local streets or congestion, or worsen air quality; and
- relating the intensity of development to public transport accessibility and highway capacity.

Policy T3 - Increasing and Promoting Opportunities for Cycling and Walking

The council will encourage and support the increasing use of bicycles by requiring:

- new developments to include the provision of convenient accessible and safe secure cycle parking within the boundary of the site
- the provision of suitable changing and showering facilities, following the guidance outlined in the Hammersmith and Fulham Cycling Strategy 2015
- developer contributions for improvements to cycling infrastructure, including contributions to the extension of TfL or other Cycle Hire schemes to mitigate their impact on the existing network.

8.2 DEVELOPMENT SUSTAINABILITY FEATURES

The proposed development is located approximately 0.3 miles from Ravenscourt Park train station and is surrounded by commercial and residential properties as shown in Figure 8.1.

This urban location allows for an excellent provision of public transport with several of bus stops, underground tube and train stations which provide a variety of routes to different areas within London and the surrounding suburbs.

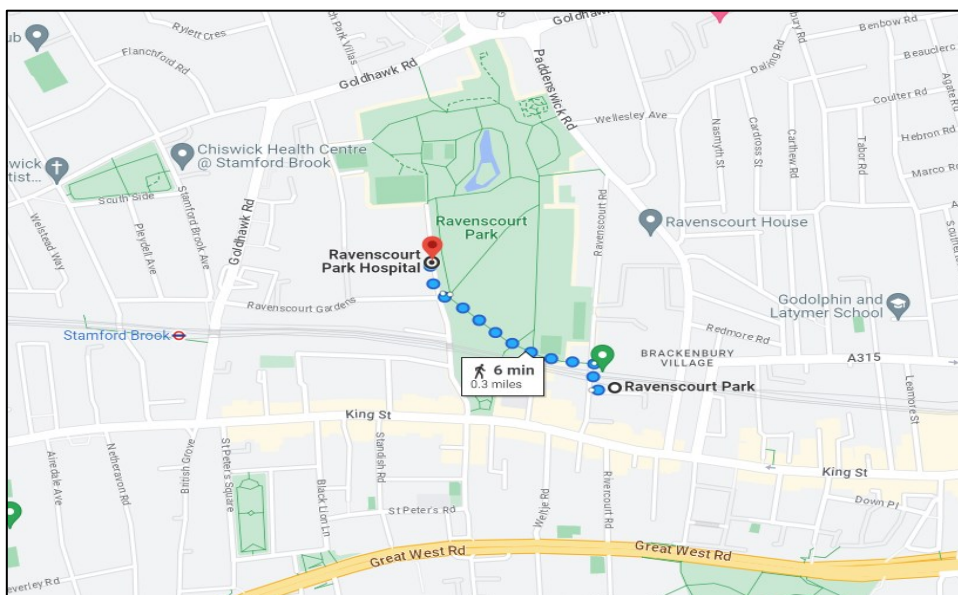


Figure 8.1 Public Transport Links

A Transport Assessment has been carried out by Transport Planning Associates (ref: 2206-037/TA/01_Draft) which demonstrates that the proposed development meets the requirements set out within National, Regional and Local Government policies in the following ways:

- By promoting predominantly residential development in an area well served by public transport; and
- By delivering a development that is designed to reduce the need for travel, especially by private car.

The location of the development is also in close proximity to a significant number of primary amenities including a number of postal services, cash points and food outlets located in walking distance. As the development is in a locality with a wide variety of amenities available, this should reduce the need for extended travel in private vehicles and in turn also reduce transport related carbon emissions.

Sheltered and secure cycle storage will also be provided for building users. The provision of cycle storage should encourage staff and visitors to use a means of commuting which does not rely on the private vehicle. The proposed development location is surrounded by a number of cycle routes within the London area, which lead on to routes across the entire city, as seen within Figure 8.2.



Figure 8.2 London Cycle Network

8.3 SUMMARY

The above National Cycle Route is located within the vicinity of the development. The above provisions aim to make the proposed development easier to access for all building users, as well as offering a sustainable means of commuting rather than using a private vehicle.

Cycle storage facilities will be provided to encourage residents, staff members and visitors to cycle to the development rather than using a private vehicle. The inclusion of the above sustainability features allow for the proposed development to be deemed sustainable with regard to transport. For further details regarding Transport, please review the Transport Assessment completed by Transport Planning Associates (Ref:2206-037/TA/01_Draft).



9.0 CONSTRUCTION SITE MANAGEMENT

In the South of England, 53% of all waste is due to construction and demolition. The requirement for new materials needs to be minimised, by re-using existing buildings and materials where possible and providing a Site Waste Management Plan for all construction sites. This responsibility lies with the contractor and needs to be clarified at an early design stage. It is a greater requirement now to construct buildings that are flexible and can be re-used.

9.1 POLICY REVIEW

National Planning Policy Framework (2021)

Local plans should set out strategic priorities for the area; this should include strategic policies to deliver the provision of infrastructure for waste management, water supply and wastewater.

The London Plan (March 2021)

Policy SI 7 Reducing Waste and Supporting the Circular Economy

- A. Resource conservation, waste reduction, increases in material re-use and recycling, and reductions in waste going for disposal will be achieved by the Mayor, waste planning authorities and industry working in collaboration to:
- 1) promote a more circular economy that improves resource efficiency and innovation to keep products and materials at their highest use for as long as possible
 - 2) encourage waste minimisation and waste prevention through the reuse of materials and using fewer resources in the production and distribution of products
 - 3) ensure that there is zero biodegradable or recyclable waste to landfill by 2026
 - 4) meet or exceed the municipal waste recycling target of 65 per cent by 2030
 - 5) meet or exceed the targets for each of the following waste and material streams:
 - a) construction and demolition – 95 per cent reuse/recycling/recovery
 - b) excavation – 95 per cent beneficial use

Hammersmith and Fulham Local Plan (February 2018)

Policy CC4 – Minimising Surface Water runoff with Sustainable Drainage Systems

All proposals for new development must manage surface water run-off as close to its source as possible and on the surface where practicable, in line with the London Plan drainage hierarchy.

Policy CC2 – Ensuring Sustainable Design and Construction

The council will require the implementation of sustainable design and construction measures in all major developments by:

- a) Implementing the London Plan sustainable design and construction policies to ensure developments incorporate sustainability measures.
- b) Requiring Sustainability Statements (or equivalent assessments such as BREEAM) for all major developments to ensure the full range of sustainability issues has been taken into account during the design stage.

9.2 DEVELOPMENT SUSTAINABILITY FEATURES

In order to comply with national and local policy, it has been ensured and committed that certain measures will be put into place for this development, such as a Site Waste Management Plan which monitors the site energy

and water consumption and ensures that that site timber is legally and responsibly sourced in accordance with the UK Government's Timber Procurement Policy. Further to this the Site Waste Management Plan should also monitor the resource efficiency of the development construction works as well as the percentage of non-hazardous materials, excavation and construction, which have been diverted from landfill. The SWMP will also be procured under the Construction Environmental Management Plan (CEMP) process.

It is expected that the main contractor will also set targets and monitor site consumption data for water consumption, energy consumption as well as fuel from deliveries and collection of waste and materials to and from site. Monitoring of such actions can encourage contractors to become more resource efficient to meet given targets.

Additionally, it is expected the main contractor will comply with best standards as set out in the Considerate Constructors Scheme, achieving a score which is considered as exceeding compliance with the criteria of the scheme, which covers the following elements:

- Care about appearance;
- Respect the community;
- Protect the environment;
- Secure everyone's safety;
- Value their workforce.

To ensure the sustainable construction of the development, the project will consider the concept of waste hierarchy as seen in Figure 9.1 below. The waste hierarchy recognises the need for waste to be considered for a variety of waste streams before being sent to land fill as a last resort. The hierarchy is as follows:

- Waste minimisation
- Reusing waste or up cycling
- Recycling of all applicable materials
- Recovery of energy from waste (anaerobic digestion plants)
- Waste is sent to landfill

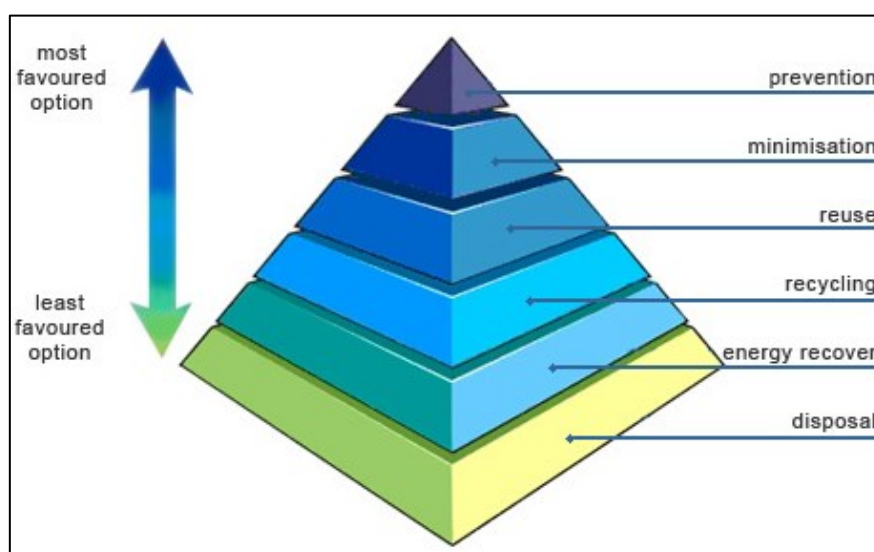


Figure 9.1 Waste Hierarchy Diagram



Responsible Construction Practices

The principal contractor will operate an Environmental Management System such as ISO 14001. Further to this the principal contractor will also undertake the following actions:

- Adhere to a Considerate Constructors Scheme and achieve a score which significantly exceeds compliance
- Monitor and record all energy consumption data from construction works
- Monitor and record all water consumption data from construction works
- Monitor and record transport movements and impacts from construction works
- Ensure all timber used on site has been legally and responsibly sourced.

Construction Waste Management

Similarly, the principal contractor will develop a Resource Management Plan or a Site Waste Management Plan (SWMP), which considers the waste streams of non-hazardous waste generated from site activities and the ability to divert such waste from landfill.

9.3 SUMMARY

This development will produce a Site Waste Management Plan, highlighting key construction waste materials and the correct waste streams for recycling these materials. There has been a commitment made to recycle/ reuse 95% of non-contaminated construction waste. The Pre-Demolition Audit, prepared by Southern Demolition, targets 98% diversion of key materials from landfill.

The development shall adhere to a Considerate Constructors Scheme, achieving a targeted score which exceeds 'compliance' with the criteria of the scheme. As a result of these measures, the development may be deemed sustainable as regards to construction site management.

10.0 SUSTAINABLE DESIGN

Good urban design is essential in providing a varied and sustainable environment, which can facilitate opportunities for positive contributions within communities. As part of sustainable design for developments, it is essential that suitable design principles are followed to maximise opportunities for energy reduction through design as well as ensuring buildings follow or enhance the character of an area. Developments should also give further consideration to the level of security and comfort that is provided for future building users, including thermal and visual comfort, inclusivity and safe access.

10.1 POLICY REVIEW

National Planning Policy Framework (2021)

Section 12- Achieving Well-Designed Places

The creation of high-quality buildings and places is fundamental to what the planning and development process should achieve. Good design is a key aspect of sustainable development, creates better places in which to live and work and helps make development acceptable to communities. Being clear about design expectations, and how these will be tested, is essential for achieving this. So too is effective engagement between applicants, communities, local planning authorities and other interests throughout the process.

London Plan (March 2021)

Policy D4 Delivering Good Design

Design Scrutiny

- c) Design and access statements submitted with development proposals should demonstrate that the proposal meets the design requirements of the London Plan.
- d) The design of development proposals should be thoroughly scrutinised by borough planning, urban design, and conservation officers, utilising the analytical tools set out in Part B, local evidence, and expert advice where appropriate. In addition, boroughs and applicants should make use of the design review process to assess and inform design options early in the planning process. Development proposals referable to the Mayor must have undergone at least one design review early on in their preparation before a planning application is made, or demonstrate that they have undergone a local borough process of design scrutiny, based on the principles set out in Part E if they:
 - 1) include a residential component that exceeds 350 units per hectare; or
 - 2) propose a building defined as a tall building by the borough (see Policy D9 Tall buildings), or that is more than 30m in height where there is no local definition of a tall building.

Hammersmith and Fulham Local Plan (February 2018)

Policy CC2 – Ensuring Sustainable Design and Construction

The council will require the implementation of sustainable design and construction measures in all major developments by:

- c. implementing the London Plan sustainable design and construction policies to ensure developments incorporate sustainability measures, including:
 - minimising energy use;
 - making the most effective use of resources such as water and aggregates;
 - sourcing building materials sustainably;



- using prefabrication construction methods where appropriate;
 - reducing pollution and waste;
 - promoting recycling and conserving and promoting biodiversity and the natural environment;
 - ensuring developments are comfortable and secure for users and avoiding impacts from natural hazards (including flooding); and
- d. Requiring Sustainability Statements (or equivalent assessments such as BREEAM) for all major developments to ensure the full range of sustainability issues has been taken into account during the design stage.

The integration of sustainable design and construction measures will be encouraged in all other (i.e. non-major) developments, where feasible.

10.2 DEVELOPMENT SUSTAINABILITY FEATURES

The proposed development shall include a variety of features which are regarded as having a good sustainable design. It is anticipated that any external lighting specified will be designed to reduce unnecessary light pollution during night-time hours. This can be achieved through the use of time switches or daylight sensors which switch off lighting between 2300hrs and 0700hrs as well as cut off luminaires which reduce light spill.

To ensure that overheating will not occur during summer months and the building is suitably insulated as well as allowing for adaptation due to the effects of climate change, the new built care home Block F element of the development will use building fabrics with enhanced 'U' values which go beyond the minimum requirements of Part L2 (2021); this can be seen within Table 10.1 below. The residential U Values used are also beyond the minimum requirements of Part L1 (2021), the thresholds for which are set lower than Part L2 (2021), see Table 10.2. It is anticipated that such measures will lower the building's energy requirements making its operation feasible and practical for years to come.

Feature	Part L 2021 Minimum U-Value Requirement	U – Value (W/m ² .K)			
		Refurb Block A & C		New Built (Block F Care Home)	
External Walls	0.26	0.30		0.16	
Exposed Floors	0.18	0.25		0.15	
Exposed Roof	0.18	0.16		0.15	
Glazing	1.6	U=1.2	G'=0.36	U=1.2	G'=0.36
Air Permeability	8 m ³ /hr/m ² @ 50 Pa	n/a		5 m ³ /hr/m ² @ 50 Pa	

Table 10.1 U Value for Non-residential Blocks



Feature	Part L1 2021 Minimum U-Value Requirement	U – Value (W/m ² .K)		
		Block E	Block B ,C and D – Top Floor Block D – Floor 3	Block B + C – Floor 1-4, Block D – Floor 1 & 2
Ground Floor	0.18	0.15	N/A	0.25
External Wall	0.26	0.18	0.18	0.55
Roof	0.16	0.12	0.15	n/a
Windows (Double Glazed)	1.6	1.2	1.2 (For top floors only of Blocks B,C & D a 0.8 W/m ² .K U value (Triple Glazed window) has been proposed)	1.2
External Doors	1.6	1.3	n/a	1.4

Table 10.2 U Values applied into new-built Residential Blocks

In order to further reduce any potential overheating or contributions to the urban heat island effect, lighter colour surfaces have been incorporated into the scheme where possible. It is anticipated that lighter coloured materials will also be incorporated into aspects of the hard landscaping with the aim of light being reflected rather than absorbed and produce excess heat.

10.3 SUMMARY

In order to comply with national and local policies, the development shall strive to provide both to building users and the local community a building of sustainable design. Measures have been taken to ensure the thermal comfort of future building users, through efforts such as ensuring no occupied areas will result in excessive solar gains.

External lighting except safety and security lighting shall be designed to be switched off automatically through the use of timers of day light sensors as well as the specification of cut off luminaires to reduce any potential light spill on to neighbouring properties as well as disturbing routes used by bats.

The above design features allow for the proposed development to be of sustainable design.



11.0 FLOOD RISK

To prevent an increase in surface water run off through development of a site, it is imperative that consideration is given to the reduction of over land flow during storm events as well as the impact of development in potential flood risk areas.

11.1 POLICY REVIEW

National Planning Policy Framework (2021)

Section 14 - Meeting the Challenge of Climate Change, Flooding and Coastal Change

Inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk (whether existing or future). Where development is necessary in such areas, the development should be made safe for its lifetime without increasing flood risk elsewhere.

The London Plan (March 2021)

Policy SI 12 Flood Risk Assessment

- A. Current and expected flood risk from all sources (as defined in paragraph 9.2.12) across London should be managed in a sustainable and cost-effective way in collaboration with the Environment Agency, the Lead Local Flood Authorities, developers and infrastructure providers.
- B. Development Plans should use the Mayor's Regional Flood Risk Appraisal and their Strategic Flood Risk Assessment as well as Local Flood Risk Management Strategies, where necessary, to identify areas where particular and cumulative flood risk issues exist and develop actions and policy approaches aimed at reducing these risks. Boroughs should cooperate and jointly address cross-boundary flood risk issues including with authorities outside London.
- C. Development proposals should ensure that flood risk is minimised and mitigated, and that residual risk is addressed. This should include, where possible, making space for water and aiming for development to be set back from the banks of watercourses.

Hammersmith and Fulham Local Plan (February 2018)

Policy CC3 – Minimising Flood risk and reducing water use

The council will require developments to reduce the use of water and minimise current and future flood risk by implementing the following measures:

- A site-specific Flood Risk Assessment (FRA) will be required for the following development proposals:
- all proposals for developments in the Environment Agency's Flood Zones 2 and 3;
- all proposals for new developments over 1 hectare in size in Flood Zone 1;
- all proposals for new development in areas identified in the council's Surface Water Management Plan (SWMP) as being susceptible to surface water flooding – i.e. those located in a flooding hotspot; and
- all proposals for new development which includes a subterranean element in areas identified in the council's SWMP as being at risk from elevated groundwater levels.

- All developments must include water efficient fittings and appliances, where provided, in line with London Plan water consumption targets. In addition, major developments and high water use developments must include other measures such as rainwater harvesting and greywater re-use.
- All developments that include a subterranean element must provide details of the structural waterproofing measures to be integrated to prevent any increase in on or off-site groundwater flood risk;
- in line with the requirements of the Thames Estuary 2100 Plan, developments adjoining the River Thames must maintain and where necessary enhance or raise flood defences (or show how they could be raised in the future), demonstrating that they will continue to provide adequate flood protection for the lifetime of the development.

11.2 DEVELOPMENT SUSTAINABILITY FEATURES

The flood map sourced from the Government Flood Warning Information Service seen below in Figure 11.1, demonstrates that the proposed site is located at a low risk of flooding from fluvial sources. The second flood map seen below in Figure 11.2, highlights there is a risk of flooding from surface water with the risk being very high.

A Flood Risk Assessment also has been carried out by Parega Ltd (ref: G26920-PER-ZZ-XX-RP-C-00001) which confirms that the site is located within Flood Zone 3, however, it benefits from the presence of flood defences (the Thames Tidal Defence system (TTD), including the Thames Barrier and Thames River Walls).

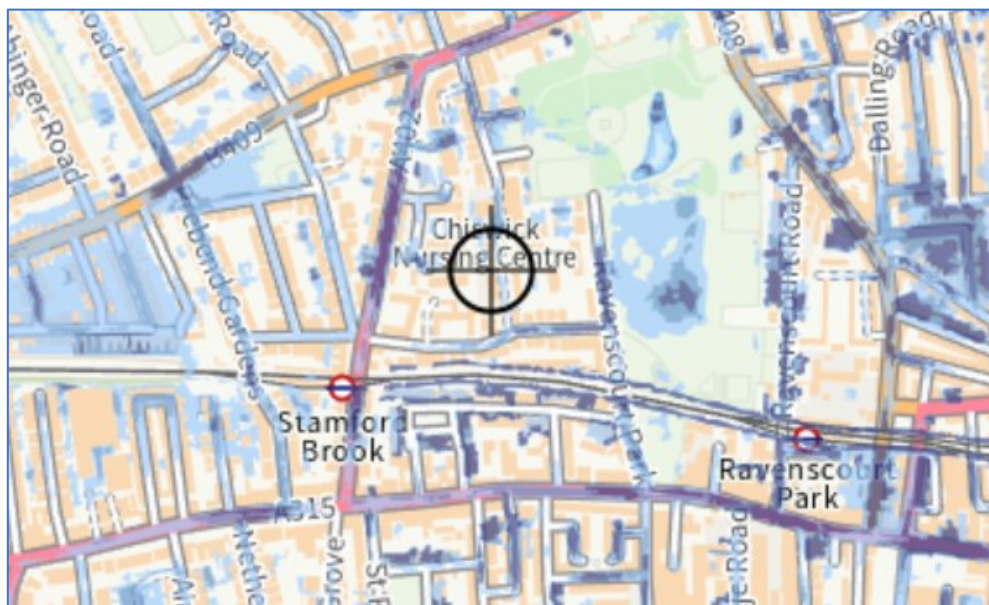


Figure 11.1: Fluvial Flooding (Sourced from Flood Warning Information Service) Ravenscourt Hospital, Hammersmith

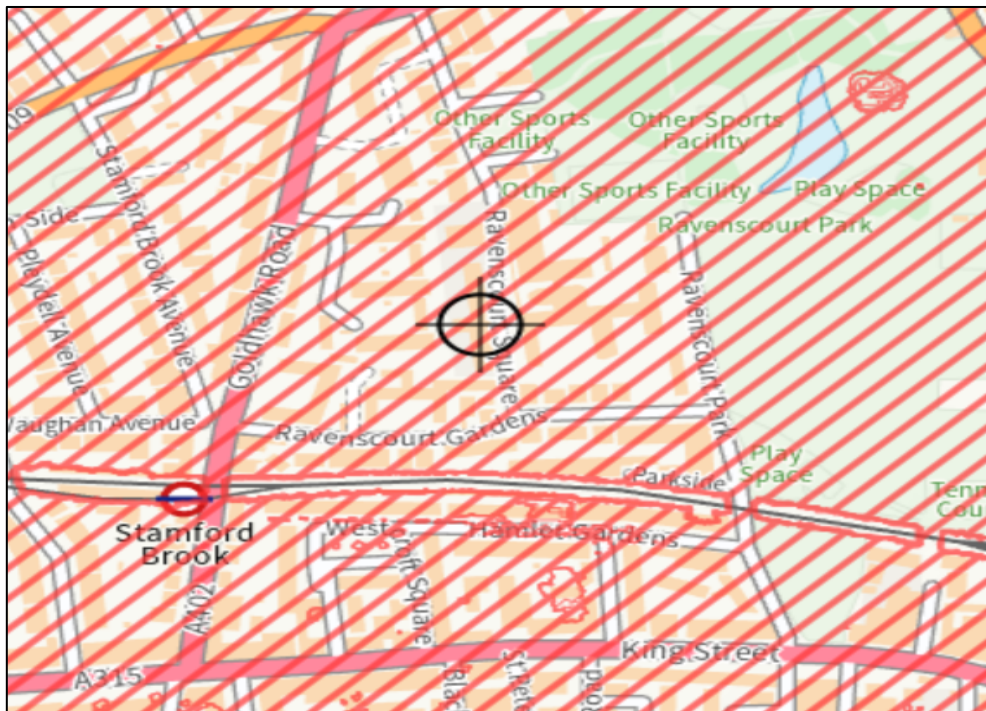


Figure 11.2: Reservoir Flooding (Sourced from Flood Warning Information Service)

11.3 SUMMARY

The site is within an area benefiting from flood defences, where areas benefiting from flood defences have a very low chances of flooding. In the event of flooding from rivers with a 1% (1 in 100) chance in any given year, or flooding from the sea with a 0.5% (1 in 200) chance in any given year. The site will not increase surface water runoff, rather it will reduce runoff to a practical 9.5l/s, which is a betterment of 97% compared to the existing 1 in 100 return period (Update after receipt of the final FRA and drainage strategy).

For more details on flooding, please refer to the Flood Risk Assessment submitted with the application Ref: G26920-PER-ZZ-XX-RP-C-00001.



12.0 NOISE

Noise is a subjective concept that can affect people differently, however there are set standards as to acceptable levels of noise, for different areas and times of day.

12.1 POLICY REVIEW

The London Plan (March 2021)

Policy D14 Noise

- A. In order to reduce, manage and mitigate noise to improve health and quality of life, residential and other non-aviation development proposals should manage noise by:
- 1) avoiding significant adverse noise impacts on health and quality of life
 - 2) reflecting the Agent of Change principle as set out in Policy D13 Agent of Change
 - 3) mitigating and minimising the existing and potential adverse impacts of noise on, from, within, as a result of, or in the vicinity of new development without placing unreasonable restrictions on existing noise-generating uses
 - 4) improving and enhancing the acoustic environment and promoting appropriate soundscapes (including Quiet Areas and spaces of relative tranquillity)

Hammersmith and Fulham Local Plan (February 2018)

Policy CC11 – Noise

Noise (including vibration) impacts of development will be controlled by implementing the following measures:

- a) noise and vibration sensitive development should be located in the most appropriate locations and protected against existing and proposed sources of noise and vibration through careful design, layout and use of materials, and by ensuring adequate insulation of the building envelope and internal walls, floors and ceilings as well as protecting external amenity areas;
- b) housing, schools, nurseries, hospitals and other noise-sensitive development will not normally be permitted where the occupants/users would be affected adversely by noise, both internally and externally, from existing or proposed noise generating uses. Exceptions will only be made if it can be demonstrated that adequate mitigation measures will be taken, without compromising the quality of the development; and
- c) noise generating development will not be permitted, if it would be liable to materially increase the noise experienced by the occupants/users of existing or proposed noise sensitive uses in the vicinity.

Where necessary, applicants will be expected to carry out noise assessments and provide details of the noise levels on the site. Where noise mitigation measures will be required to enable development to take place, an outline application will not normally be acceptable.

12.2 DEVELOPMENT SUSTAINABILITY FEATURES

The proposed development will not be subject to noise pollution from road as well from the rail sources as seen within Figure 12.1 and 12.2 below.

An Acoustic Report has been undertaken by Noise Consulting Ltd which provides noise predictions.

Consideration will be given to the mechanical design of the scheme to ensure that any external plant provided does not exceed the existing background noise levels, though it is currently anticipated that the majority of plant equipment will be located at basement level and as such not become a source of localised noise pollution.

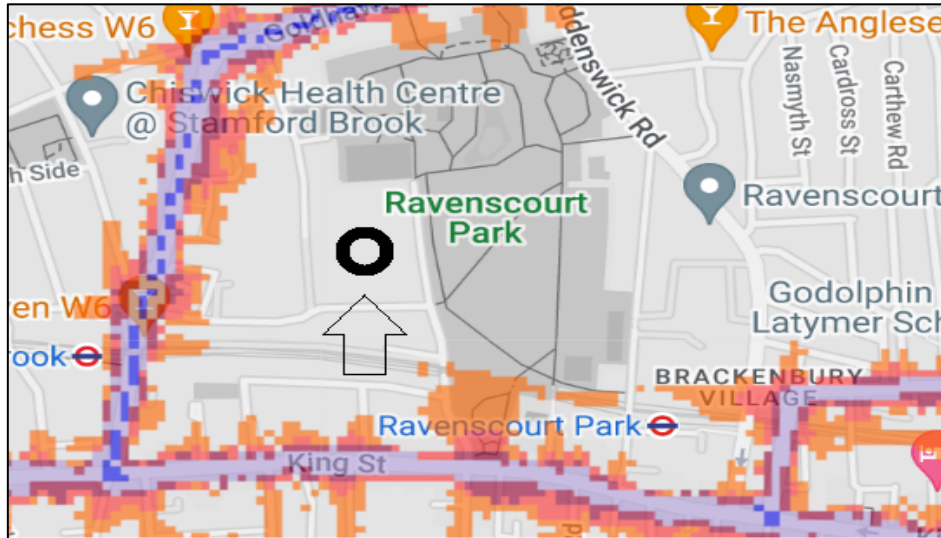


Figure 12.1 Road Noise Data Map (Sourced from Extrium)

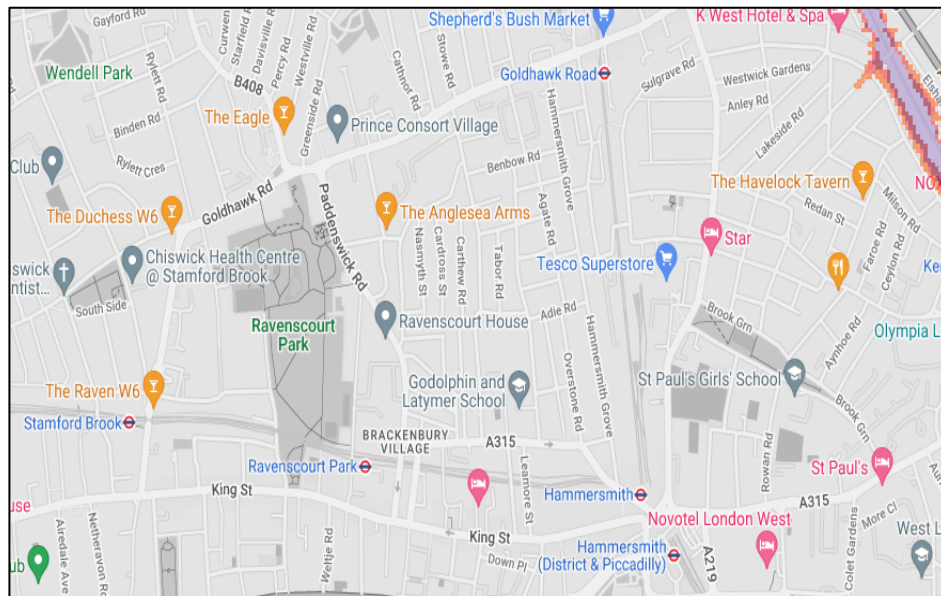


Figure 12.2 Rail Noise Data Map (Sourced from Extrium)

12.3 SUMMARY

The development would not be subject to noise pollution from a rail sources. It is anticipated that any construction will not have impact on the local area noise map as the proposed development may be deemed sustainable with regard to noise.

13.0 ECOLOGY

Ecology is essential within many communities, with the mix of flora and fauna facilitating benefits such as flood alleviation and pollution amelioration. In addition to this, areas with a wealth of green spaces and an abundance of biodiversity are seen to provide a positive contribution to a community.

13.1 POLICY REVIEW

The London Plan (March 2021)

Policy G6 Biodiversity and Access to Nature

- A. Sites of Importance for Nature Conservation (SINCs) should be protected.
- B. Boroughs, in developing Development Plans, should:
 - 1) use up-to-date information about the natural environment and the relevant procedures to identify SINCs and ecological corridors to identify coherent ecological networks
 - 2) identify areas of deficiency in access to nature (i.e. areas that are more than 1km walking distance from an accessible Metropolitan or Borough SINC) and seek opportunities to address them
 - 3) support the protection and conservation of priority species and habitats that sit outside the SINC network, and promote opportunities for enhancing them using Biodiversity Action Plans
 - 4) seek opportunities to create other habitats, or features such as artificial nest sites, that are of particular relevance and benefit in an urban context.

Hammersmith and Fulham Local Plan (February 2018)

Policy OS1 – Parks and Open Spaces

The council will meet requirements for open space and green infrastructure by:

The council will protect, enhance and increase provision of parks, open spaces and biodiversity in the borough by:

- a) Designating a hierarchy of open space that includes metropolitan open land (MOL), open space of borough wide importance and open space of local importance (see Appendix 3) as well as a hierarchy of nature conservation areas of metropolitan, borough and local importance, and green corridors along the borough's railway lines (see Appendix 4);
- b) Requiring a mix of new public and private open space in the White City and Earls Court and West Kensington Opportunity Areas and the South Fulham Riverside Regeneration Area and in any new major development; and
- c) Improving existing parks, open spaces and recreational facilities throughout the borough.

Climate Change Supplementary Planning Document (SPD) October 2023:

KPC16 - Key Principles - What You MUST Do

All Development

- Include urban greening as a fundamental element of site and building design, and by incorporating measures such as high-quality landscaping (including trees), green roofs, green walls, and nature-based sustainable drainage.
- Riverside developments should enhance river related biodiversity and avoid, minimise or mitigate significant adverse impacts.

Major Developments

- Submit an assessment showing the UGF score. Higher standards are required for residential development. Align with the London Plan Policy G5 recommended target UGF score of 0.4 in residential developments, and 0.3 in commercial developments.

13.2 DEVELOPMENT SUSTAINABILITY FEATURES

An ecology conservation map (sourced from MAGIC) highlights there is no Site of Special Scientific Interest (SSSI) in the vicinity of the site development. Figure 17.1 below shows that the nearest SSSI is approximately 1.0 mile from the proposed development.

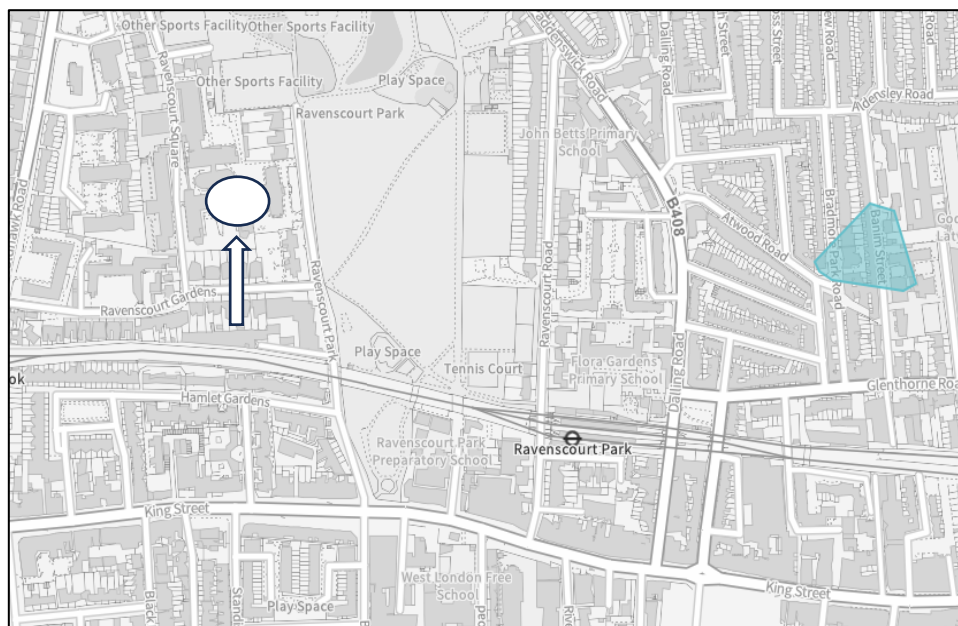


Figure 13.1 Ecological Sensitivity (Sourced from MAGIC)

13.3 SUMMARY

An Ecology conservation map (sourced from MAGIC) highlights there are no Sites of Special Scientific Interest (SSSI) in the vicinity of the site development. For more details on Ecology, please refer to the Ecological Assessment completed as part of planning submission.

To meet the developments Biodiversity Net Gain requirements, certain measures will be put in place such as provision of green infrastructure including both intensive and extensive green roofs.

There are 52 existing individual trees and 4 tree groups on site. The development proposes to retain 22 of the individual trees, relocate 1 individual tree and retain 1 tree group. The remaining 29 individual trees, 2 tree groups and 1 partial group will be removed. 43 better quality new trees are proposed to replace those removed.

The biodiversity net gain has been calculated by Logika as 33.42% in habitat units. As per Logika Consultants Ltd report (ref: 13691-30-R04-D01) all habitats within the proposed development, with the exception of 22 individual retained trees have been considered to be lost. New habitats such as green roofs, and perennial grasses and herbs and tree planting have been included.

14.0 AIR QUALITY

In order to provide building users with a healthy environment it is essential that consideration is given to the air quality within the building with regard to both the potential intake of pollutants from nearby sources of pollution such as transport or industry, or emissions given off from internal finishing products. Additionally, it is essential that the scheme design does not become a source of pollution within the local area.

14.1 POLICY REVIEW

The London Plan (March 2021)

Policy SI 1 Improving Air Quality

- A. Development Plans, through relevant strategic, site-specific and area based policies, should seek opportunities to identify and deliver further improvements to air quality and should not reduce air quality benefits that result from the Mayor's or boroughs' activities to improve air quality.
- D. In order to reduce the impact on air quality during the construction and demolition phase development proposals must demonstrate how they plan to comply with the Non-Road Mobile Machinery Low Emission Zone and reduce emissions from the demolition and construction of buildings following best practice guidance.

Climate Change Supplementary Planning Document (SPD) October 2023:

KPC14 - Key Principles – What You MUST Do

Major developments

- Carry out a preliminary Air Quality Assessment before designing the development to inform the design process.

All developments

- Take on board London Plan policy SI1.
- Be at least Air Quality Neutral
- Be designed to avoid increased exposure to existing air pollution and make provision to address local problems of air quality.
- Demonstrate that heating and/or cooling systems have been selected to minimise CO2 emissions.

14.2 DEVELOPMENT SUSTAINABILITY FEATURES

The air quality map seen in Figure 14.1 (sourced from the Environment Agency) confirms that there are no breaches in air pollution within close proximity to the development location. The Environment Agency analysis reviews emission levels from the following pollutants:

- Carbon dioxide;
- Dioxins;
- Nitrogen oxides;
- Particulates (PM10);
- Sulphur oxides.

The map within Figure 14.1 shows that Hammersmith and Fulham is in an area with an acceptable quality of air. This scheme has maximised use of sustainable features to reduce any negative impact on the Air Quality. Energy strategy has been proposed by having Air Quality in mind, and as such use of Air Heat Pumps and Ground Source heat pump (GSHP) as the main heating source for the development would not result in any emissions to the air. The development is also keen on reducing car-based travel by encouraging use of public/ sustainable transport. By having ASHP and GSHP as the primary heating source and reducing car-based trip generation, the development will not give rise to air quality impacts.

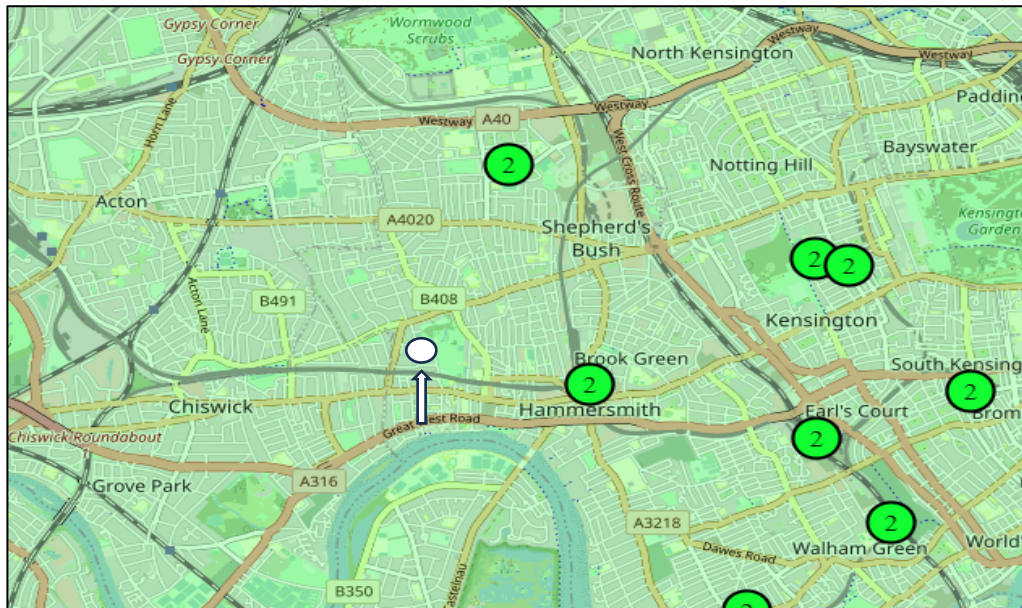
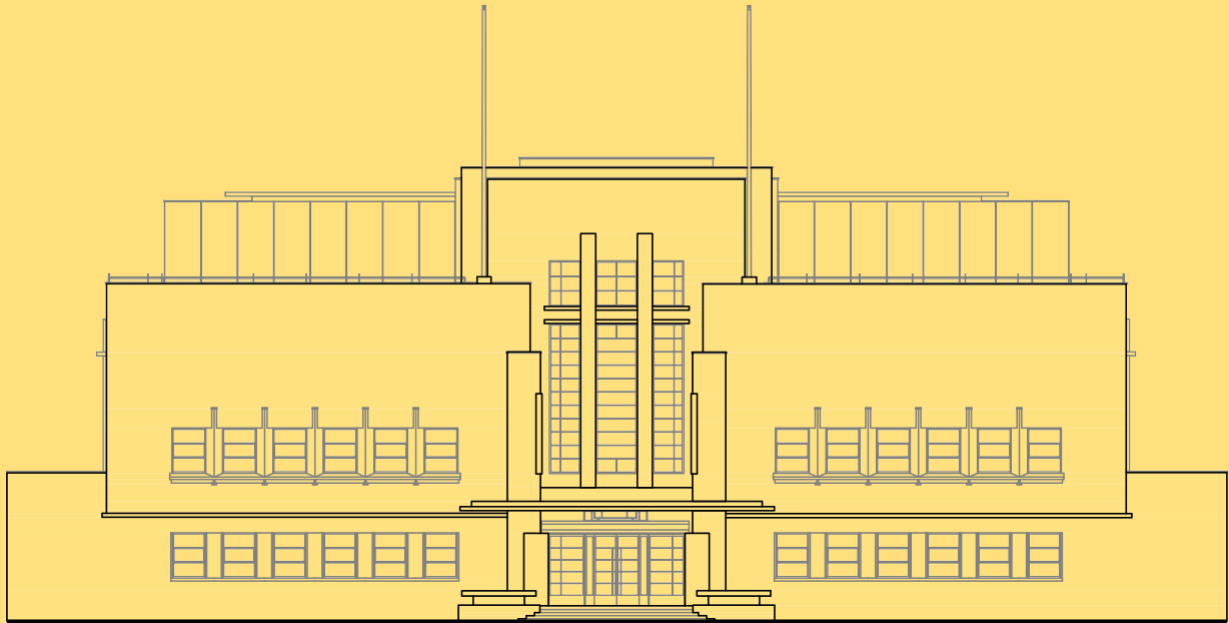


Figure 14.1 Air Quality Map (Sourced from Environment Agency)

14.3 SUMMARY

The above Air Quality Map in figure 14.1 confirms that development is located in an area which has acceptable quality of air. The AQA prepared by Logika (ref: J30/13691A/10/1/D2) demonstrates the site gives rise to no significant air quality impacts and is considered Air Quality Neutral. Once the development is completed and operational, it will have insignificant impact on the local air quality, hence no mitigation would be required. The site is therefore considered to be suitable for both residential and commercial use. Hence the proposed development can be deemed sustainable with regard to air quality.

APPENDIX A – BREEAM PRE-ASSESSMENT (MULTI RESIDENTIAL)



RAVENS COURT PARK

FORMER ROYAL MASONIC HOSPITAL



Cudd Bentley Consulting

Ravenscourt Park Hospital Care (Multi-Residential)
BREEAM Pre-Assessment Report
6391-CBC-RS-RP-S-001-P01
March 2023

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RECORD OF REVISIONS.

Date.	Revision.	Description of change.
14/03/2023	001	Draft for Comments

1 EXECUTIVE SUMMARY

The predicted BREEAM score and rating for the proposed multi-residential development at Ravenscourt Park Hospital Care (Multi-Residential) is shown in Table 1.1 below.

Building Type	BREEAM v6 Rating
Multi-residential (Fully Fitted)	81.67% (Excellent)

Table 1.1 BREEAM score

The results of this assessment have been based on credits assigned with the objective of ascertaining the feasibility of achieving a BREEAM 'Excellent' rating for the proposed multi-residential site at Ravenscourt Park Hospital. The BREEAM pre-assessment for the proposed scheme has an anticipated score of 81.67% therefore achieving an 'Excellent' rating which requires a percentage score greater than 70%. The score also allows for a 11.67% margin of contingency above the minimum score of 70% required.

All credits which can be investigated to deliver a higher BREEAM score have been highlighted within Section 5.0 of this report. If all these credits can be achieved the development could potentially achieve a BREEAM score of 84.50% which still delivers an 'Excellent' rating with an 14.50% margin of contingency from the 70% minimum required for BREEAM 'Excellent' rating.

The credits that cannot be achieved are highlighted in blue within the BREEAM assessment and the credits which are likely to be achieved have been achieved are highlighted in green in the Tables provided in Section 6.0 of this report.

This is a live document and the BREEAM score is subject to change throughout the development should the relevant criteria not be met or should further credits become achievable.

2 INTRODUCTION

The BREEAM pre-assessment is an assessment method to inform a developer's design team of the predicted building rating and strategy. It is an initial view of the sustainability of the proposed development. The Pre-assessment report is designed to show how, based on the information provided, the development can achieve a certain score/rating and to provide information with regards to the next steps of the BREEAM assessment process. It includes the requirements to achieve desired BREEAM rating and potential credits that can be considered to increase the targeted score. It will be followed by the design assessment.

The report has been prepared by Cudd Bentley with regard to the development of multi-residential units at Ravenscourt Park Hospital Care (Multi-Residential). The purpose of the proposed development is demolition of existing buildings and redevelopment to provide employment units for a flexible range of employment uses, erection of ancillary offices, together with the provision of yard areas, parking, landscaping and associated works.

Figure 2.1 below shows the site plan for the development of Ravenscourt Park Hospital Care (Multi-Residential)



Figure 2.1 Site Plan

Ayesha Batool of Cudd Bentley Consulting Limited has been appointed to assist with the BREEAM v6 UK (Non-Domestic & Industrial) Pre-assessment on the proposed development. Sushil Pathak has been appointed as a BREEAM AP and is involved to assist with the BREEAM v6 UK (Non-Domestic Buildings) design stage BREEAM AP Concept and Developed Design requirements for the proposed development.



3 BREEAM OVERVIEW

BREEAM schemes are an environmental assessment method for buildings. Each standard sets the best practice in environmental design and has become the de facto measure to describe a buildings environmental performance.

BREEAM has the following aims:

- *To mitigate the impacts of buildings on the environment;*
- *To enable buildings to be recognised according to their environmental benefits;*
- *To provide a credible, environmental label for buildings;*
- *To stimulate demand for sustainable buildings.*

BREEAM has the following objectives:

- *To provide market recognition to low environmental impact buildings;*
- *To ensure best environmental practice is incorporated in buildings;*
- *To set criteria and standards surpassing those required by regulations and challenge the market to provide innovative solutions that minimise the environmental impact of buildings;*
- *To raise awareness of owners, occupants, designers and operators of the benefits of buildings with a reduced impact on the environment;*
- *To allow organisations to demonstrate progress towards corporate environmental objectives.*

Credits are awarded over 10 categories of sustainability consisting of a number of issues, summarised in Table 3.1 below.



<p>Management</p> <ul style="list-style-type: none"> • <i>Project Brief and Design;</i> • <i>Life Cycle Cost and Service Life Planning;</i> • <i>Responsible Construction Practices;</i> • <i>Commissioning and Handover;</i> • <i>Aftercare.</i> 	<p>Materials</p> <ul style="list-style-type: none"> • <i>Environmental Impacts from Construction Products – Building Life Cycle Analysis;</i> • <i>Environmental Impact from Construction Products – EPD;</i> • <i>Responsible Sourcing of Construction Products;</i> • <i>Designing for Durability and Resilience;</i> • <i>Material Efficiency.</i>
<p>Health & Wellbeing</p> <ul style="list-style-type: none"> • <i>Visual Comfort;</i> • <i>Indoor Air Quality;</i> • <i>Safe Containment in Laboratories;</i> • <i>Thermal Comfort;</i> • <i>Acoustic Performance;</i> • <i>Security;</i> • <i>Safe and Healthy Surroundings.</i> 	<p>Waste</p> <ul style="list-style-type: none"> • <i>Construction Waste Management;</i> • <i>Use of Recycled and Sustainably Sourced Aggregates;</i> • <i>Operational Waste;</i> • <i>Speculative Finishes;</i> • <i>Adaptation to Climate Change;</i> • <i>Design for Disassembly and Adaptability.</i>
<p>Energy</p> <ul style="list-style-type: none"> • <i>Reduction of Energy Use and Carbon Emissions;</i> • <i>Energy Monitoring;</i> • <i>External Lighting;</i> • <i>Low Carbon Design;</i> • <i>Energy Efficient Cold Storage;</i> • <i>Energy Efficient Transportation Systems;</i> • <i>Energy Efficient Laboratory Systems;</i> • <i>Energy Efficient Equipment;</i> 	<p>Land Use and Ecology</p> <ul style="list-style-type: none"> • <i>Site Selection;</i> • <i>Identifying and Understanding the Risks and Opportunities for the Project;</i> • <i>Managing Negative Impacts on Ecology;</i> • <i>Change and Enhancement of Ecological Value;</i> • <i>Long Term Ecology Management and Maintenance.</i>
<p>Transport</p> <ul style="list-style-type: none"> • <i>Transport Assessment and Travel Plan;</i> • <i>Sustainable Transport Measures.</i> 	<p>Pollution</p> <ul style="list-style-type: none"> • <i>Impact of Refrigerants;</i> • <i>Local Air Quality;</i> • <i>Flood and Surface Water Management;</i> • <i>Reduction of Night Time Light Pollution;</i> • <i>Reduction of Noise Pollution.</i>
<p>Water</p> <ul style="list-style-type: none"> • <i>Water Consumption;</i> • <i>Water Monitoring;</i> • <i>Water Leak Detection;</i> • <i>Water Efficient Equipment.</i> 	<p>Innovation</p> <ul style="list-style-type: none"> • <i>New technology, process and practices.</i>

Table 3.1 Summary of Categories Covered by BREEAM

3.1 SCORES AND RATING

There are four main elements that determine the building rating:

3.1.1 BREEM Rating Benchmarks

Table 3.2 below summarises the overall percentage score that is required to classify within each rating.

BREEM Rating	% Score
Unclassified	< 30
Pass	≥ 30
Good	≥ 45
Very Good	≥ 55
Excellent	≥ 70
Outstanding	≥ 85

Table 3.2 BREEM Ratings

3.1.2 BREEM Environmental Weightings

Table 3.3 below outlines the environmental weightings that are adopted in each section to convert the credits awarded into an overall percentage score.

BREEM Section	Weighting (%) v6		
	Fully Fitted	Shell and Core	Shell Only
Management	11%	11%	12%
Health & Wellbeing	14%	8%	7%
Energy	16%	14%	9.5%
Transport	10%	11.5%	14.5%
Water	7%	7%	2%
Materials	15%	17.5%	22%
Waste	6%	7%	8%
Land Use & Ecology	13%	15%	19%
Pollution	8%	9%	6%
Innovation (additional)	10%	10%	10%

Table 3.3 Environmental Section Weightings

3.1.3 Minimum BREEAM Standards

To achieve a BREEAM rating, the minimum percentage score must be achieved (Table 3.2) and the minimum standards (number of credits) applicable to that rating level, Table 3.4 below.

BREEAM Issue	Minimum standards by BREEAM rating level				
	Pass	Good	Very Good	Excellent	Outstanding
Man 03 – Responsible Construction Practices	None	None	None	1 (Responsible construction management)	2 (Responsible construction management)
Man 04 – Commissioning and Handover	None	None	One credit (commissioning-test schedule and responsibilities)	One credit (commissioning-test schedule and responsibilities)	One credit (commissioning-test schedule and responsibilities)
Man 04 – Commissioning and Handover	None	None	Criterion 11 (Building User Guide)	Criterion 11 (Building User Guide)	Criterion 11 (Building User Guide)
Man 05 – Aftercare	None	None	None	1 (Commissioning implementation)	1 (Commissioning implementation)
Ene 01 – Reduction of CO2 Emissions	None	None	None	4 Credits	6 Credits
Ene 02 – Energy Monitoring	None	None	1 (First credit)	1 (First credit)	1 (First credit)
Wat 01 – Water Consumption	None	1 Credit	1 Credit	1 Credit	2 Credits
Wat 02 – Water Monitoring	None	Criteria 1 only	Criteria 1 only	Criteria 1 only	Criteria 1 only
Mat -3 – Responsible Sourcing of Materials	Criteria 1 only	Criteria 1 only	Criteria 1 only	Criteria 1 only	Criteria 1 only
Wst 01 – Construction Waste Management	None	None	None	None	1 Credit
Wst 03 – Operational Waste	None	None	None	1 Credit	1 Credit

Table 3.4 Minimum Standards



3.1.4 BREEAM Credits for Innovation

Innovation credits provide additional recognition for a building that innovates in the field of sustainable performance, above and beyond the level that is currently recognised and rewarded within standard BREEAM issues.

3.2 CURRENT ASSESSMENT – DESIGN PARAMETERS

BREEAM New Construction v6 is the latest version of the certification published by BRE for the new developments. That's why, the project is assessed by BREEAM New Construction v6 requirements. For this v6 pre-assessment, the following design parameters were used within the BREEAM Calculator Tool to commence the assessment:

- *Scheme - BREEAM UK New Construction (Non-Domestic Buildings) v6.*
 - *Building Type – Multi-Residential.*
- *Project type – New Construction / Shell & Core*
- *Functions/facilities specified in the building.*
 - *External areas*
 - *Amenity space*

4 SITE ANALYSIS

The purpose of the proposed development is demolition of existing buildings and redevelopment to provide employment units for a flexible range of employment uses, erection of ancillary offices, together with the provision of yard areas, parking, landscaping and associated works.

The proposed site layout is shown in Figure 4.1.



Figure 4.1 Site Layout

5 SUMMARY

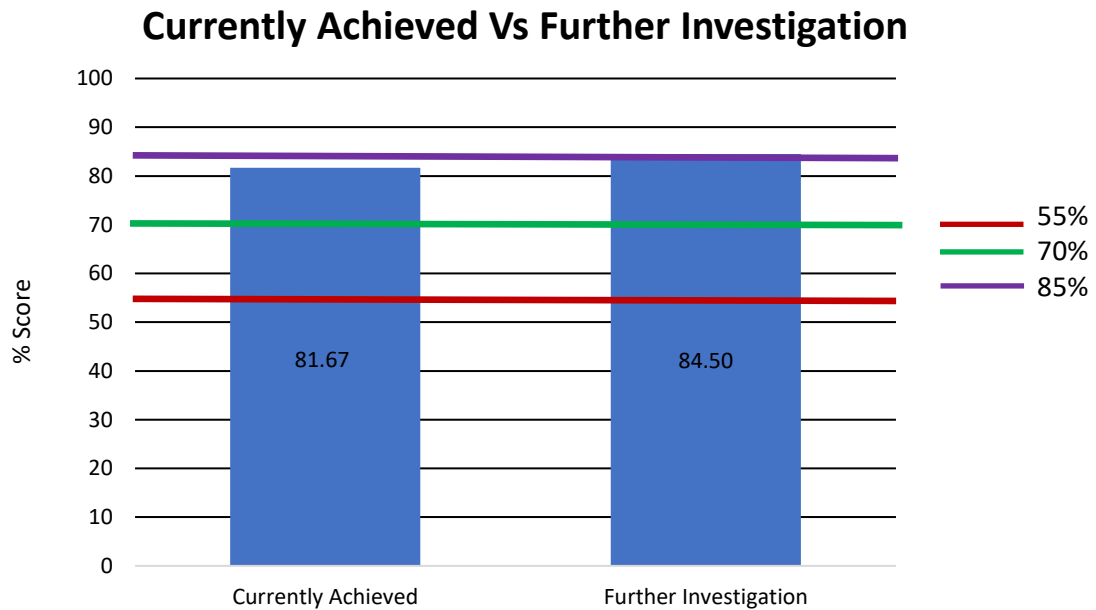
In summary, the BREEAM pre-assessment anticipates that the proposed development can achieve an Excellent rating, by scoring 81.67% which surpasses the 70% minimum threshold.

All credits which can be investigated to deliver a higher BREEAM score have been included within Table 5.1 below. If all these credits can be achieved the development could potentially achieve a BREEAM score of 84.50% which still delivers an 'Excellent' rating with a 14.50% margin of contingency over the 70% target for an 'Excellent' BREEAM rating.

Both scores have been visually represented within Graph 5.1 below. All credits are listed in Section 6.1

Credit for Further Investigation	Requirement	Contribution Score
Tra02, Sustainable Transport Measures	Will a car sharing scheme be developed?	0.83%
LE 1 Site Selection	Is the site deemed to be significantly contaminated?	1.00%
LE 3 Managing Negative Impacts on Ecology	Will negative impacts on site be limited to allow for no overall loss of ecological value, or to be limited as much as possible?	1.00%
Total Score		2.83%

Table 5.1 Credits for Further Investigation





Graph 5.1 Currently Achievable Credits

6 BREEAM ASSESSMENTS

The following section highlights the BREEAM credits that can be awarded at the pre-assessment stage for the multi-residential development in Ravenscourt Park Hospital Care and the corresponding percentage score.

The design stage assessment and subsequent interim BREEAM Certification represents the performance of the building at the design stage of the assessment, typically prior to the beginning of operations on site. Certification at this stage does not, therefore, represent the buildings final 'as built' BREEAM performance.



The post construction stage assessment and subsequent BREEAM Certification represents the final 'as built' performance and BREEAM rating. A final post construction stage assessment will be completed and certified after practical completion of the building works.

6391	Ravenscourt Park Hospital	BREEAM V.6. Pre-Assessment Fully Fitted (Multi-Residential) 14/11/2023							
Credit	Description	Requirements	Achieved	Responsibility	Comments	Credits Available	Credits Achieved	Percentage %	
Management									
Man 1 Project Brief and Design	To optimise final building design through recognising and encouraging an integrated design process and robust stakeholder engagement.	Project delivery planning - Will roles and responsibilities defined in accordance with BREEAM and set a project delivery for stakeholder contributions?	Y	PM/Client	Action at concept design Stage 2	1	1	0.52%	
		Stakeholder consultation - Will all relevant third parties been consulted with comments influencing the outcomes of the concept design?	Y	Client / SPPARC	Action at concept design Stage 2 & 4	1	1	0.52%	
		BREEAM AP (Concept Design) - Will a Sustainability Champion be appointed during the preparation and brief stage to facilitate BREEAM performance targets?	Y	CBC	Action at concept design Stage 2	1	1	0.52%	
		BREEAM AP (Developed Design) - Will the Sustainability Champion monitor progress throughout the design process?	Y	CBC/Architect/Main contractor	Action at concept design Stage 2	1	1	0.52%	
Man 2 Life Cycle Cost and Service Life Planning	To promote the business case for sustainable buildings and to deliver whole life value by encouraging the use of life cycle costing to improve design, specification, through life maintenance and operation.	Will and elemental life cycle cost analysis be carried out at RIBA stage 2 (concept design)?	N	Specialist Consultant	Action at concept design Stage 2	2	0	0.00%	
		Will a component level plan be developed by the end of RIBA stage 4 (technical design)?	N	Specialist Consultant		1	0	0.00%	
		Will the predicted capital cost for the building be reported?	Y	PM/Client		1	1	0.52%	
Man 3 Responsible Construction Practices	To recognise and encourage construction sites which are managed in an environmentally and socially considerate, responsible and accountable manner.	Will the principal contractor operate under an Environmental Management System, use responsibly sourced timber and best practice pollution prevention policies?	Y	Main contractor	One credit minimum standard for excellent	1	1	0.52%	
		Will a Sustainability Champion be appointed to monitor the project during construction, handover and close out stages?	Y	Main contractor		1	1	0.52%	
		Will the principal achieve the minimum requirements and six additional requirements of Table 4.1 (BREEAM 2018 manual V1.0)?	Y	Main contractor		2	2	1.05%	
		Will responsibility be assigned for monitoring energy, water and transport data?	Y	Main contractor		2	2	1.05%	
Man 4 Commissioning and Handover	To encourage a properly planned handover and commissioning process that reflects the needs of the building occupants.	Will an appropriate team member be appointed to monitor commissioning and will a commissioning schedule be provided?	Y	Main contractor		1	1	0.52%	
		Will a Specialist Commissioning Manager be appointed?	N	Main contractor		1	0	0.00%	
		Will a thermographic survey and air tightness testing be undertaken?	N	Main contractor		1	0	0.00%	
		Will a Building User Guide and Training Schedules be developed?	Y	Main contractor	Minimum standard for excellent	1	1	0.52%	
Man 5 Aftercare	To ensure the building operates in accordance with the design intent and operational demands, through providing aftercare to the building owner and occupants during the first year of occupation.	Will aftercare support be provided through an operational infrastructure and resources?	Y	Main contractor/Client		1	1	0.52%	
		Will seasonal commissioning be undertaken?	Y	Main contractor/Client	One credit minimum standard for excellent	1	1	0.52%	
		Will a Post Occupancy Evaluation be undertaken?	Y	Main contractor/Client		1	1	0.52%	
					Total	21	16	8.38%	



Green - Achieved
Blue - Not Achieved
Orange - To be Investigated

6391	Ravenscourt Park Hospital	BREEAM V.6. Pre-Assessment Fully Fitted (Multi-Residential) 14/11/2023				Cudd Bentley Consulting	breeam		
Credit	Description	Requirements	Achieved	Responsibility	Comments	Credits Available	Credits Achieved	Percentage %	
Health and Wellbeing									
Hea 1 Visual Comfort	To encourage best practice in visual performance and comfort by ensuring daylighting, artificial lighting and occupant controls are considered.	Will suitable glare control measures be provided in relevant building areas?	Y	SPPARC		1	1	0.78%	
		Will all relevant building areas be designed to achieve the appropriate daylight factor(s) as per Table 5.1 (BREEAM manual v6)?	Y	Design MEP	Underpin test modelling pre confirmation Credit highlighted for further investigation. Action at concept design Stage 2	2	2	1.56%	
		Will the design provide adequate view out for building users?	Y	SPPARC		1	1	0.78%	
		Will internal/external lighting be specified in accordance with the SLL Code for Lighting 2012, CIBSE Lighting Guide 7 and BS 5489-1?	Y	CBC/ Main Contractor		1	1	0.78%	
Hea 2 Indoor Air Quality	To encourage and support healthy internal environments with good indoor air quality.	Will an Indoor Air Quality plan be developed?	Y	Specialist Consultant	Pre - requisite Action at concept design Stage 2	-	-	-	
		Will the building ventilation be design to minimise the indoor concentration and recirculation of pollutants?	Y	CBC//Main contractor		1	1	0.78%	
		Will Volatile Organic Compound emission levels within construction products be minimised? One credit - 3/5 products Two credit - all 5 products	Y	SPPARC/ Main contractor	Credit highlighted for further investigation	2	2	1.56%	
		Will the post-construction indoor air quality be measured?	Y	Main contractor		1	1	0.78%	
Hea 4 Thermal Comfort	To ensure the building is capable of providing an appropriate level of thermal comfort.	Will Thermal Comfort modelling be undertaken?	Y	Specialist Consultant	Action at concept design Stage 2	1	1	0.78%	
		Will the Thermal Comfort modelling be measured against a climate change scenario?	Y	Specialist Consultant		1	1	0.78%	
		Will thermal zoning and relevant controls be included within the scheme design?	Y	Specialist Consultant/CBC / Main Contractor		1	1	0.78%	
Hea 5 Acoustic performance	To ensure the building is capable of providing an appropriate acoustic environment to provide comfort for building users.	Will the building meet the relevant acoustic performance standards and testing requirements?	Y	LOGIKA CONSULTANTS - Acoustician	Action at concept design Stage 2	4	3	2.33%	
Hea 6 Security	To encourage the planning and implementation of effective measures that provide an appropriate level of security to the building and site.	Will a suitably qualified security consultant (Architectural Liaison Officer) be appointed and security considerations accounted for?	Y	SQSS/SPPARC/Main contractor	Action at concept design Stage 2	1	1	0.78%	
Hea 7 Safe and Healthy Surroundings	To encourage the provision of safe access around the site and outdoor space that enhances the wellbeing of building users.	Where external site areas are present, will safe access be designed for pedestrians and cyclists?	Y	SPPARC		1	1	0.78%	
		Will an outside amenity space with seating be provided?	Y	SPPARC		1	1	0.78%	
Total						19	18	14.00%	



Green - Achieved
Blue - Not Achieved
Orange - To be Investigated

6391	Ravenscourt Park Hospital	BREEAM V.6. Pre-Assessment Fully Fitted (Multi-Residential) 14/11/2023				 Cudd Bentley Consulting			
Credit	Description	Requirements	Achieved	Responsibility	Comments	Credits Available	Credits Achieved	Percentage %	
Energy									
Ene 1 Reduction of Energy Use and Carbon Emissions	To minimise operational energy demand, primary energy consumption and CO2 emissions.	Calculate an energy performance ratio based on BRUKLS	FI	Specialist Consultant	Further investigation. Minimum 4 credits for excellent rating	9	4	2.78%	
	prediction of operational energy consumption	Conduct an energy design workshop at RIBA Stage 2 and undertake energy modelling.	Y	Specialist Consultant	Action at concept design Stage 2	4	4	2.78%	
Ene 2 Energy Monitoring	To encourage the installation of energy sub-metering to facilitate the monitoring of operational energy consumption. To enable managers and consultants post-handover to compare actual performance with targets in order to inform ongoing management and help in reducing the performance gap	Will energy metering be provided to cover at least 90% of the annual energy consumption of each fuel?	Y	CBC/ Main Contractor	Minimum standard for excellent	2	2	1.39%	
Ene 3 External Lighting	To reduce energy consumption through the specification of energy efficient light fittings for external areas of the development.	Will external light fittings have a luminous efficacy of no less than 70 lumens per circuit Watt, as well as suitable controls?	Y	CBC/ Main Contractor		1	1	0.70%	
Ene 4 Low Carbon Design	To encourage the adoption of design measures, which reduce building energy consumption and associated carbon emissions and minimise reliance on active building services systems.	Will Hea 4 (Thermal Comfort) be achieved?	Y	Specialist Consultant	Pre-requisite. Action at concept design Stage 2	2	2	1.39%	
		Will an analysis of the buildings passive design features be carried out?	Y	Specialist Consultant	Action at concept design Stage 2				
		Will the building use a BREEAM compliant free cooling strategy?	N	Specialist Consultant					
		Will a feasibility study be undertaken and recommended LZC technology installed?	Y	Specialist Consultant	Action at concept design Stage 2				
Ene 06 Energy efficient transportation systems	To encourage the specification of energy efficient transportation systems within buildings.	Will transportation systems be specified, analyse transportation demand and usage pattern.	Y	Specialist Consultant/ Main Contractor		1	1	0.70%	
		Will lifts be installed? Specify stand-by for off-peak periods, lift lighting (>70 lm) and variable drive controller control of the motor.	Y	Main Contractor		1	1	0.70%	
Ene 08 Energy efficient equipment	To recognise and encourage procurement of energy efficient equipment to ensure optimum performance and energy savings in operation.	Will there be meaningful reduction in the total annual unregulated energy consumption of the building through equipment selection.	Y	Main Contractor /SPPARC		2	2	1.39%	
Total						22	17	11.83%	



Green - Achieved
Blue - Not Achieved
Orange - To be Investigated

6391	Ravenscourt Park Hospital	BREEAM V.6. Pre-Assessment Fully Fitted (Multi-Residential) 14/11/2023				 Cudd Bentley Consulting			
Credit	Description	Requirements	Achieved	Responsibility	Comments	Credits Available	Credits Achieved	Percentage %	
Transport									
Tra 1 Transport Assessment and Travel Plan	To reward awareness of existing local transport and identify improvements to make it more suitable.	Will a site specific Transport Assessment be undertaken?	Y	TRANSPORT PLANNING ASSOCIATES	Action at concept design stage 2	2	2	1.67%	
		Will a Travel Plan be implemented based on the findings of the Transport Assessment?	Y						
		Buildings indicative Accessibility Index	<25		AI<25				
Tra 2 Sustainable Transport Measures	To maximise the potential for local public, private and active transport through provision of sustainable transport measures appropriate to the site.	Is the existing Accessibility Index for the site >8?	Y	TPA		1	1	0.83%	
		Will the development itself demonstrate an increase in the site's Accessibility Index?	N	NICK/ BREEAM Assessor		1	0	0.00%	
		Will a public transport information system be provided in a public place?	Y	PM		1	1	0.83%	
		Will electric car charging stations be provided for at least 10% of the total car parking?	Y	M&E Consultant/ SPPARC	Credit highlighted for further investigation	1	1	0.83%	
		Will a car sharing scheme be developed?	FI	SPPARC	Credit highlighted for further investigation	1	0	0.00%	
		Will consultation with the Local Authority regarding the local cycle network and pedestrian routes for the site, with improvement proposition agreed with the LA being implemented? significant impact on the local cycling network or on pedestrian routes open to the public.	N	Client/Project Manager		1	0	0.00%	
		Will compliant cycle storage spaces be provided?	Y	SPPARC	Tra 01 needs to be achieved as pre-requisite	1	1	0.83%	
		Will compliant cyclist facilities be provided, in the form of either showers, changing facilities, lockers or drying spaces?	Y	SPPARC	Tra 01 needs to be achieved as pre-requisite	1	1	0.83%	
		Will suitable existing amenities be available to building users?	Y	CBC	Tra 01 needs to be achieved as pre-requisite	1	1	0.83%	
		Will the development provide additional suitable amenities for building users?	Y	PM/ CBC		1	1	0.83%	
					Total	12	9	7.50%	



Green - Achieved
Blue - Not Achieved
Orange - To be Investigated

6391	Ravenscourt Park Hospital	BREEAM V.6. Pre-Assessment Fully Fitted (Multi-Residential) 14/11/2023				 Cudd Bentley Consulting			
Credit	Description	Requirements	Achieved	Responsibility	Comments	Credits Available	Credits Achieved	Percentage %	
Water									
Wat 1 Water Consumption	To reduce the consumption of potable water for sanitary use in new buildings through the use of water efficient components and water recycling systems.	Which Level of BREEAM criteria will be targeted for this credit?	40%	CBC/ Main Contractor/SPPARC	Level 3 Minimum one credit for a Excellent rating	5	3	2.33%	
Wat 2 Water Monitoring	To reduce the consumption of potable water in new buildings through the effective management and monitoring of water consumption.	Will there be a water meter on the mains water supply to the building(s)?	Y	CBC/ Main Contractor/SPPARC	Minimum standard for a Excellent rating	1	1	0.78%	
		Will metering/monitoring equipment be specified on the water supply to any relevant plant/ building areas?	Y						
		Will all specified water meters have a pulsed output?	Y						
		If the site/building has an existing BMS connection, will all pulsed meters be connected to the BMS?	Y						
Wat 3 Water Leak Detection	To reduce the consumption of potable water in new buildings through minimising wastage due to water leaks.	Will a mains water leak detection system be installed on the buildings mains water supply?	Y	CBC/ Main Contractor/SPPARC		1	1	0.78%	
		Will flow control devices be specified within sanitary areas of the building?	Y						1
Wat 4 Water efficient equipment	To reduce water consumption for uses not assessed under Wat 01 by encouraging specification of water efficient equipment.	Will all water demands outside sanitary use be identified and mitigated?	Y	CBC/ Main Contractor/SPPARC	Credit highlighted for further investigation	1	1	0.78%	
Total						9	7	5.44%	



Green - Achieved
Blue - Not Achieved
Orange - To be Investigated

6391	Ravenscourt Park Hospital	BREEAM V.6. Pre-Assessment Fully Fitted (Multi-Residential) 14/11/2023							
Credit	Description	Requirements	Achieved	Responsibility	Comments	Credits Available	Credits Achieved	Percentage %	
Materials									
Mat 1 Environmental Impacts from Construction Products - Building Life Cycle Assessment	To reduce the burden on the environment from construction products by recognising and encouraging measure to optimise construction efficiency and the selection of products with a low environmental impact (including embodied carbon), over the life cycle of the building.	Has a target number of BREEAM credits been defined using the Mat 01 calculator?	FI	SPPARC / Main Contractor	Information for LCA required at Concept Design Pre-planning Action at concept design stage 2 Credits highlighted for further investigation	7	6	6.43%	
Mat 2 Environmental Impacts from Construction Products - Environmental Product Declarations	To encourage availability of robust and comparable data on the impacts of construction products through the provision of EPD.	Will construction products with EPD be specified to achieve a total EPD points of 20 (as calculated within the Mat 01 calculator)?	Y	SPPARC / Specialist Consultant		1	1	1.07%	
Mat 3 Responsible Sourcing of Construction Products	To facilitate the selection of products that involve lower levels of negative environmental, economic and social impact across their supply chain including extraction, processing and manufacture.	Will all timber used on the project be 'Legally harvested and traded timber'?	Y	SPPARC	Minimum standard for a Very Good rating	4	3	3.21%	
		Will a sustainable procurement plan be developed?	Y	SPPARC/Contractor	To be in place at concept design Stage 2				
		Will materials specified for relevant elements will be responsibly sourced?	Y						
Mat 5 Designing for Durability and Resilience	To reduce the need to repair and replace materials resulting from damage to exposed elements of the building and landscape.	Will suitable durability/ protection measures be specified and installed to vulnerable areas of the building?	Y	SPPARC		1	1	1.07%	
		Will exposed building elements incorporate measures to limit degradations due to environmental factors?	Y						
Mat 6 Material Efficiency	To avoid unnecessary materials use arising from over specification without compromising structural stability, durability of the service life of the building.	Will all appropriate parties be consulted in optimising the use of materials throughout the course of the project?	Y	All design team	To be in place at concept design Stage 2	1	1	1.07%	
Total						14	12	12.86%	



Green - Achieved
Blue - Not Achieved
Orange - To be Investigated

6391	Ravenscourt Park Hospital	BREEAM V.6. Pre-Assessment Fully Fitted (Multi-Residential) 14/11/2023				 Cudd Bentley Consulting			
Credit	Description	Requirements	Achieved	Responsibility	Comments	Credits Available	Credits Achieved	Percentage %	
Waste									
Wst 1 Construction Waste Management	To reduce construction waste by encouraging reuse, recovery and best practice waste management practices to minimise waste going to landfill.	Will a compliant Resource Management Plan and Pre-demolition Audit (where required) be implemented?	Y	PM/ Demolition Contractor	Action at stage 1	4	3	1.80%	
		Has a target resource efficiency per 100 m2 of gross internal area been agreed? One credit = <13.3 m3 or <11.1 tonnes Two credits = <7.5 m3 or <6.5 tonnes Three credits = <3.4 m3 or <3.2 tonnes	Y	Main contractor					
		Will at least 70% of non-demolition waste and 80% of any demolition waste (by volume) be diverted from landfill?	Y	Main contractor					
Wst 2 Use of Recycled and Sustainable Sourced Aggregates	To encourage the use of more sustainable sourced aggregates, encourage reuse where appropriate and avoid waste and pollution arising from disposal of demolition and other forms of waste.	Will a review of all reused and sustainably sourced aggregates be undertaken?	Y	PM/ Demolition Contractor	Credit highlighted for further investigation	1	1	0.60%	
Wst 3 Operational Waste	To encourage the recycling of operational waste through the provision of dedicated storage facilities and space.	Will appropriate facilities for the storage of operational recyclable waste volumes be provided?	Y	SPPARC	Minimum standard for a Very Good rating	1	1	0.60%	
		If relevant, will a static waste compactor(s) or baler(s) be specified/installed?	N						
		If relevant, will a vessel for composting suitable organic waste be specified/installed?	N						
Wst 5 Adaptation to Climate Change	To minimise the future need of carrying out workshop adapt the building to take account of more extreme weather changes resulting from climate change and changing weather patterns.	Will a Climate Change Adaptation Strategy appraisal be carried out by the end of RIBA Stage 2 (Concept design)?	Y	SPPARC	To be achieved at concept design Stage 2	1	1	0.60%	
Wst 6 Design for Disassembly and Adaptability	To avoid unnecessary material use, cost and disruption arising from the need for future adaption works as a result of changing functional demands and to maximise the ability to reclaim and reuse materials at final demolition in line with the principles of a circular economy.	Will a Functional Adaptation Strategy appraisal be carried out by the end of RIBA Stage 2 (Concept design), as will the recommendation be implemented?	Y	SPPARC	To be achieved at concept design Stage 2 and updated at Stage 4 Credit highlighted for further investigation	2	2	1.20%	
Total						10	9	5.40%	

Green - Achieved
Blue - Not Achieved
Orange - To be Investigated

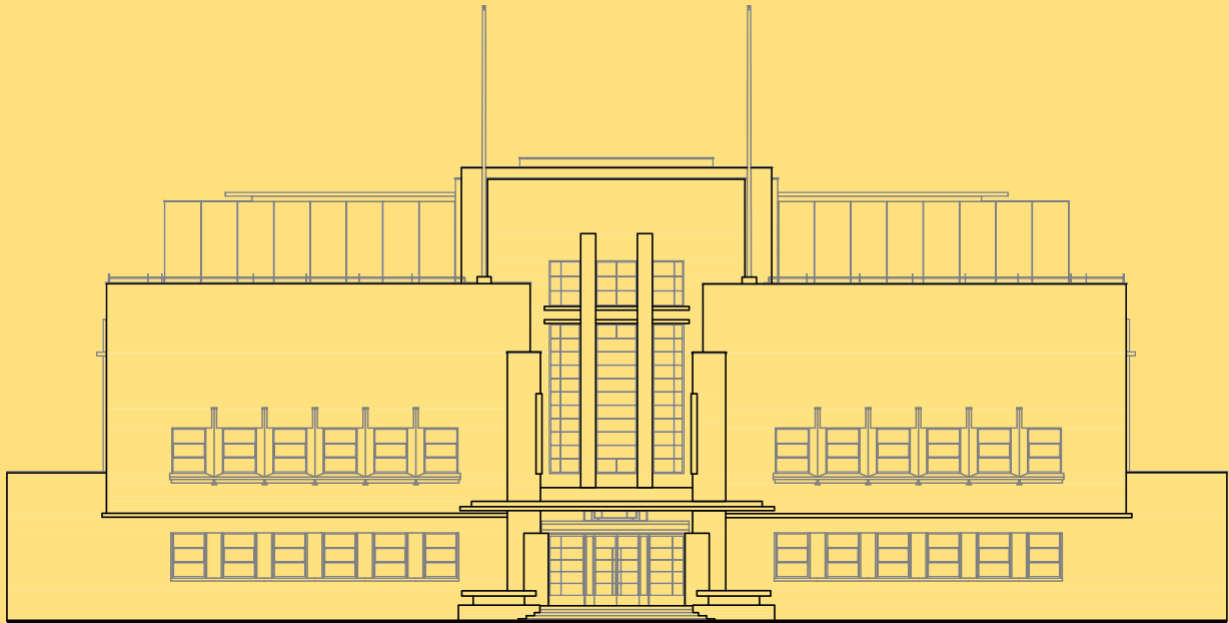
6391	Ravenscourt Park Hospital	BREEAM V.6. Pre-Assessment Fully Fitted (Multi-Residential) 14/11/2023							
Credit	Description	Requirements	Achieved	Responsibility	Comments	Credits Available	Credits Achieved	Percentage %	
Land Use and Ecology									
LE 1 Site Selection	To encourage the use of previously developed and/or contaminated land and avoid land which has not been previously disturbed	Will at least 75% of the proposed developments footprint be located on previously developed land?	Y	SPPARC		1	1	1.00%	
		Is the site deemed to be significantly contaminated?	FI	Specialist Consultant	Credit highlighted for further investigation	1	0	0.00%	
LE 2 Identifying and Understanding the Risks and Opportunities for the Project	To determine the ecological baseline and zone of influence of the site and identify risks and opportunities for achieving optimum outcomes.	Will a Suitably Qualified Ecologist be appointed to assess the value of the site? Additionally, will the Client or Contractor confirm that compliance will be monitored against relevant UK and EU legislation?	Y	SQE/Main contractor	Pre-requisite.	2	2	2.00%	
		Will the Ecologist report on current and potential ecological value, risks to the ecological value and capacity for enhancement?	Y	SQE/Main contractor	To be carried at Stage 1				
		Will the ecological outcome from the development be determined, considering avoidance, protection, reduction of negative impacts, on site compensation and enhancement?	Y	SQE/Main contractor	Liaison with stakeholders be at Stage 2				
LE 3 Managing Negative Impacts on Ecology	To avoid, or limit as far as possible, negative impacts on the ecology of the site and its zone of influence arising as a result of the project.	Will the project team liaise with relevant stakeholders to consider collated and shared data in order to implement the best solutions during site preparation and construction works to prevent negative impacts?	Y	SQE/Main contractor	Ecology credits will be confirmed by the ecologist	1	1	1.00%	
		Will negative impacts on site be limited to allow for no overall loss of ecological value, or to be limited as much as possible?	FI	SQE	Ecology credits will be confirmed by the ecologist Credit highlighted for further investigation	2	1	1.00%	
LE 4 Change and Enhancement of Ecological Value	To enhance the ecological value of the site and areas within its zone of influence in support of local, regional and national priorities.	Will the project team liaise with relevant stakeholders to consider collated and shared data in order to implement the best solutions during site preparation and construction works to enhance site ecology?	Y	SQE	Ecology credits will be confirmed by the ecologist	1	1	1.00%	
		Will site ecology be enhanced inline with BREEAM Guidance Note 35?	Y	SQE	Ecology credits will be confirmed by the ecologist Credit highlighted for further investigation	3	1	1.00%	
LE 5 Long Term Ecology Management and Maintenance	To secure ongoing monitoring, management and maintenance of the site and, its habitats ecological features to ensure intended outcomes are realised for the long term?	Will the design team liaise with stakeholders to ensure effective management and maintenance systems are implemented?	Y	SQE	Ecology credits will be confirmed by the ecologist	1	1	1.00%	
		Will a landscape and ecology management plan be implemented?	Y	SQE	Ecology credits will be confirmed by the ecologist	1	1	1.00%	
Total						13	9	9.00%	

Green - Achieved
Blue - Not Achieved
Orange - To be Investigated

6391	Ravenscourt Park Hospital	BREEAM V.6. Pre-Assessment Fully Fitted (Multi-Residential) 14/11/2023							
Credit	Description	Requirements	Achieved	Responsibility	Comments	Credits Available	Credits Achieved	Percentage %	
Pollution									
Pol 1 Impact of Refrigerants	To reduce the level of greenhouse gas emissions arising from the leakage of refrigerants from building systems.	Will the building be designed to operate without the need for refrigerant containing systems or alternatively electric compressors will be compliant with BS EN 378:2016 and the impact of the installed refrigerants will be ≤1000kgCO ₂ -eq/kW cooling and heating capacity?	Y	CBC/ Main Contractor		3	2	1.33%	
Pol 2 Local Air Quality	To contribute to a reduction in local air pollution through the use of low emission combustion appliances in the building.	Will the building be combustion systems comply with NOx, PM and VOC levels for the fuel type used?	Y	CBC/ Main Contractor		2	2	1.33%	
Pol 3 Flood and Surface Water Management	To avoid, reduce and delay the discharge of rainfall to public sewers and watercourse, thereby minimising the risk and impact of localised flooding on-site and off-site, watercourse pollution and other environmental damage.	What is the actual/likely annual probability of flooding for the assessed site?	Low	PEREGA /Drainage Consultant	Engaging with an appropriate consultant is a pre-requisite for this credit	2	2	1.33%	
		Will a Flood Risk Assessment be undertaken and ground level of the building/access meet BREEAM criteria?	Y	PEREGA /Drainage Consultant	FRA				
		Will the site meet the BREEAM criteria for peak rate surface water run off?	Y	PEREGA /Drainage Consultant		1	1	0.67%	
		Will the site meet the criteria for surface water run off volume, attenuation and/or limiting discharge?	Y	PEREGA /Drainage Consultant		1	1	0.67%	
		Will the site be designed to minimise watercourse pollution in accordance with the BREEAM criteria?	Y	Drainage Consultant	2.00	1	1	0.67%	
Pol 4 Reduction of Night Time Light Pollution	To ensure that external lighting is concentrated in the appropriate areas and that upward lighting is minimised, reducing unnecessary light pollution, energy consumption and nuisance to neighbouring properties	Will the external lighting be designed to reduce light pollution?	Y	CBC/ Main Contractor		1	1	0.67%	
Pol 5 Reduction of Noise Pollution	To reduce the likelihood of noise arising from fixed installations on the new development affecting nearby noise sensitive buildings.	Will a Noise Impact Assessment be undertaken to determine the limiting dB levels of external plant equipment specified?	Y	LOGIKA CONSULTANTS- Acoustician		1	1	0.67%	
Total						12	11	7.33%	
Total BREEAM Percentage Score								81.67%	

Green - Achieved
Blue - Not Achieved
Orange - To be Investigated

APPENDIX B – BREEAM PRE-ASSESSMENT (COMMUNITY)



RAVENS COURT PARK

FORMER ROYAL MASONIC HOSPITAL



Cudd Bentley Consulting

Ravenscourt Park Hospital Care - Community Hall
(Block A)
BREEAM RFO Pre-Assessment Report
6391-CBC-RS-RP-S-001-P01
March 2023



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RECORD OF REVISIONS.

Date.	Revision.	Description of change.
14/03/2023	001	Draft for comments

1 EXECUTIVE SUMMARY

The predicted BREEAM score and rating for the proposed multi-residential development within the Ravenscourt Park Hospital building is shown in Table 1.1 below.

Building Type	BREEAM RFO 2014 Pre-Assessment
Community building RFO 2014 (Parts 2, 3 & 4)	61.35% (Very Good)

Table 1.1 BREEAM score

The results of this assessment have been based on credits assigned with the objective of ascertaining the feasibility of achieving a BREEAM 'Very Good' rating for the proposed Ravenscourt Park Hospital Care – Community Hall (Block A) assessment. The BREEAM pre-assessment for the proposed scheme has an anticipated score of 61.35% which allows for 6.35% of contingency above the minimum score of 55% required.

All credits potential which can be investigated to increase the score have been in the Section 5.0 of this report and highlighted in orange within Section 6.0. If all these credits can be achieved the development could potentially achieve a BREEAM score of 68.87% which still delivers a 'Very Good' rating with a 13.87 margin of contingency from the 55% minimum required for BREEAM 'Very Good' rating.

The credits that cannot be achieved are highlighted in blue within the BREEAM assessment and the credits which are likely to be achieved are highlighted in green in the Tables provided in Section 6.0 of this report.

This is a live document and the BREEAM score is subject to change throughout the development should the relevant criteria not be met or should further credits become achievable.

2 INTRODUCTION

The report has been prepared by Cudd Bentley with regard to the development of Ravenscourt Park Hospital Care – Community Hall (Block A). The purpose of the proposed development is to carry out a refurbishment of the space within the community development at Ravenscourt Park Hospital Centre.



Figure 2.1 Ravenscourt Park Hospital Care

Sushil Pathak of Cudd Bentley Consulting Limited has been appointed to assist with the BREEAM RFO 2014 Pre-Assessment (Assessment Parts, 2, 3 and 4) on the proposed development.

Sushil Pathak of Cudd Bentley Consulting Limited has been appointed as a BREEAM AP and is involved to assist with the BREEAM RFO 2014 Pre-Assessment (Parts 2, 3 and 4) and BREEAM AP Concept and Developed Design requirements for the proposed development.

Cudd Bentley Consulting and in particular the licensed Assessor and Accredited Professional has been trained by the BRE to be able to undertake BREEAM advisory requirements



3 BREEAM OVERVIEW

BREEAM schemes are an environmental assessment method for buildings. Each standard sets the best practice in environmental design and has become the de facto measure to describe a buildings environmental performance.

BREEAM has the following aims:

- *To mitigate the impacts of buildings on the environment;*
- *To enable buildings to be recognised according to their environmental benefits;*
- *To provide a credible, environmental label for buildings;*
- *To stimulate demand for sustainable buildings.*

BREEAM has the following objectives:

- *To provide market recognition to low environmental impact buildings;*
- *To ensure best environmental practice is incorporated in buildings;*
- *To set criteria and standards surpassing those required by regulations and challenge the market to provide innovative solutions that minimise the environmental impact of buildings;*
- *To raise awareness of owners, occupants, designers and operators of the benefits of buildings with a reduced impact on the environment;*
- *To allow organisations to demonstrate progress towards corporate environmental objectives.*

Credits are awarded over 10 categories of sustainability consisting of a number of issues, summarised in Table 3.1 below.



<p>Management</p> <ul style="list-style-type: none"> • <i>Project Brief and Design;</i> • <i>Life Cycle Cost and Service Life Planning;</i> • <i>Responsible Construction Practices;</i> • <i>Commissioning and Handover;</i> • <i>Aftercare.</i> 	<p>Materials</p> <ul style="list-style-type: none"> • <i>Environmental Impacts from Construction Products – Building Life Cycle Analysis;</i> • <i>Environmental Impact from Construction Products – EPD;</i> • <i>Responsible Sourcing of Construction Products;</i> • <i>Designing for Durability and Resilience;</i> • <i>Material Efficiency.</i>
<p>Health & Wellbeing</p> <ul style="list-style-type: none"> • <i>Visual Comfort;</i> • <i>Indoor Air Quality;</i> • <i>Safe Containment in Laboratories;</i> • <i>Thermal Comfort;</i> • <i>Acoustic Performance;</i> • <i>Security;</i> • <i>Safe and Healthy Surroundings.</i> 	<p>Waste</p> <ul style="list-style-type: none"> • <i>Construction Waste Management;</i> • <i>Use of Recycled and Sustainably Sourced Aggregates;</i> • <i>Operational Waste;</i> • <i>Speculative Finishes;</i> • <i>Adaptation to Climate Change;</i> • <i>Design for Disassembly and Adaptability.</i>
<p>Energy</p> <ul style="list-style-type: none"> • <i>Reduction of Energy Use and Carbon Emissions;</i> • <i>Energy Monitoring;</i> • <i>External Lighting;</i> • <i>Low Carbon Design;</i> • <i>Energy Efficient Cold Storage;</i> • <i>Energy Efficient Transportation Systems;</i> • <i>Energy Efficient Laboratory Systems;</i> • <i>Energy Efficient Equipment;</i> 	<p>Land Use and Ecology</p> <ul style="list-style-type: none"> • <i>Site Selection;</i> • <i>Identifying and Understanding the Risks and Opportunities for the Project;</i> • <i>Managing Negative Impacts on Ecology;</i> • <i>Change and Enhancement of Ecological Value;</i> • <i>Long Term Ecology Management and Maintenance.</i>
<p>Transport</p> <ul style="list-style-type: none"> • <i>Transport Assessment and Travel Plan;</i> • <i>Sustainable Transport Measures.</i> 	<p>Pollution</p> <ul style="list-style-type: none"> • <i>Impact of Refrigerants;</i> • <i>Local Air Quality;</i> • <i>Flood and Surface Water Management;</i> • <i>Reduction of Night Time Light Pollution;</i> • <i>Reduction of Noise Pollution.</i>
<p>Water</p> <ul style="list-style-type: none"> • <i>Water Consumption;</i> • <i>Water Monitoring;</i> • <i>Water Leak Detection;</i> • <i>Water Efficient Equipment.</i> 	<p>Innovation</p> <ul style="list-style-type: none"> • <i>New technology, process and practices.</i>

Table 3.1 Summary of Categories Covered by BREEAM

3.1 SCORES AND RATING

There are four main elements that determine the building rating:

3.1.1 BREEAM Rating Benchmarks

Table 3.2 below summarises the overall percentage score that is required to classify within each rating.

BREEAM Rating	% Score
Unclassified	< 30
Pass	≥ 30
Good	≥ 45
Very Good	≥ 55
Excellent	≥ 70
Outstanding	≥ 85

Table 3.2 BREEAM Ratings

3.1.2 BREEAM Environmental Weightings

Table 3.3 below outlines the environmental weightings that are adopted in each section to convert the credits awarded into an overall percentage score.

Environmental section	Project Specific weightings							
	Core weightings	Part 1 only	Part 2 only	Part 3 only	Part 4 only	Part 1 and 2	Part 2 and 3	Part 3 and 4
Management	12%	15.00%	16.70%	16.50%	20.00%	13.00%	16.50%	14.10%
Health and Wellbeing	15%	14.80%	14.40%	15.30%	19.90%	11.00%	15.30%	15.90%
Energy	19%	16.40%	24.50%	24.30%	2.50%	18.80%	24.30%	22.50%
Transport	8%	10.00%	11.20%	11.10%	13.40%	8.60%	11.10%	9.50%
Water	6%	0.00%	7.50%	7.40%	10.10%	5.70%	7.40%	7.10%
Materials	12.50%	15.60%	5.40%	5.30%	19.30%	13.40%	5.30%	13.70%
Waste	7.50%	9.40%	9.30%	9.20%	11.20%	8.10%	9.20%	7.90%
Land Use and Ecology	10%	12.50%	0.00%	0.00%	0.00%	10.70%	0.00%	0.00%
Pollution	10%	6.30%	11.00%	10.90%	3.60%	10.70%	10.90%	9.30%
Total	100%	100%	100%	100%	100%	100%	100%	100%

Table 3.3 Environmental Section Weightings

3.1.3 Minimum BREEAM Standards

To achieve a BREEAM rating, the minimum percentage score must be achieved (Table 3.2) and the minimum standards (number of credits) applicable to that rating level, Table 3.4 below.

BREEAM Issue	Minimum standards by BREEAM rating level				
	Pass	Good	Very Good	Excellent	Outstanding
Man 03: Responsible construction practices	None	None	None	One credit (Considerate construction)	Two credits (Considerate construction)
Man 04: Commissioning and handover	None	None	None	Criterion 9 (Building User Guide)	Criterion 9 (Building User Guide)
Man 05: Aftercare	None	None	None	Parts 2 and 3 only: One credit (Seasonal commissioning)	Parts 2 and 3 only: One credit (Seasonal commissioning)
Ene 01: Reduction of energy use and carbon emissions	None	None	None	Parts 1, 2, 3 and 4 (full assessments): Six credits, varies for other assessment types	Parts 1, 2, 3 and 4 (full assessments): Ten credits, varies for other assessment types
Ene 02: Energy monitoring	None	None	Parts 2, 3 and 4: One credit (First sub-metering credit)	Parts 2, 3 and 4: One credit (First sub-metering credit)	Parts 2, 3 and 4: One credit (First sub-metering credit)
Wat 01: Water consumption	None	One credit (where applicable)	One credit (where applicable)	One credit (where applicable)	Two credits (where applicable)

Wat 02: Water monitoring	None	Part 2: Criterion 1 only	Part 2: Criterion 1 only	Part 2: Criterion 1 only	Part 2: Criterion 1 only
Mat 03: Responsible sourcing of materials	Criterion 1 only	Criterion 1 only	Criterion 1 only	Criterion 1 only	Criterion 1 only
Wst 01: Project waste management	None	None	None	None	One credit
Wst 03 – Operational Waste	None	None	None	1 Credit	1 Credit

Table 3.4 Minimum Standards

3.1.4 BREEAM Credits for Innovation

Innovation credits provide additional recognition for a building that innovates in the field of sustainable performance, above and beyond the level that is currently recognised and rewarded within standard BREEAM issues.

3.2 EARLY-STAGE CREDITS

The following actions are recommended by BRE to be undertaken at early stages of the project (RIBA Stage 1 & 2 or equivalent). Following sections outline the BRE requirements under each of these credits to be actioned at early stages of the project. It is the responsibility of the project manager to action these appointments in order secure these credits.

3.2.1 Man01 Project Brief and Design

Prior to completion of the Concept Design (RIBA Stage 2 or equivalent), the project delivery stakeholders have met to identify and define their roles, responsibilities, and contributions for each of the key phases of project delivery.

BREEAM AP appointment - early in the project: A Sustainability Champion has been appointed to facilitate the setting and achievement of BREEAM performance targets for the project. The design stage Sustainability Champion is appointed to perform this role during the feasibility stage (Stage 1, Preparation and Brief stage, as defined by the RIBA Plan of Work 2013 or equivalent).

The defined BREEAM performance target(s) has been formally agreed (see Relevant definitions) between the client and design/project team no later than the Concept Design stage (RIBA Stage 2 or equivalent).

Design programme - A programme setting out the strategic dates in relation to the design process. It is aligned with the Project Programme but is strategic in its nature, due to the iterative nature of the design process.

3.2.2 *Hea 2 Indoor Air Quality*

(If applicable) An indoor air quality plan has been produced and implemented at RIBA stage 2, with the objective of facilitating a process that leads to design, specification and installation decisions and actions that minimise indoor air pollution during the design, construction and occupation of the building.

3.2.3 *Hea 4 Thermal Comfort*

A Thermal modelling must be carried out using software in accordance with CIBSE AM11 Building Energy and Environmental Modelling at RIBA stage 2- 3.

3.2.4 *Ene04 Low carbon design*

Passive design: The project team carries out an analysis of the existing building fabric, form, site location and outline scheme design to influence decisions made during the Concept Design stage (RIBA Stage 2 or equivalent) and identifies opportunities for the implementation of passive design solutions and retrofit measures that reduce demands for energy consuming building services (see compliance note CN7).

Low and zero carbon feasibility study: A feasibility study has been carried out by the completion of the Concept Design stage (RIBA Stage 2 or equivalent) by an energy specialist (see Relevant definitions) to establish the most appropriate recognised local (on-site or near-site) low and zero carbon (LZC) energy source(s) for the building/development (see compliance note CN10)

3.2.5 *Mat 3 Responsible Sourcing of Materials*

The principal contractor sources materials for the project in accordance with a documented sustainable procurement plan

3.2.6 *Wst 01 Construction waste management*

Pre-refurbishment audit: The client shall ensure that a pre-refurbishment audit of all existing buildings, structures or hard surfaces within the scope of the refurbishment or fit-out zone is completed. The requirements for carrying out an appropriate pre-refurbishment audit are

- The audit should be carried out at the Concept Design Stage (equivalent to RIBA stage 2) prior to strip-out or demolition works in order to use the audit results to guide the design, consideration of materials that can be reused, and to set targets for waste management and ensure all contractors are engaged in the process of maximising high-grade reuse and recycling opportunities.

3.2.7 *Pol 3 Flood and Surface Water Management*

Pre-requisite - an appropriate Consultant is appointed to carry out/confirm compliance with the following criteria.

Two Credits - where the building is situated in a low flood zone not at risk from flooding. (Only One Credit is available where the development is situated in a flood zone where the probability of flooding is likely (medium to high)). This is to be confirmed within a site specific Flood Risk Assessment which confirms the probability of flooding from all sources.

For this 2014 pre-assessment, the following design parameters were used within the BREEAM Calculator Tool to commence the assessment:

- *Scheme - BREEAM RFO 2014 Pre-Assessment;*
- *Building Type – Community building*
- *Project type – Refurbishment/(Parts 2,3 & 4);*
- *Site Plan*

4 SITE PLAN ANALYSIS

The proposed site plan are shown in the Figures below.



Figure 4.1 Proposed Site Plan

5 SUMMARY

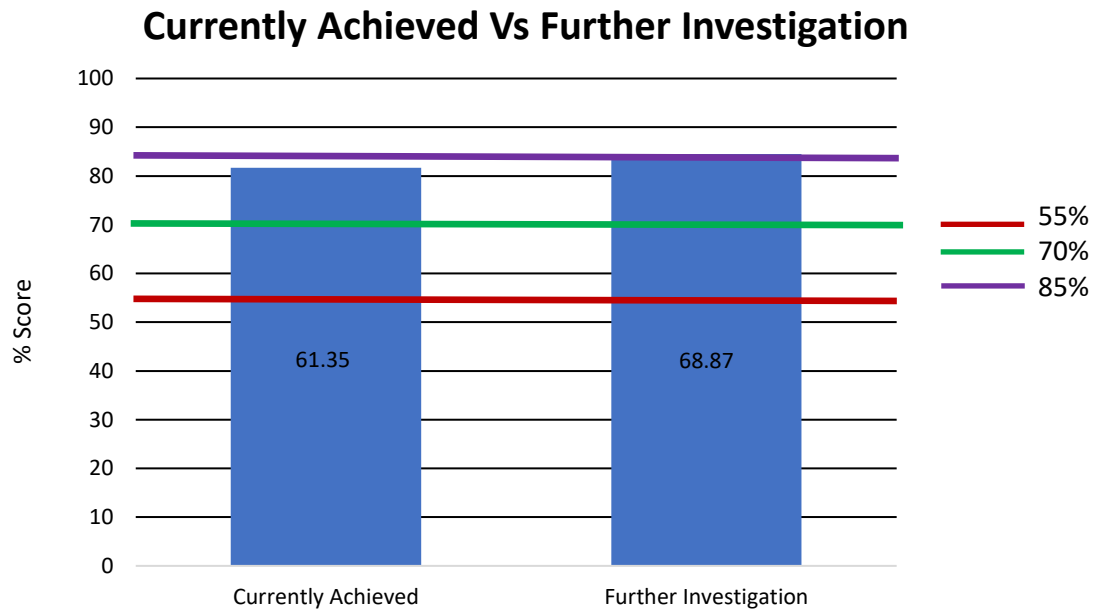
In summary, the BREEAM pre-assessment for the proposed development has an anticipated score of 61.95% which achieves an 'Very Good' BREEAM rating. If the credits highlighted in orange in the BREEAM assessment report is achieved, the development can increase the score within the BREEAM Very Good rating.

All credits which can be investigated to deliver a higher BREEAM score have been highlighted within the Table below.

Credit for Further Investigation	Requirement	Contribution Score
Man 2 Life Cycle Cost and Service Life Planning	Will and elemental life cycle cost analysis be carried out at RIBA stage 2 (concept design)?	1.54%
	Will a component level plan be developed by the end of RIBA stage 4 (technical design)?	0.77%
Hea 2 Indoor Air Quality	VOC levels to be in accordance with BRE criteria for VOCs and Formaldehydes?	0.92%
Man 3 Responsible Construction Practices	Will the principal contractor adhere to a considerate construction scheme?	1.54%
Hea 1 Visual Comfort	Will the design provide adequate view out for building users?	1.83%
Hea 2 Indoor Air Quality	VOC levels to be in accordance with BRE criteria for VOCs and Formaldehydes?	0.92%
Total Score		7.52%

Table 5.1 Credits for Further Investigation

If all these credits can be achieved the development could potentially achieve a BREEAM score of 68.87% which still delivers a 'Very Good' rating with 13.87% margin of contingency over the 55% target. Both scores have been visually represented within Graph 5.1 below.





Graph 5.1 Credit rating: Currently Achieved Vs Further Investigation

6 BREEAM ASSESSMENTS



The following section highlights the BREEAM credits that have been awarded for the proposed development at Ravenscourt Park Hospital Care – Community Hall (Block A) and the corresponding percentage score.

The design stage assessment and subsequent interim BREEAM Certification represents the performance of the building at the design stage of the assessment, typically prior to the beginning of operations on site. Certification at this stage does not, therefore, represent the building's final 'as built' BREEAM performance.



The post construction stage assessment and subsequent BREEAM Certification represents the final 'as built' performance and BREEAM rating. A final post construction stage assessment is completed and certified after practical completion of the building works.

6391	Ravenscourt Park Hospital Centre	BREEAM RFO 2014 Pre-Assessment (Parts 2, 3 & 4) Community building 26/01/23					 Cudd Bentley Consulting	
Credit	Description	Requirements	Achieved	Responsibility	Comments	Credits Available	Credits Achieved	Very Good Target Percentage %
Management								
Man 1 Project Brief and Design	To recognise and encourage an integrated design process that optimises building performance.	Will roles and responsibilities defined in accordance with BREEAM and set a project delivery for stakeholder contributions?	Y	PM/ Client	Action required before stage 2	1	1	0.77%
		Will all relevant third parties been consulted with comments influencing the outcomes of the concept design?	N	Client / SPPARC		1	0	0.00%
		Will a Sustainability Champion be appointed during the preparation and brief stage to facilitate BREEAM performance targets?	Y	CBC	Action required during stage 1	1	1	0.77%
		Will the Sustainability Champion monitor progress throughout the design process?	Y	CBC/Architect/Main contractor	Action required during stage 2	1	1	0.77%
Man 2 Life Cycle Cost and Service Life Planning	To deliver whole life value from investment and promote economic sustainability by recognising and encouraging the use of life cycle costing and service life planning to improve design, specification and through-life maintenance and operation.	Will and elemental life cycle cost analysis be carried out at RIBA stage 2 (concept design)?	FI	Specialist Consultant		2	0	0.00%
		Will a component level plan be developed by the end of RIBA stage 4 (technical design)?	FI	Specialist Consultant		1	0	0.00%
		Will the predicted capital cost for the building be reported?	Y	PM/ Client		1	1	0.77%
Man 3 Responsible Construction Practices	To recognise and encourage construction sites which are managed in an environmentally and socially considerate, responsible.	Will the principal contractor operate under an Environmental Management System, use responsibly sourced timber and best practice pollution prevention policies?	Y	Main contractor		1	1	0.77%
		Will a Sustainability Champion be appointed to monitor the project during construction, handover and close out stages?	Y	Main contractor		1	1	0.77%
		Will the principal contractor adhere to a considerate construction scheme?	FI	Main contractor	Minimum one credit required for Excellent rating	2	1	0.77%
		Will responsibility be assigned for monitoring energy, water and transport data?	Y	Main contractor		2	2	1.54%
Man 4 Commissioning and Handover	To encourage a properly planned handover and commissioning process that reflects the needs of the building occupants.	Will commissioning schedule and responsibilities be developed and accounted for?	Y	Main contractor/Client		1	1	0.77%
		Commissioning building services by appropriate commissioning manager or appropriate project team member?	Y	Main contractor/Client		1	1	0.77%
		Will a Building User Guide be developed prior to handover? Will a training schedule for building occupiers/managers at handover?	Y	Main contractor/Client	Minimum credit for Excellent rating	1	1	0.77%
					Total	17	12	9.22%



Green - Achieved
Blue - Not Achieved
Orange - To be Investigated

6391	Ravenscourt Park Hospital Centre	BREEAM RFO 2014 Pre-Assessment (Parts 2, 3 & 4) Community building 26/01/23					 Cudd Bentley Consulting	
Credit	Description	Requirements	Achieved	Responsibility	Comments	Credits Available	Credits Achieved	Very Good Target Percentage %
Health and Wellbeing								
Hea 1 Visual Comfort	To encourage and recognise projects that maximise opportunities for good daylighting, artificial lighting and occupant controls at the design stage to ensure best practice in visual performance and comfort for building occupants.	Will the potential for disabling glare be designed out without reliance on blinds?	Y	SPPARC		1	1	0.92%
		Will all relevant building areas be designed to achieve the appropriate daylight factor(s)?	Y	CONSIL	Action required during stage 2	3	2	1.83%
		Will the design provide adequate view out for building users?	FI	SPPARC		2	0	0.00%
		Will internal/external lighting be specified in accordance with the relevant CIBSE Guide/ British Standards?	Y	CBC/ Main Contractor		1	1	0.92%
Hea 2 Indoor Air Quality	To recognise and encourage a healthy internal environment through the specification and installation of appropriate ventilation, equipment and finishes.	An Air Quality Plan to be produced that will allow the building to be designed to minimise the concentration and recirculation of pollutants in the building?	Y	Specialist Consultant	Action required during stage 2	1	1	0.92%
		Ventilation supply and extract to be 10m apart and 20m away from external pollution?	N	CBC/Main contractor		1	0	0.00%
		VOC levels to be in accordance with BRE criteria for VOCs and Formaldehydes?	FI	SPPARC/ Main contractor		1	0	0.00%
		Will VOCs emission levels be tested at post construction?	FI	Main contractor		1	0	0.00%
		Will the building be designed to, or have the potential to provide, natural ventilation?	N	CBC/Architect		1	0	0.00%
Hea 4 Thermal Comfort	To ensure that appropriate thermal comfort levels are achieved through design, and controls are selected to maintain a thermally comfortable environment for occupants within the building.	Will thermal modelling of the design be carried out which informs the building services zoning and control strategy?	Y	Specialist Consultant	Action required during stage 2	3	2	1.83%
Hea 5 Acoustic performance	To ensure the buildings' acoustic performance including sound insulation meet the appropriate standards for its purpose.	Will the building meet the relevant acoustic performance standards and testing requirements?	Y	LOGIKA CONSULTANTS - Acoustician	Action required during stage 2	3	3	2.75%
Hea 6 Safety and Security	To recognise and encourage effective design measures that promote low risk, safe and secure access to and use of the building.	Will a suitably qualified security consultant (Architectural Liaison Officer) be appointed and security considerations accounted for?	Y	SQSS/SPPARC/Main contractor	Action required during stage 2	1	1	0.92%
Total						19	11	10.08%



Green - Achieved
Blue - Not Achieved
Orange - To be Investigated

6391	Ravenscourt Park Hospital Centre	BREEAM RFO 2014 Pre-Assessment (Parts 2, 3 & 4) Community building 26/01/23					 Cudd Bentley Consulting	
Credit	Description	Requirements	Achieved	Responsibility	Comments	Credits Available	Credits Achieved	Very Good Target Percentage %
Energy								
Ene 1 Reduction of Energy use and Carbon Emissions	To recognise and encourage refurbishment and fit-out projects that reduce operational energy demand, primary energy consumption and carbon emissions.	A target number of BREEAM credits to be achieved have been defined	FI	Specialist Consultant	To be reviewed on completion of energy modelling.	15	9	6.97%
Ene 2 Energy Monitoring	To recognise and encourage the installation of energy sub-metering that facilitates the monitoring of operational energy consumption.	Will a BMS or sub-meters be specified to monitor energy use by major energy consuming systems and tenancy areas?	Y	CBC/ Main Contractor	Minimum Standard (Excellent) Minimum Standard (Very Good)	2	1	0.77%
Ene 03 External lighting	To recognise and encourage the specification of energy efficient light fittings for existing and new lighting within the scope of refurbishment works	Will the average initial luminous efficacy of the external light fittings within the construction zone is not less than 60 luminaire lumens per circuit Watt? Will all external light fittings are automatically controlled to prevent operation during daylight hours and have presence detection in areas of intermittent pedestrian traffic?	Y	CBC/ Main Contractor		1	1	0.77%
Ene 4 Low Carbon Design	To encourage the adoption of design measures, which reduce building energy consumption and associated carbon emissions and minimise reliance on active building services systems.	Will Hea 4 (Thermal Comfort) be achieved?	Y	Specialist Consultant	Action required during stage 2	3	2	1.55%
		Will an analysis of the buildings passive design features be carried out?	Y	Specialist Consultant				
		Will the building use a BREEAM compliant free cooling strategy?	N	Specialist Consultant				
		Will a feasibility study be undertaken and recommended LZC technology installed?	Y	Specialist Consultant				
Ene 06 Energy efficient transportation systems	To recognise and encourage the specification of energy efficient transportation systems.	Will energy efficient transportation be used ?	Y	Specialist Consultant/ Main Contractor		2	2	1.55%
					Total	23	15	11.61%



Green - Achieved
Blue - Not Achieved
Orange - To be Investigated

6391	Ravenscourt Park Hospital Centre	BREEAM RFO 2014 Pre-Assessment (Parts 2, 3 & 4) Community building 26/01/23					 Cudd Bentley Consulting	
Credit	Description	Requirements	Achieved	Responsibility	Comments	Credits Available	Credits Achieved	Very Good Target Percentage %
Transport								
Tra 2 Proximity to Amenities	To encourage and reward a building that is located in close proximity to local amenities, thereby reducing the need for extended travel or multiple trips.	Will the building be in close proximity of and accessible to applicable amenities?	Y	TRANSPORT PLANNING ASSOCIATES		1	1	0.90%
Tra 5 Travel Plan	To recognise the consideration given to accommodating a range of travel options for building users, thereby encouraging the reduction of user reliance on forms.	Will a transport plan based on site specific travel survey/assessment be developed?	Y	TPA		1	1	0.90%
Total						2	2	1.79%



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Credit	Description	Requirements	Achieved	Responsibility	Comments	Credits Available	Credits Achieved	Very Good Target Percentage %
Water								
Wat 1 Water Consumption	To reduce the consumption of potable water for sanitary use in existing buildings from all sources through the use of water efficient components and water recycling systems.	Will there be a % reduction in the potable water consumption of the unit?	Y	CBC/ Main Contractor	WC - 4 flush volume Wash hand basins - 4.5 l/min Shower - 6 l/min Urinal - 1.5 l/bowl/hour Kitchen tap - 5 l/min Dish washer - 12 l/cycle Minimum standard (Excellent & Very good) 1 credit	5	3	2.69%
Wat 2 Water Monitoring	To ensure water consumption can be monitored and managed and therefore encourage reductions in water consumption.	Will there be a water meter on the mains water supply to the building(s)?	Y	CBC/ Main Contractor/SPPAR C	Minimum Standard (Excellent & Very good)	1	1	0.90%
		Will metering/monitoring equipment be specified on the water supply to any relevant plant/ building areas?	Y					
		Will all specified water meters have a pulsed output?	Y					
		If the site/building has an existing BMS connection, will all pulsed meters be connected to the BMS?	N/A					
Wat 3 Water Leak Detection and Prevention	To reduce the impact of water leaks that may otherwise go undetected.	Will a mains water leak detection system be installed on the buildings mains water supply?	Y	CBC/ Main Contractor/SPPAR C		1	1	0.90%
		Will flow control devices be installed in sanitary areas?	Y			1	1	0.90%
					Total	8	6	5.38%



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Credit	Description	Requirements	Achieved	Responsibility	Comments	Credits Available	Credits Achieved	Very Good Target Percentage %
Materials								
Mat 1 Environmental Impact of Materials	To reward projects where materials have been selected to reduce their life cycle environmental impacts through the use of robust life cycle environmental assessment tools and robust environmental data	A target number of BREEAM credits to be achieved will be defined Elemental assessment of environmental performance information required	FI	SPPARC / Main Contractor	Credit highlighted for further investigation.	6	3	3.88%
Mat 3 Responsible Sourcing of Materials	To recognise and encourage the specification of responsibly sourced materials for key materials used in refurbishment and fit-out.	Will all timber used on the project be 'Legally harvested and traded timber'?	Y	SPPARC	Minimum Standard (Excellent & Very good)	4	3	3.88%
		Will a sustainable procurement plan be developed?	Y	SPPARC/Main Contractor				
		Will materials specified for relevant elements will be responsibly sourced?	Y					
Mat 04 Insulation	To recognise and encourage the use of thermal insulation which has a low embodied environmental impact relative to its thermal properties.	Will the Insulation Index for the building fabric and services insulation is the same as or greater than 2.5?	FI	SPPARC/Main Contractor	Credit highlighted for further investigation.	1	0	0.00%
Mat 5 Designing for Robustness	To recognise and encourage adequate protection of exposed elements of the building and landscape, therefore minimising the frequency of replacement and maximising materials optimisation.	Will suitable durability/ protection measures be specified and installed to vulnerable areas of the building?	Y	SPPARC	Action required during stage 2	1	1	1.29%
		Will exposed building elements incorporate measures to limit degradations due to environmental factors?	Y	SPPARC				
Mat 6 Material Efficiency	To recognise and encourage measures to optimise material efficiency in order to minimise environmental impact of material use and waste.	Will all appropriate parties be consulted in optimising the use of materials throughout the course of the project?	Y	All design team	Action required during stage 2	1	1	1.29%
						13	8	10.34%

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6391	Ravenscourt Park Hospital Centre	BREEAM RFO 2014 Pre-Assessment (Parts 2, 3 & 4) Community building 26/01/23						
Credit	Description	Requirements	Achieved	Responsibility	Comments	Credits Available	Credits Achieved	Very Good Target Percentage %
Waste								
Wst 1 Project Waste Management	To promote resource efficiency via the effective management and reduction of refurbishment and fit-out waste and the reuse and direct recycling of materials.	A target number of BREEAM credits to be achieved was defined as 5	FI	PM/ Demolition Contractor/Main contractor	Pre-refurbishment audit required and materials either re-used on site or sent back to manufacturer for closed loop recycling Action required during stage 2	7	3	2.80%
Wst 3 Operational Waste	To recognise and encourage the provision of dedicated storage facilities for a buildings operational-related waste stream, so that this waste is diverted from landfill or incineration.	Will appropriate facilities for the storage of operational recyclable waste volumes be provided?	Y	SPPARC	2m ² of dedicated waste space per 1000m ² of net floor area One credit minimum standard for excellent	1	1	0.93%
		If relevant, will a static waste compactor(s) or baler(s) be specified/installed?	N/A					
		If relevant, will a vessel for composting suitable organic waste be specified/installed?	N/A					
Wst 6 Functional Adaptability	To recognise and encourage measures taken to accommodate future change of use of the building over its lifespan.	Will a Functional Adaptation Strategy appraisal be carried out by the end of RIBA Stage 2 (Concept design)?	Y	SPPARC	Credit highlighted for further investigation.	1	1	0.93%
					Total	9	5	4.67%

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Credit	Description	Requirements	Achieved	Responsibility	Comments	Credits Available	Credits Achieved	Very Good Target Percentage %
Land Use and Ecology								
Le 02 Protection of ecological features	To encourage the protection of existing ecological features from substantial damage during refurbishment or fit-out works.	Will a Suitably Qualified Ecologist (SQE), prior to any preliminary site refurbishment or fit-out or preparation works ? Will All existing features of ecological value within and surrounding the refurbishment or fit-out zone and site boundary area are adequately protected from damage during clearance, site preparation and refurbishment or fit-out activities in line with BS42020: 20131?	Y	SQE/Main contractor	Action required at stage 1	1	1	2.69%
Le 05 Long term impact on biodiversity	To encourage long term protection and enhancement of biodiversity on the site and surrounding area.	Will a landscape and habitat management plan, appropriate to the site, is produced covering at least the first five years after project completion in accordance with BS 42020:20131 Section 11.1.1.? Will this is to be handed over to the building owner/occupants for use by the grounds maintenance staff?	Y	SQE/Main contractor		2	2	5.38%
					Total	3	3	8.07%
Pollution								
Pol 1 Impact of Refrigerants	To reduce the level of greenhouse gas emissions arising from the leakage of refrigerants from building systems.	Will all refrigerants used within the building systems have a Global Warming Potential less than 10?	Y	CBC/ Main Contractor		3	2	2.07%
Pol 2 NOx Emissions	To contribute to a reduction in national NOx emission levels through the use of low emission heat sources in the building.	Will the NOx emissions produced from the building heating source meet BREEAM criteria?	Y	CBC/ Main Contractor		3	2	2.07%
Pol 3 Flood Risk & Surface Water Run Off	To avoid, reduce and delay the discharge of rainfall to public sewers and watercourses, therefore minimising the risk of localised flooding on and off site, watercourse pollution and other environmental	What is the actual/likely annual probability of flooding for the assessed site?	Low	PEREGA /Drainage Consultant		2	2	2.07%
		Will a Flood Risk Assessment be undertaken and ground level of the building/access meet BREEAM criteria?	Y	PEREGA /Drainage Consultant				
Pol 04 Reduction of Night Time Light Pollution	To ensure that external lighting is concentrated in the appropriate areas and that upward lighting is minimised, reducing unnecessary light pollution, energy consumption and nuisance to neighbouring properties.	Will external lightings be designed to in compliance with Table 2 (and its accompanying notes) of the ILP Guidance notes for the reduction of obtrusive light, 20111.	Y	CBC/ Main Contractor		1	1	1.03%
Pol 5 Reduction of Noise Pollution	To reduce the likely impact of noise arising from existing or newly specified fixed installations affecting nearby noise sensitive buildings.	Will a noise impact assessment be undertaken?	Y	LOGIKA CONSULTANTS- Acoustician		1	1	1.03%
					Total	10	8	8.27%
Total BREEAM Percentage Score								61.35%

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Orange - To be Investigated