Sustainability Statement for 17 Charterhouse Street

On behalf of: Anglo American and De Beers

August 2017

DOCUMENT CONTROL

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1.0	28 July 2017	H Mustafa	M Cotton	1st draft for comment
2.0	03 August 2017	H Mustafa	M Cotton	Updated following project team comments – Final draft
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EXECUTIVE SUMMARY

This Sustainability Statement sets out the approach to sustainable design, construction and operation of the proposed redevelopment of 17 Charterhouse Street, London. The appraisal has been developed by Twin&Earth for Anglo-American-DeBeers (the applicant) in support of application for planning permission to The London Borough of Camden. Whilst the appraisal summarises the sustainability principles and approach of the development, reference has been made to a number of documents that will be submitted in support of the planning application.

The proposed redevelopment comprises extensions to the office building to provide 3,700 sqm net additional office floorspace (Class B1a) - including part two-storey and part five-storey extensions within central courtyard; a single storey roof extension; and demolition of existing floorspace. The building will be remodelled through the part removal of the existing façade and part replacement with new glazed, metal and stonework façade. Access alterations include redesign of the existing pedestrian entrance and relocation of the vehicular entrance on Charterhouse Street. Existing plant and equipment will be remodelled and replaced. There will be provision for 168 cycle parking spaces, and associated landscaping works.

Figure 1. Proposed Charterhouse Street elevation (MCM Architects)

Planning Policy context

This appraisal has been structured around the GLA and London Borough of Camden's sustainable development policies and guidance, and demonstrates the sustainability of the proposed development. Specifically, the proposed development has been assessed against the policies in the London Plan (March 2015), the Mayor of London's Sustainable Design and Construction Supplementary Planning Guidance (April 2014), Camden Local Plan (Adopted 2010), Camden Local Plan (Adopted July 2017) and Camden Planning Guidance (CPG) 3 – Sustainability.

The London Plan states that all development proposals should demonstrate that sustainable design standards are integral to the proposal, including its construction and operation, and ensure that they have been considered at the beginning of the design process. The proposed sustainability strategy described in this report sets out the commitments that need to be incorporated into the detailed design, construction and operation of the proposed development in order to optimise its environmental performance and mitigate its baseline carbon dioxide emissions, covering issues such as management, health and wellbeing, energy, transport, water, materials, waste, land use and ecology.

The sustainability proposal

The proposed sustainability strategy is the result of a collaborative design process driven by the applicant and involved all disciplines within the design team. Sustainability input for the project was procured as early as the commencement of the feasibility stage.

This report focuses on demonstrating how the current design addressed the environmental aspects covered by planning policy and therefore the proposals have been arranged in line with the principles established in the Mayor of London's Sustainable Design and Construction SPG (April 2014), Camden Local Plan (Adopted 2010) and Camden Local Plan (Adopted July 2017) and Camden Planning Guidance (CPG) 3 – Sustainability.

The paragraphs below summarise the key aspects of the sustainability strategy.

Land Use, Site Layout and Building Design

- The development will alter and enhance the existing building with all construction works on previously developed land;
- Considerate architectural interventions have been developed to provide a scheme that is capable of accommodating the proposed extensions and alterations to the facade while respecting the historic significance of the adjacent existing Grade II listed building and enhancing the inherent architectural ideas and qualities, and improving the functionality and thermal performance of the building as a whole;
- The development will create a high quality, state-of-the-art Head Quarters for Anglo-American and De Beers within the center of Hatton Garden which has been at the heart of the jewellery and diamond trade since the 19th century.
- The design follows best practice environmental design, including access to daylight, ventilation and acoustic performance.

Reduction in energy and CO_2 and incorporation of renewable energy

- The development will use sustainable, energy efficient building measures to reduce site wide CO_2 emissions by a predicted 34.2% over base-line emissions;
- The energy strategy prioritises passive design measures, taking into account some of the limitations imposed by the existing building form. Features include:
    - Improved U-values for both opaque and transparent elements. U-values of all replaced elements (windows, walls, roof, floors) will be lower than the maximum allowable under both building regulation Part L2A (New Construction) and Part L2B (Existing Construction).
    - Solar control glazing, balancing passive solar control versus overheating and controlling thermal comfort;
    - High light transmittance glazing;
    - Mixed mode ventilation in the ground floor restaurant area through incorporation of low and high level openings;
    - The façade design incorporates deep reveals, providing both vertical and horizontal shading;
    - Specification of high efficiency lighting systems based on LED technology;
    - Presence detection on lighting controls in occupied areas;
    - Daylight dimming in perimeter office areas.
    - Low energy, variable volume fans;
    - Heat recovery integrated into ventilation systems of the main Air Handling Units;
    - Efficient Fan Coil Units utilising ec-dc variable speed motors;
- A low carbon heating and cooling system will be incorporated including:
    - Air source heat pump that will meet a majority of the space heating and cooling demands in the Charterhouse Street /Saffron Hill Blocks. The system will recover heat from the building when there is a simultaneous demand for heating and cooling.
    - The heat pump will meet 100% of the hot water demand of the restaurant and changing rooms
    - The buildings heating system will be future proofed to allow the heating systems to connect to a district heating network.
- Renewable electricity will be produced on site through roof mounted photovoltaic panels including:
    - Saffron Hill Block (roof): 37 panels at 30° pitch
    - Saffron Hill Block (plant room): 8 panels mounted vertically in front of the plant screen
    - Charterhouse Block (plant room): 52 panels mounted vertically in front of plant screen
    - St Andrews House: 40 panels at 30° pitch

Water efficiency:

- Potable water savings will be maximised through the incorporation of:
    - Grey water harvesting which will collect and treat water from wash hand basins, sinks and showers, for use in toilet flushing;
    - Provision of water efficient WCs, including sanitary supply shut-off and pulsed water metering;
    - Water wastage due to major leaks will be avoided through the installation of a leak detection system; and installation of solenoid valves linked to PIR sensors to provide automatic water shut-off to all toilets and shower areas;
    - Utilising greywater and rainwater harvesting at roof level for irrigation of soft landscaping and planting.

Materials and Waste:

Materials

- Materials and waste are considered a key aspect for a project of this size and a holistic approach has been taken that considers the project from construction to the end of life;
- Opportunities for lean design are being reviewed at each stage of design which will minimise the amount of raw materials used;

- Embodied impact of materials is a key aspect of the project brief. Retention of the existing structure along with specification of newly installed materials including hardscaping materials which have low embodied energy will reduce the buildings environmental impact;
- Responsible sourcing – only FCS or PEFC certified timber will be used in the project and materials will be responsibly sourced wherever possible;
- All insulation will be specified by giving consideration to the balance between thermal efficiency and embodied carbon.

Waste

- The Contractor will be required to develop and implement a Resource Management Plan establishing targets for both maximum waste generation and minimum % of deviation from landfill;
- Suitably sized, dedicated and accessible areas are being provided for the storage of recyclable waste. A compactor currently exists for the site which will be re-used for the recycling of cardboard;
- Adaptability and flexible design studies have been undertaken to accommodate future changes with the minimum possible impact on structure and services;
- Wastage during operation due to materials replacement will be reduced by specifying suitable protection measures to vulnerable areas as well as by giving careful consideration to the risk of degradation.

Health & Wellbeing:

- Detailed thermal comfort simulations will be undertaken during the detailed design stage to inform the building envelope specification and thermal comfort levels;
- A natural ventilation strategy will be incorporated in the double height restaurant facing the central courtyard. Actuated low and high-level openings, along with large operable doors will provide natural ventilation during mid seasons;
- Low VOC finishes will be specified wherever possible.
- Ventilation rates will be specified in line with BCO standards (minimum of 12 litres/person/second)

Nature Conservation and biodiversity:

- To maximise the biodiversity of the site, the following ecological measures are proposed:
  - Incorporate biodiverse green roof at roof level along Saffron Hill.
  - Introduce artificial faunal habitat aids to improve the biodiversity value of the site, and the local area, for birds, bats and invertebrates.

Flooding and water pollution:

- Water run off rates from the site will be minimised through:
  - The discharge for the extension section of building will be restricted to a flow rate equal to a 50% betterment on existing brownfield rates. The other existing surface water outfalls from the site will remain unchanged. The discharge from the extension will be at a variable rate to suit differing storm return periods, however if this is not possible the discharge will be attenuated to 50% of the existing 1 in 1 year rate where reasonably practicable.
  - A Green Roof will be incorporated which will help to reduce peak surface water run off rates from the site.
  - Rainwater harvesting is also being considered using a "blue roof" which will provide irrigation for planting and attenuate any surplus rainwater.

Air and noise pollution:

- Dust and particulate matter during the construction stage, vehicle exhaust emissions and air / noise pollution from building systems will be minimised through:
  - Adoption of best practice guidance on dust and emissions from construction and demolition;
  - Development of a Site Environmental Management Plan (SEMP), including a requirement for the contractor to register the site with the Considerate Constructors Scheme (CCS).
  - Design plant to operate within the noise limits required by planning to ensure this does not exceed background noise levels;
  - To limit the intake of pollution into the building, mechanical ventilation will be utilised with air intakes located away from sources of pollution including roads.

Promotion of Sustainable Transport:

- The site is located in an area with outstanding public transport service and has good pedestrian accessibility to surrounding retail, leisure and public transport nodes; the site has an accessibility index (TfL) of (6b).
- To reduce car usage, the proposed development will include 168 cycle parking spaces which will be safe, secure, integrated, convenient and accessible to staff and visitors. Facilities will include cycle storage as well as changing areas with lockers and showers;
- The development is well served by public transport including a frequent number of bus services and London Underground stations which are located within a kilometre (15 minutes' walk) from the site.

Environmental Certification - BREEAM

London Borough of Camden planning policy requires all non-domestic development of more than 500m² to achieve a minimum BREEAM rating of 'Excellent'.

The proposed redevelopment of 17 Charterhouse Street will consist mainly of the major refurbishment of the existing building, including refurbishment of the façade, vertical and horizontal extensions to the existing building, and hard and soft landscaping works.

Due to the complexity of the building, it has been advised that the project undertakes a BREEAM Bespoke scoping exercise to ensure that the criteria are tailored to account for the New Build and Refurbished elements. Pre-Application advice from the BRE indicates that the anticipated assessment type will be: BREEAM 2014 Non-Domestic Refurbishment & Fit-Out – Bespoke. Due to the timescales and level of information required for the application, it has not been feasible at the current project stage to submit the BRE bespoke application in advance of this application.

In the interim, the BREEAM Licensed Assessor organisation, Twin and Earth, have adopted the BREEAM 2014 New Construction (Fully Fitted) criteria for the proposed development. The requirements for New Construction are typically more onerous than that required for refurbishment and as such the intention is that by adopting this approach, the design will be "future-proofed" upon receipt of the Bespoke criteria.

A BREEAM pre-assessment for the office has been produced with input from the design team. Through a number of workshops with the client and design team as well as further correspondence and reviews undertaken by the assessor, credits have been classified as Targeted, Potential or Unobtainable depending on their achievability, as follows:

- Targeted: credits which are deemed achievable at this stage.
- Potential: credits which could be achieved, but which require further investigation and may have design and/or cost implications
- Unobtainable: credits which cannot be achieved due to site or design constrains

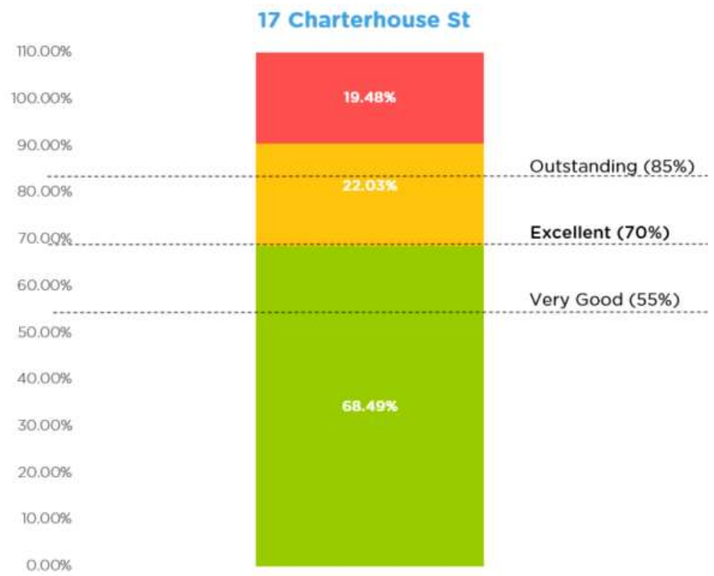

Figure 2. Targeted, potential and unobtainable credits – based on the pre-assessment

The pre-assessment identified credits worth a total of 68.49% which is currently 1.51% below the threshold for Excellent; however, there are 22.03% of potential credits which will be reviewed during RIBA Stage 3 (design stage) in order to determine any additional credits which could be achieved, therefore the project maintains an aspiration to achieve Excellent. At this stage, an 'Outstanding' rating is deemed to be unachievable due to the energy performance limitations imposed by the site location. A summary of the "potential" credit and their status have been provided within the BREEAM Pre-Assessment checklist (Appendix C). Compliance with the Minimum Standards for Excellent have been achieved therefore all necessary pre-requisites have been met to ensure a BREEAM Excellent is possible.

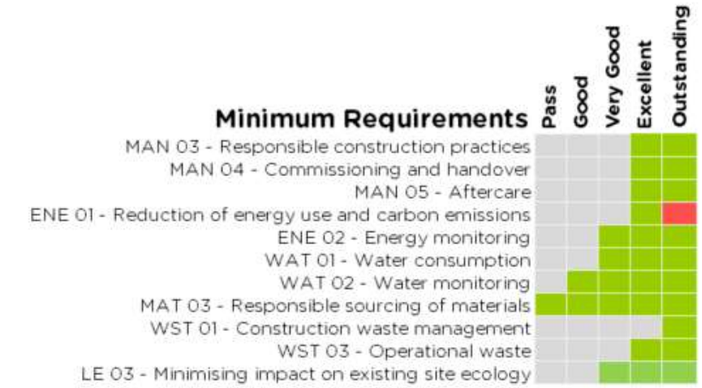

Figure 3. Assumed compliance with minimum requirements

The following un-weighted scores have been achieved at this stage of design for the proposed development in line with Camden Policy:

	Camden Policy target	Targeted Score	Potential Score
Energy	60%	65%	65%
Water	60%	78%	100%
Materials	40%	31%	62%

Table 1. Summary of performance against BREEAM categories in line with Camden policy

Compliance with the Energy and Water targets will be achieved; however, performance in the materials section will depend on the final specification of new building services. Additionally, credits in the Materials section have been limited by the uncertainty regarding the final BREEAM bespoke credits, and thereby ultimately creating a significant amount of uncertainty on how materials will be assessed as this varies between New Construction and Non-Domestic Refurbishment and Fit-Out.

It has been agreed by the project team that the project will maintain an aspiration to achieve BREEAM Excellent. Following development of the Bespoke criteria, a revised pre-assessment will be re-submitted to Camden.

CONTENTS

1. INTRODUCTION

1.1 Purpose of the report

This report sets out the approach to sustainable design, construction and operation of the proposed development works at 17 Charterhouse Street, London. The report has been prepared in support of applications for planning permission which will be submitted to The London Borough of Camden.

Assessment of the sustainable performance of the proposed development has been demonstrated through a Sustainable Building Assessment and pre-assessment of the proposed office development against the BREEAM New Construction 2014 environmental assessment methodology. The Sustainable Building Assessment demonstrates how the proposed development has been designed to meet the 'Mayors Priorities' as stated in the Sustainable Design and Construction Supplementary Planning Guidance, as well as relevant policies within the London Plan (2015), Camden Local Plan (Adopted 2010), Camden Local Plan (Adopted July 2017) and Camden Planning Guidance (CPG) 3 – Sustainability. These policies / standards include measures to achieve the following sustainable design principles:

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

The following sections detail the sustainability credentials of the proposed development against the above topics and aims to demonstrate the holistic approach taken to ensure the sustainability of the proposed development and how this approach will result in a measurable improvement in the sustainability of the development during construction and operation.

The sustainability measures described in this Sustainability Statement were developed in consultation with the project team and following pre-application feedback from officers at The London Borough of Camden.

1.2 Description of proposed development

The principle aim of the remodelling of the building is to create an efficient, high quality workspace to meet the demands of the 21st century as well as achieving the performance requirements of new offices in central London.

The new reception will provide an open and welcoming entrance that will flow into the new heart of the building including a double height glazed courtyard extension. The office space will be opened to enhance flexibility, connectivity and create a contemporary working environment and ultimately the existing interlinked buildings become one building.

The internal cores will be rationalised and remodelled to provide new WC cores, lifts and stairs while working with the existing structural grain. A new central accommodation stair will be inserted into the heart of the building to enhance connectivity, adjacencies and the sense of dynamism through the office floors.

The proposed new façade to 17 Charterhouse Street and the linking Saffron Hill block will be transformed to bring a new identity to the building. The principle aim of the façade remodelling is to give the building a new sense of understated elegance, finesse, sophistication and a timeless high quality.

The existing structural rhythm of the building provides the basis of the new elevation proposals but substituting the heavy stone base for a more open and transparent feel. The structural width and rhythm is counter pointed by the window paneling up the façade while maintaining the concept of base, 'piano nobile' and top floor.

The proposed glazed new courtyard 'pavilion' will create a new 'heart' for the building transforming the link between 17 Charterhouse Street and the Saffron Hill wings. Its proximity to the St Andrew's building will help to re-instate the original urban fabric.

The aesthetic of the courtyard side extension to the Saffron Hill link building will follow the design principles of the main Charterhouse Street façade.

The use of a simple palette of high quality materials will reinforce the aims of transforming this building.

The Saffron Hill link building will retain its own secure entrance with the refurbished lifts and stair providing access to the whole building. All building deliveries and couriers will still use the main Saffron Hill delivery entrance linked via Greville Street other than the secure deliveries, which will use the proposed new entrance on Charterhouse Street.

Figure 4. Proposed Charterhouse Street elevation (MCM Architects).

1.3 An integrated approach to sustainability

The redevelopment of the Anglo-American and De Beers offices provides a significant opportunity to create an exemplar Head Quarters. The alterations and re-use of 17 Charterhouse Street provides an opportunity to create a refurbished building which exemplifies current best practice in environmental design and operation.

The site is located within the Central Activity zone of Hatton Garden. The area is London and the UK's largest jewellery district and has been established as a center for the jewellery and diamond trade since the 19th century. Today the area is home to nearly 500 businesses and over 50 shops related to the industry. The application site is located in the eastern part of Hatton Garden which is characterised by large scale office buildings.

Sustainability has been at the core of the design since the initial feasibility stages. To inform the development options for the building, early assessments were undertaken of the relative environmental impacts of different use classes, factoring in the potential thermal and functional performance limitations as a result of the building's retained elements.

During stages 1 and 2, the key focus has been on embedding sustainability, with the key drivers being planning submission and BREEAM. In both instances, there has been a keen focus to ensure that the sustainability measures are optimized, and therefore targeting the early stage BREEAM points has been a priority. These early stage points ensure there is sufficient space within the design to accommodate for any changes / integration, thereby allowing sufficient time and accountability of costs; these early points are primarily geared towards the following aspects:

- Embedding the stakeholders requirements within the Project Brief and design outcomes
- Identifying any existing ecological value and maximizing ecological value
- Optimizing building performance through utilising passive design solutions and low / zero carbon technologies
- Ensuring that the security requirements of the site are understood and security measures established and agreed.

The result is a design that accommodates the proposed office and associated uses, respects the historic significance of the existing building, and which will also deliver lower energy consumption and carbon emissions through careful integration of new and replacement elements that will help to minimise energy consumption.

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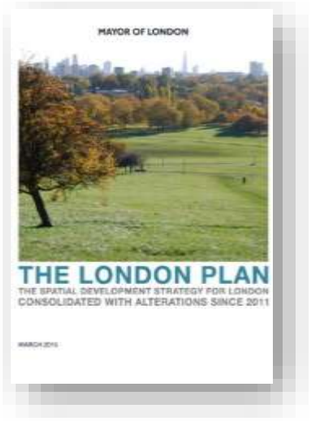
2. POLICY FRAMEWORK

2. POLICY FRAMEWORK

This section summarises the national and local planning policy and regulations applicable to the development. Polices on sustainable design and construction are set out in the following:

- National Planning Policy Framework
- London Plan March 2015 (FALP)
- The London Borough of Camden planning policies



2.1 National Policy

National Planning Policy Framework

The National Planning Policy Framework (NPPF) was published on 27 March 2012 as a key part of Government reforms to make the planning system less complex and more accessible, to protect the environment and to promote sustainable growth. Planning Practice Guidance (PPG) was published by the Government on 6 March 2014 and provides guidance on the implementation of the NPPF policies. The NPPF and the PPG outline the Government's planning policies for England to support Local Authorities on the development of local planning policies.

2.2 London Plan

The London Plan (March 2015) is the overall strategic plan for London which sets out an integrated economic, environmental, transport and social framework for the development of London over the next 20–25 years.

The plan brings together the geographic and locational (although not site specific) aspects of the Mayor's other strategies including those dealing with: Transport, Economic Development, Housing, Culture, Social issues and Environment including climate change (adaptation and mitigation), air quality, noise and waste.

Guidance on how to demonstrate compliance with sustainability policies within the London Plan is contained in the Mayor of London's Sustainable Design and Construction SPG (April 2014). The SPG contains best practice guidance on how to meet the sustainability targets set out in the London Plan, and provides examples of how to implement sustainability measures within developments.

The London Plan includes a range of policies that relate to Sustainable Design and Construction. Policy 5.3 states that new development should include measures to achieve the following sustainable design principles:

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

The specific policies that have been considered when developing the sustainable strategy for the development are listed in Appendix A.

2.3 Local Policy

Local planning policy is set out in the London Borough of Camden's Local Development Framework, and the recently adopted Local Plan (June 2017) including:

- Camden Core Strategy 2010-2025 (adopted 2010)
- Camden Development Policies 2010-2025
- Camden Local Plan (adopted June 2017)
- Camden Planning Guidance (CGP) 3 – Sustainability

Consideration has also been given to the following documentation:

- Climate Change Mitigation and Sustainable Design (June 2016)
- Camden Local Plan Monitoring Indicators (June 2016)

Relevant Sustainability policies applicable to the development are listed below. Please see appendix A for details of applicable policy wording.

Camden Core Strategy (2010):

- CS11 – Promoting sustainable and efficient travel
- CS13 – Tackling climate change through promoting higher environmental standards
- CS14 – Promoting high quality places and conserving our heritage
- CS15 – Protecting and improving our parks and open spaces and encouraging biodiversity
- CS16 – Improving Camden's health and well-being
- CS17 – Making Camden a safer place
- CS18 – Dealing with our waste and encouraging recycling
- DP16 – The transport implications of development
- DP17 – Walking, cycling and public transport
- DP18 – Parking standards and limiting the availability of car parking
- DP19 – Managing the impact of parking
- DP20 – Movement of goods and materials
- DP21 – Development connecting to the highway network
- DP22 – Promoting sustainable design and construction
- DP23 – Water
- DP24 – Securing high quality design
- DP25 – Conserving Camden's heritage
- DP27 – Basements and lightwells
- DP28 – Noise and vibration
- DP29 – Improving access
- DP31 – Provision of, and improvements to, open space and outdoor sport and recreation facilities
- DP32 – Air quality and Camden's Clear Zone

Camden Local Plan (2017):

- Policy C1 - Health and wellbeing
- Policy C5 - Safety and security
- Policy C6 - Access for all
- Policy A3 - Biodiversity
- Policy A4 - Noise and vibration
- Policy D1 - Design
- Policy CC1 - Climate change mitigation
- Policy CC2 - Adapting to climate change
- Policy CC3 - Water and flooding
- Policy CC4 - Air quality
- Policy CC5 - Waste
- Policy T1 - Prioritising walking, cycling and public transport
- Policy T2 - Parking and car-free development
- Policy T4 - Sustainable movement of goods and materials

2.3.1 Camden Planning Guidance (CGP) 3 – Sustainability

The following summarises key sustainability requirements established by the policies above and further guidance on the CPG3.

Sustainable design solutions

The proposed design has successfully adopted the sustainable design principles as noted in policy DP22 (Camden CPG3) including (but not limited to):

Design

- The layout of uses
- Floorplates size / depth
- Floor to ceiling heights
- Location, size and depth of windows
- Limiting excessive solar gain
- Reducing the need for artificial lighting
- Shading methods, both on or around the building
- Optimising natural ventilation
- Design for and inclusion of renewable energy technology
- Sustainable urban drainage including provision of a green or brown roof
- Adequate storage space for recyclable materials, composting where possible
- Bicycle storage
- Measures to adapt to climate change
- Impact of microclimate

Fabric / Services

- Level of insulation
- Choice of materials, including – responsible sourcing, re-use and recycled content
- Air tightness
- Efficient heating, cooling and lighting systems
- Effective building management system
- The source of energy used
- Metering
- Counteracting the heat expelled from plant equipment
- Enhancement of / provision for biodiversity
- Efficient water use
- Re-use of water
- Educational elements
- On-going management and review

As far as possible the above design principles have been addressed within this sustainability statement although there are aspects which are related to energy performance and have been addressed within the Energy Statement (developed by Twin & Earth).

Water Efficiency

- At least 50% of water consumed in homes and workplaces need to be of drinkable quality re-using water.
- All developments are to be water efficient.
- Developments over 10 units or 1000sq m should include grey water recycling

Sustainable Materials

- Reduce waste by firstly re-using your building, where this is not possible you should implement the waste hierarchy.
- The waste hierarchy prioritises the reduction, re-use and recycling of materials.
- Source your materials responsibly and ensure they are safe to health.
- All developments should aim for at least 15-20% of the total value of materials used to be derived from recycled and reused sources. This should relate to the WRAP Quick Wins assessments or equivalent.

Sustainable assessment tools

- Developments of 500sqm or more of non-residential floorspace will need to be designed in line with BREEAM.

Developments are encouraged to achieve the following ratings: from 2016 – BREEAM Excellent with the Minimum standard for the following categories (% of un-weighted credits):

- Energy 60%
- Water 60%
- Materials 40%

Green roofs

- All developments should incorporate green and brown roofs.
- The appropriate roof or wall will depend on the development, the location and other specific factors.
- Specific information needs to be submitted with applications for green/brown roofs and walls.
- Special consideration will be given to historic buildings to ensure historic and architectural features are preserved.

Biodiversity

Proposals should demonstrate:

- how biodiversity considerations have been incorporated into the development;
- if any mitigation measures will be included; and
- what positive measures for enhancing biodiversity are planned.

Flooding

- All developments are required to prevent or mitigate against flooding.
- All developments are expected to manage drainage and surface water.
- The development should follow the drainage hierarchy

Adaptation to climate change

- All development should consider how it can be occupied in the future when the weather will be different.
- The early design stage is the most effective time to incorporate relevant design and technological measures.

2.3.2 Pre-Application Advice

Pre-Application feedback from Camden stipulates the following sustainability requirements:

- All major developments to incorporate greywater harvesting, unless demonstrated to be unfeasible
- Major developments should aim to achieve 15- 20% of the total value of materials used to be derived from recycled and reused sources
- The development will be expected to incorporate a green roof/s
- The development should undertake measures to reduce overheating risk and reliance on cooling, and demonstrate in the Energy and Sustainability Statement how the Mayor's Cooling Hierarchy has been followed.
- Engage with Citigen to assess if there is enough capacity to connect to this network.
- The development should primarily seek to connect to an existing network. If this is not possible (and an alternative energy strategy is not possible) and proposes CHP instead, then the applicant will be required to demonstrate that it is technically and economically feasible and suitable for the development. This will include submission of details on the heat and electricity demands of the site, and further details on how the CHP will operated to meet these demands. also expect applicants to consider economic feasibility and how the CHP will be maintained and operated and any electricity exports to the grid. The design of the network to be in line with CIBSE Code of Practice. Additionally, a detailed air quality assessment will be required for all schemes proposing CHP.
- Achieve greenfield run-off rates wherever feasible and as a minimum 50% reduction in existing run off rates.
- Design of the drainage system to the 20% climate change allowance on top of the 1 in 100 year storms. Then a sensitivity test against the 40% allowance to ensure that the additional runoff is wholly contained within the site and there is no increase in the rate of runoff discharged from the site safe.
- Air quality assessment
- All developments in the borough should be compliant with the ecology, nature conservation and biodiversity requirements of the London Plan, as well as Camden's Core Strategy and Development policies, and comply with the mitigation hierarchy (information, avoidance, mitigation, compensation, additional benefits) set out within these policies.

All developments to incorporate brown roofs, green roofs and green walls unless it is demonstrated this is not possible or appropriate.

2.4 Additional Policy References

2.4.1 BREEAM

BREEAM is being used as a benchmarking tool in the design of the offices and associated uses. The aim of BREEAM is to estimate the environmental impact of buildings.

BREEAM awards credits in relation to the following construction, design and procurement options:

- Management – commissioning, education and training of building users
- Health and Wellbeing – ventilation, daylighting, occupant controls
- Energy – carbon emissions, heating and lighting control, energy monitoring, use of daylight, provision of shading
- Transport – car parking provision, cyclist facilities, public transport nodes, distance to local amenities, green transport plan
- Water – leak detection, water meters, low flush toilets and grey water use
- Materials – specification of building materials and prohibition of hazardous substances

- Land-use and Ecology – protection of ecological features and protection of natural habitats, enhancement of ecological value
- Pollution – pollution monitoring, ozone depleting substances, NOx emission rates, noise pollution

2.4.2 Summary of BREEAM targets

The proposed redevelopment is currently being assessed against the BREEAM 2014 New Construction V5.0 manual however given the extent of new and retained elements, Twin & Earth BREEAM consultants have advised that the project be submitted for a BREEAM Bespoke criteria, whereby the credits are tailored according to the scope of works and thereby allowing for an area-weighted approach to each credit.

The following table sets out the assessment methodology and targeted rating:

Use	Assessment method	Targeted score
Offices	BREEAM 2014 Non-Domestic Refurbishment & Fit-Out – Bespoke	Excellent

For the purpose of the initial application, the development has been assessed against the BREEAM New Construction 2014 credit criteria. It is anticipated that the BREEAM New Construction criteria would ensure that all the requirements have been appropriately addressed to a sufficient degree to allow for any design implications should there be significant differences following receipt of the bespoke criteria.

Upon receipt of the bespoke criteria a revised pre-assessment will be submitted to Camden following consultation with the project team.

3. SUSTAINABLE BUILDING ASSESSMENT

3. SUSTAINABLE BUILDINGS ASSESSMENT

3.1 Response to development policies

This section summarises how the development responds to regional and local polices on sustainable design and construction. The responses cover the key principles that are set out in the Mayor of London's Sustainable Design and Construction SPG (April 2014) and Camden Core Strategy (Adopted 2010) and Camden Local Plan (Adopted June 2017). Relevant policies within the London Plan and Camden's Policy are referenced below within each section. In addition, references to other supporting documents that have been submitted as part of this planning application are included in the body of the text. The documents that are referenced are listed towards the end of this report.

Land

Policy Requirements

- Developments to demonstrate that they have incorporated design principles which contribute to community safety and security
- The Council will require development to incorporate sustainable design and construction measures.
- Developments to reduce their water consumption, the pressure on the combined sewer network and the risk of flooding
- The Council will require all developments, including alterations and extensions to existing buildings, to be of the highest standard of design.
- All buildings and places must meet the highest practicable standards of access and inclusion
- Proposals in Hatton Garden which increase the total gross floorspace by more than 200 sqm shall provide 50% of the additional floorspace as affordable premises suitable for the jewellery sector.
- Through both their Local Plans and planning decisions, boroughs should ensure development patterns reflect the strategic spatial vision for London's growth as set out in Chapter 2 of the London Plan.
- Through both their Local Plans and planning decisions, boroughs should aim for 100% of development to be delivered on previously developed land.
- Developers should optimise the scale and density of their development, considering the local context, to make efficient use of London's limited land.
- When planning a basement development, developers should consider the geological and hydrological conditions of the site and surrounding area, proportionate to the local conditions, the size of the basement and lightwell and the sensitivity of adjoining buildings and uses, including green infrastructure.

Development response

The existing buildings are currently vacant, however, until March 2017 they were in use as the head offices for De Beers, the renowned diamond traders who have been based in Hatton Garden for the past 100 years. The building use was a mix of office space (B1a) and jewellery specific light industrial use (B1c). Both of these uses are priority uses for this area in the Local Development Framework and the emerging Local Plan.

The proposal is to increase the amount of B1a and B1c floorspace at the site to enable AADB's head office to return to the site. Policy DP13 and emerging policies E1 and E2 seek to secure a strong economy by continuing business use. As such, the proposal will retain and expand employment in the area. Pre-application feedback from Camden has also expressed their approval for the return to Hatton Garden for Anglo-American and De Beers as this would be a benefit to the rest of the jewellery industry in the area which Camden is looking to protect and enhance. When the provision of jewellery workspace is not possible due to the nature of the site or the development, the Council will seek a financial contribution towards support for the jewellery industry. Anglo American and De Beers are committed to such a financial contribution.

The property is situated in the south-easternmost section of the Hatton Garden Conservation Area and occupies the most southern tip of the London Borough of Camden (the south side of Charterhouse Street falls within the City of London). The principal building has its main frontage on Charterhouse Street and a secondary frontage and extension on Saffron Hill. Its curtilage stretches in the north to Bleeding Heart Yard and to the rear boundary with properties in Ely Place, some of which are grade II listed. On the west side of the site is the grade II listed 1870s St Andrew's House, an early social housing block. To its north is a 19th century light industrial building fronting onto Bleeding Heart Yard, which is a positive contributor to the conservation area.

Responses related to safety and security, sustainable design and construction and flood risk are covered in other sections.

London Plan Policies: 1.1, 2.6, 2.7, 2.8, 2.9, 2.10, 2.11, 2.12, 2.13, 2.14, 2.15, 2.16, 2.17, 2.18, 3.3, 3.4, 3.5, 4.3, 5.12, 5.13, 5.3, 5.14, 5.18, 6.1, 6.3, 7.13, 7.14, 7.15, 7.19, 7.6
Camden Policies: CS 17, DP 22, DP 23, DP 24, DP 25, DP 29, C1, D1, CC3

Site Layout & Building Design

Policy Requirements

- Reducing the effects of and adapting to climate change by minimising the need to travel by car and help support local energy networks, promoting the efficient use of land and buildings, minimising carbon emissions from the redevelopment, construction and occupation of buildings by implementing, the Be Lean, Be Clean, Be Green energy hierarchy and designing buildings that facilitate climate change adaptation

- The Council will require development to incorporate sustainable design and construction measures.

- The Council will require all developments, including alterations and extensions to existing buildings, to be of the highest standard of design.

- Incorporate consultation and feedback from the Designing Out Crime Officer at the Metropolitan Police

- The design of the site and building layout, footprint, scale and height of buildings as well as the location of land uses should consider:
  - The layout of uses
  - Floorplates size / depth
  - Floor to ceiling heights
  - Location, size and depth of windows
  - Limiting excessive solar gain
  - Reducing the need for artificial lighting
  - Shading methods, both on or around the building
  - Optimising natural ventilation
  - Design for and inclusion of renewable energy technology
  - Sustainable urban drainage including provision of a green or brown roof
  - Adequate storage space for recyclable materials, composting where possible
  - Bicycle storage
  - Measures to adapt to climate change
  - Impact of microclimate

Development response

The design of the proposed development, layout and scale maximises the retention of the existing structure, whilst improving the functionality and thermal performance of the building as a whole. Considerable architectural interventions have been developed to provide a building which maximises the existing footprint of the site, which includes for additional floors and horizontal extensions.

The redevelopment of Anglo-American-DeBeers Head Quarters presents a unique opportunity to re-imagine the site and to create a vibrant and dramatically transformed public realm. The project will create brand new high specification Head Quarters to accommodate the day-to-day operations of Anglo American and De Beers.

The impact on the microclimate (wind and solar exposure) will be largely unaffected by the proposals given the scale of existing mass retention, in particular at ground floor level.

The proposed development has been designed to accommodate future changes in climate, namely increased precipitation and temperatures. The current design incorporates passive design measures aimed at reducing the building primary energy consumption by reducing heating and cooling loads [Ref 1]. This includes: shading from adjacent buildings surrounding the site, deep window reveals, natural ventilation to the restaurant area, specification of high performance solar control glass.

The proposed development occupies 100% of the existing building footprint, ensuring no change in impermeable area which will assist in ensuring that there will be no increase in surface water run-off from the proposed development. Surface water run-off and flood risk in considered further in the following sections. Sustainable urban drainage has been incorporated into the scheme including the provision of a green roof on the Saffron Hill Block [Ref 2]. Options for blue roofs are also being considered but will be reviewed during the detailed design stages.

Occupied areas have been located to make use of natural daylight:

- The existing structure has been 'de-cluttered' where possible to provide open spaces with regular column grids
- The ground floor glazed restaurant extension has been designed to maximise light levels, whilst providing the opportunity for natural ventilation due to its proximity to the central courtyard.
- Lifts and risers have been consolidated into three cores which are inset from the facade so as not to impede assess to daylight and views.
- The ground floor reception area will provide a deep plan, double height space in parts, to ensure that natural light from the glazed restaurant permeates deep into the space.
- The Saffron Hill Block will maintain its dual aspect to ensure good daylight penetration.

The floor to ceiling heights on the ground to 4th floors are partially constrained by the slab to slab heights of existing structure. Where possible, the ceiling heights have been maximised by minimising the depth of the services void and use of cellular structural beams in the extended areas which maximise the floor to ceiling heights

A Suitably Qualified Security Consultant has been appointed during the design stage to undertake a security needs assessment to determine the level of security required for the site. Consultation has been carried out with the Anglo-American and De Beers in-house security team and the design proposals presented to the Designing Out Crime Officer at the Metropolitan Police who has approved the design proposals with no further recommendations. Given the nature of the development, security is of the highest priority.

A real-time energy display shall be located in the vicinity of the ground floor reception to indicate visually the actual energy consumption for the building displayed in Real Time. The display can also be configured to show the energy being generated by the PV cells.

Consideration in relation to storage space of recyclable materials has been considered within the "Waste" section.

Cycle storage provision has been proposed in line with the London Plan, although this is addressed in more detail within the "Sustainable Transport" section.

London Plan Policies: 2.18, 5.2, 5.3, 5.4, 5.6, 5.7, 5.9, 5.10, 5.11, 5.12, 5.13, 5.16, 5.18, 5.21, 6.1, 6.7, 6.9, 6.10, 7.1, 7.6, 7.14, 7.15, 7.18, 7.19, 7.21, 7.22
Camden Policies: CS 13, DP 22, DP 24, C1, C5, C6, D1, CC1, CC2, CC3

Energy & CO_2 Emissions

Policy Requirements

- Follow the hierarchy of energy efficiency, decentralised energy and renewable energy technologies set out in the London Plan (2011) Chapter 5 (particularly Policy 5.2) to secure the following carbon reductions:

- A minimum of 35% reduction in regulated CO2 emissions below the maximum threshold allowed under Part L 2013. The fullest contribution to CO2 reduction in the refurbished parts of the development. In particular, improvements should be sought on the minimum building fabric targets set in Part L of the building regulations. Where any refurbished parts are considered to be a 'deep' refurbishment and therefore assessed under Part L2A, it will need to meet the 35% reduction target for a new build.

- GLA guidance on preparing energy assessments and CPG3 should be followed. The new build parts and refurbished parts should be presented separately within the energy statement and a combined site wide CO2 reduction target also provided.

- Engage with Citigen to assess if there is enough capacity to connect to this network.

- Developers should assess the potential for their development to:
  - connect to an existing district heating or cooling network;
  - expand an existing district heating or cooling network, and connect to it; or
  - establish a site wide network, and enable the connection of existing buildings in the vicinity of the development.

Development response

The project team have developed a holistic approach to Energy and Carbon performance, based on the energy hierarchy set out in London Plan policy 5.2. An energy demand and carbon emissions assessment [Ref 1] has been carried out using software which is accredited for assessing compliance against building regulation PartL2A. The assessment demonstrates that the reduction in the regulated site wide emissions is 34.2% when compared to benchmark emissions. After energy efficiency alone, the regulated carbon emissions of the Charterhouse Street / Saffron Hill Block are 12% lower than the Target Emissions Rate. This is as a result of the improved u-values of the building envelope v's minimum Part L standards, along with specification of high efficiency lighting and ventilation systems. Further design development will be undertaken during RIBA Stage 3 to identify potential options to further improve the performance of the building. The energy strategy has prioritised passive, energy efficient design measures, taking into account some of the limitations imposed by the existing building form and location. The following summarises the overarching strategy as detailed in the Energy Statement [Ref 1]:

Energy Efficient Design (Be Lean):

- Improved U-values for both opaque and transparent elements. U-values of all replaced elements (windows, walls, roof, floors) will be lower than the maximum allowable under both building regulation Part L2A (New Construction) and Part L2B (Existing Construction).
- Solar control glazing, balancing passive solar control versus overheating and controlling thermal comfort;
- High light transmittance glazing;
- Mixed mode ventilation in the ground floor restaurant area through low and high level openings;
- The façade design incorporates deep reveals, providing both vertical and horizontal shading;
- Specification of high efficiency lighting systems based on LED technology;
- Presence detection on lighting controls in occupied areas;
- Daylight dimming in perimeter office areas.
- Low energy, variable volume fans;
- Heat recovery integrated into ventilation systems of the main Air Handling Units;
- Efficient Fan Coil Units utilising ec-dc variable speed motors;

Heating infrastructure (Be Clean):

- A detailed assessment of the viability of connecting to the Citigen district heating main has been undertaken [Ref 1] including discussions with the operators (E.On). E.On have confirmed indicative connection costs of £10,000/m. The high cost is as a result of the potential technical constraints of crossing Farringdon Road including – Cross Rail, River Fleet culvert, gas, water and power utilities. In addition, traffic disruption and road closures would need to be agreed with Camden, Islington and the City of London which would incur costs. Assuming the shortest distance between the Citigen energy centre and the development, the initial connection costs would be ~£1.45M. This would cover the costs of installing the pipework, but would exclude costs for the heat exchanger within the building
- Due to the high capital costs associated with the extension of the network, along with uncertainty over the technical feasibility of crossing Farringdon road, connecting to Citigen as the primary heating source is deemed to be unfeasible. However, the design will incorporate capped connections to allow for future connection to the network.
- The development will largely be used as office space and therefore the base load (represented by the domestic hot water consumption) will be relatively intermittent resulting in CHP being financially and technically unfeasible.

Renewable Energy (Be Green):

- A detailed assessment of renewable energy opportunities and viability has been undertaken which determined that air to water heat pumps and roof mounted photovoltaic panels are viable for the scheme. Details of the proposed systems are summarised in the following section.

London Plan Policies: 5.2, 5.3, 5.5, 5.6, 5.7, 5.8, 5.9, 5.17
Camden Policies: CS 11, CS13, CS 16, DP 22, DP 32, C1, D1, CC1, CC2

Renewable Energy, Carbon Offsetting & Energy Monitoring

Policy Requirements

- Major developments should incorporate renewable energy technologies to minimise overall carbon dioxide emissions, where feasible.
- All developments are required to achieve a 20% reduction in CO2 emissions through renewable technologies (the 3rd stage of the energy hierarchy) wherever feasible, and this should be demonstrated through the energy statement.
- Where the London Plan carbon reduction target cannot be met on-site, provision of measures elsewhere in the borough or a financial contribution (charged at £60/tonne CO2/ yr over a 30 year period), which will be used to secure the delivery of carbon reduction measures elsewhere in the borough.
- Developers are encouraged to incorporate monitoring equipment, and systems where appropriate to enable occupiers to monitor and reduce their energy use.
- Developers are encouraged to incorporate equipment that would enable their schemes to participate in demand side response opportunities.

Development response

A detailed study has been undertaken to evaluate the feasibility of incorporating renewable energy technologies within the development [Ref 1]. The study takes into account the proposed energy efficiency measures (fabric, central and terminal plant, shading and ventilation), Citigen connection, which is considered unfeasible due to technical and financial constraints, and intermittency of hot water demands which means combined heat and power (CHP) is not a viable option. The suitability of each renewable technology has been evaluated based on technical feasibility considering spatial requirements, suitability for the development (i.e. office use), conflicts with alternative systems, the energy demand profile of the building and potential for carbon emissions savings. Following the review of each technology, photovoltaic panels and air source heat pumps were considered as viable for the assessed development. Details of

Technology	Technical feasibility / details	Recommended?
Photovoltaics	A solar analysis study indicates that the roof areas above the Saffron Hill block and St Andrews House and in front of the plant screen facing Charterhouse Street would be suitable for PV panels. The following panels are proposed: • Saffron Hill Block (roof): 37 panels at 30° pitch • Saffron Hill Block (plant room): 8 panels mounted vertically in front of the plant screen • Charterhouse Block (plant room): 52 panels mounted vertically in front of plant screen • St Andrews House: 40 panels at 30° pitch	Yes
Solar Hot Water	As solar collectors generally offset gas used for domestic hot water rather than grid electricity, which has a higher carbon burden, achievable carbon emissions savings per unit of area are lower than those achieved with PV.	No
Heat pumps	Chilled (CHW) and low temperature hot water (LTHW) will be provided to the fan coil units from roof mounted heat pumps. The proposed system will provide both heated and chilled water within a single unit. A thermal load analysis of the building demonstrates that the building has simultaneous heating and cooling loads for a majority of the year, partly as a result of the highly shaded lower ground floor, more exposed upper floors and hot water demands of the central kitchen and changing facilities. By adopting a combined heat pump, the system can recover heat from areas of the building that have a cooling demand and recover the heat for heating areas with space heating demand.	Yes
Wind turbines	Large scale wind turbines can present nuisances such as noise and flicker effect which are not considered acceptable for an urban development of this nature, and are likely to face significant objection through the planning process.	No
Biomass heating	Biomass based systems have been ruled out as the project cannot accommodate the spatial requirements for fuel loading and storage. Additionally, biomass has high NOx emissions and is therefore not deemed a suitable solution for the development given its city centre location.	No

A building management system (BMS) will be installed and connected to sub-meters which are designed to meet the sub metering credit within BREEAM. The system shall be capable of metering >90% of the overall electrical energy for the site. Metering shall be provided for the following elements:

- Lighting (Internal & External)
- Small power services
- Cooling/Heating systems
- Ventilation systems
- Lifts
- Controls
- Low carbon technologies

The incorporation of infrastructure to provide demand side management will be considered during the detailed design stage as it will require a detailed assessment of the potential operational impacts on the building users. Options to be considered include working with an aggregator to reduce demand from chiller / heat pump and air handling equipment for short periods.

London Plan Policies: 5.2, 5.3, 5.4, 5.7
Camden Policies: CS 11, CS13, CS 16, DP 22, DP 32, C1, D1, CC1, CC2

Water Efficiency

Policy Requirements

- At least 50% of water consumed in homes and workplaces need to be of drinkable quality re-using water.
- All developments are to be water efficient.
- Developments over 10 units or 1000sq m should include grey water recycling
- Developers should maximise the opportunities for water saving measures and appliances in all developments, including the reuse and using alternative sources of water.
- Where a building is to be retained, water efficiency measures should be retrofitted.
- New non-residential developments, including refurbishments, should aim to achieve the maximum number of water credits in a BREEAM assessment or the 'best practice' level of the AECB (Association of Environment Conscious Building) water standards.
- All developments should be designed to incorporate rainwater harvesting.
- All residential units, including individual flats / apartments and commercial units, and where practical, individual leases in large commercial properties should be metered.

Development response

Potable water savings will be maximised by ensuring the following:

- Provision of a greywater recycling system which will significantly contribute to reducing primary potable water consumption.
- The system will reduce WC flush volumes down to 4.5 effective flush, compared to typical flush volumes of conventional systems of 6 litres per flush.
- A packaged Grey Water Harvesting System shall be located within the plant area to collect and treat all the following: Grey water collected from wash basins, kitchen sinks and showers. The processed non-potable water shall be distributed throughout the building to serve all WC and urinal flushing requirements.
- Sanitary ware, including wash hand basins, showers and urinals shall be low volume, and selected to deliver the maximum number of BREEAM credits and follow the levels stipulated by the BREEAM Wat 01 Calculator. By considering Greywater, the primary potable water consumption is considerably reduced, in particular utilising greywater for WCs is a significant contributor to reducing consumption in an office development.
- The toilet cores will be provided with a potable and greywater harvesting boosted cold water supply with solenoid shut off valves linked to PIR occupancy detection sensors all to prevent water wastage and damage.
- All cold and hot water systems will be sub metered and connected into the central BMS to allow water consumption to be monitored.
- The existing mains cold water supply shall have a leak detection system monitoring the supply from the external local authority pit to the building internal supply within the plantroom with water leak detection meters. The system will be linked to a central BMS system which will raise an alarm should a major leak be detected.
- The communal changing and shower facilities will have a separate leak detection system to identify any major leaks.

The proposal is to provide toilet flushing water using recycled grey water, as the volume of collected grey water can be tailored to suit the demand. Grey water production is also more easily predicated than rainfall. Flushing water will be processed to remove odours and colouration, with high grade water processing systems more readily available for grey water harvesting systems. These typically include filters and UV application to remove particulates and bacteria.

The proposals also include for irrigation of planting and soft landscaping to be delivered via the water collected from the greywater and rainwater harvesting systems. This concept is currently being explored further by the design team as it is important to avoid any conflict between systems which can conversely result in a greater consumption of primary water. Options are being considered to utilise a Cat 5 boosted colds water irrigation system fed from the basement grey/ rainwater harvesting system (blue roof) with mains supply back up to serve external areas planters and wash down.

London Plan Policies: 5.3, 5.13, 5.15
Camden Policies: CS 13, DP 22, DP 23, D1, CC1, CC2, CC3

Materials

Policy Requirements

- The Council will require all developments, including alterations and extensions to existing buildings, to be of the highest standard of design.
- Reduce waste by firstly re-using your building, where this is not possible you should implement the waste hierarchy.
- The waste hierarchy prioritises the reduction, re-use and recycling of materials.
- Source your materials responsibly and ensure they are safe to health.
- All developments should aim for at least 15-20% of the total value of materials used to be derived from recycled and reused sources. This should relate to the WRAP Quick Wins assessments or equivalent.
- The design of the development should prioritise materials that:
    - have a low embodied energy, including those that can be reused intact or recycled - at least three of the key elements of the building envelope (external walls, windows roof, upper floor slabs, internal walls, floor finishes / coverings) are to achieve a rating of A+ to D in the BRE's The Green Guide of specification;
    - can be sustainably sourced - at least 50% of timber and timber products should be sourced from accredited Forest Stewardship Council (FSC) or Programme for the Endorsement of forestry Certification (PEFC) source;
    - are durable to cater for their level of use and exposure; and
    - will not release toxins into the internal and external environment, including those that deplete stratospheric ozone.
- The design of developments should maximise the potential to use pre-fabrication elements.

Development response

Whilst carbon emissions are often usually associated with operational energy consumption, the embodied carbon of newly installed materials can have a significant impact on the whole life environmental impact of the development. Materials will be specified to minimise the environmental impact through the life of the building and improve the quality of the indoor environment. The following are proposed:

- Specification of materials with a good rating on the Green Guide to specification aiming for A and A+ wherever feasible.
- Specification of acoustic and thermal insulation (both fabric and building services) that delivers an insulation index of 2.5 of more in accordance with the BREEAM Mat 04 Insulation Calculator.
- Specification of locally sourced materials wherever possible.
- Require the contractor to develop and implement a materials policy which includes responsible sourcing of materials wherever possible.
- Require contractor to demonstrate Chain of Custody (FSC or PEFC certification) for all timber used in the project including permanently installed timber and timber used during construction.
- Materials and products will be specified to have low volatile organic compounds level (VOCs) where possible.
- Design for durability will be a key consideration. Vulnerable areas such as areas with high pedestrian traffic will be identified and suitable heavy-duty materials and protection measures will be specified.

The most significant factor in terms of reduced embodied carbon for the development is re-use of the major part of the existing buildings and foundations rather than demolition & reconstruction. There may be other (non-structural) elements within the building that can be reused although these will be reviewed following detailed surveys and during the detailed design.

The materials specifications will prioritise materials that are recycled or contain recycled content with an aspiration to meet a target of 15-20% of the total value of materials from recycled and re-used sources. The design team have identified the following options which will be reviewed during the detailed design stage:

- Specifying the use of crushed concrete aggregate (CCA/RCA) for coarse aggregates. However, for concrete the use of recycled aggregates only holds up if they are local (within 10-15km) beyond that you can actually use more carbon than using locally available virgin aggregate. The use of recycled aggregates would therefore be dependent on local availability to the proposed batching plant. Given the uncertainties it has been specified to allow the use of recycled aggregates to a maximum % rather than require a minimum %.
- There will be demolition waste from the site which could be recycled although there is insufficient space on site to store for re-use onsite. However, options will be explored to specify for concrete demolition waste to be crushed for re-use as RCA (not necessarily on this project) and therefore adopt an 'offsetting' approach against any new aggregates used.
- Reducing the CEM1 content is the most effective way to reduce embodied carbon in concrete - and the use of GGBS/PFA as a cement replacement is common. Cement replacement would most likely be 25%+ by weight of cement content and a mix specification to achieve that will be reviewed during the detailed design stage.
- Structural steel / rebar will be specified to contain recycled content.

London Plan Policies: 5.3, 5.20, 7.6, 7.14
Camden Policies: CS 13, CS 14, DP 22, DP 24, DP 25, D1, CC1, CC2, CC5

Waste

Policy Requirements

- Developments to make sure that include facilities for the storage and collection of waste and recycling;
- Developers should maximise the use of existing resources and materials and minimise waste generated during the demolition and construction process through the implementation the waste hierarchy.
- Developers should provide sufficient internal space for the storage of recyclable and compostable materials and waste in their schemes.
- The design of development should meet borough requirements for the size and location of recycling, composting and refuse storage and its removal.

Development response

Waste minimisation will be considered during both project construction and operation of the extension.

Operational Waste

A building management team have been consulted regarding the existing / proposed waste management strategy [Ref 4]. Anglo-American and DeBeers contract out their waste collection to an independent waste management company which operates an energy from waste and recycling facility.

Currently there is a dedicated waste area located on the Charterhouse Street site where waste is separated out into the following groups:

- General waste – x2 bins.
- Recyclable waste – x2 bins and a compactor for cardboard.
- Food waste - x1 bin. (sent for anaerobic digestion)
- Container for battery disposals (recycled).
- Area for WEEE items.
- Container for used fluorescent tubes & lamps.
- Area for boxed used filters.
- Lockable cage for chemical waste and cooking oil (recycled).

Collections for general waste are made on 3 days per week, Monday –Wednesday –Friday, and food waste is collected twice per week with all other items collected on an adhoc basis as and when required.

Given the proposed scope of works, it is anticipated that the waste storage facility will remain in its current state as this will provide sufficient capacity and segregation

Construction Waste

Waste minimisation during construction will be one of the key contractor responsibilities which will form part of the Principal Contractor's main contract. The contractor will be required to develop a Resource Management Plan (RMP) covering non-hazardous waste related to on and off-site manufacture and fabrication prior to the commencement of any site works. The contractor will be required to meet a minimum target of ≤7.5m3 or ≤6.5 tonnes of construction waste per 100m^2 gross internal floor area in line with BREEAM credit Wst 01. In addition, a minimum target of 70% by volume and 80% by weight of non-hazardous construction waste; and a minimum of 80% by volume and 90% by weight of demolition waste will be diverted from landfill.

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London Plan Policies: 5.3, 5.20, 7.6, 7.14

Camden Policies: CS 18, DP 16, DP 20, DP 22, D1, CC1, CC2, CC5

Nature Conservation & Biodiversity

Policy Requirements

- Developments to support, where possible and suitable to the development scale, improvements to open spaces
- All developments should incorporate green and brown roofs.
- The appropriate roof or wall will depend on the development, the location and other specific factors.
- Specific information needs to be submitted with applications for green/brown roofs and walls.
- how biodiversity considerations have been incorporated into the development; if any mitigation measures will be included; and what positive measures for enhancing biodiversity are planned.
- There is no net loss in the quality and quantity of biodiversity.
- Developers make a contribution to biodiversity on their development site.

Development response

A qualified ecologist has been appointed to advise on ways to minimise the impact on biodiversity of the site and maximise ecological enhancements [Ref 2].

The site is not subject to any statutory nature conservation designations and no statutory sites are present within 1km of the site. The site is not subject to any non-statutory nature conservation designations. Seven non-statutory sites designated as Sites of Importance for Nature Conservation (SINCs) are present within 1km of the site, comprising one Site of Metropolitan Importance to Nature Conservation (SMINC), two Sites of Borough Importance for Nature Conservation (SBINC), and four Sites of Local Importance for Nature Conservation (SLINC) (see Table 3.1).

The potential for the site to support protected species has been assessed based on the results of the desk study and observations made during the site survey of habitats at the site. Other legally protected species are not referred to as it is considered that the site does not contain habitats that would be suitable to support them.

The site does present opportunities for nesting birds on the buildings and within shrubs therefore the developer will mitigate by conducting works between September to February, which is outside the nesting bird season. Any clearance outside of the period must be preceded by a nesting bird check from a suitably experienced ecologist up to 48hours prior.

Ecological enhancements can also contribute to green infrastructure and ecosystem services such as storm water attenuation and reducing the urban heat island effect. The following measures are being considered for integration into the site's design, but would require a more detailed design to successfully implement:

Biodiverse / Biosolar Roof
The current proposals include enhancement of biodiversity through the addition of areas of biodiverse / biosolar roof on the proposed buildings. To demonstrate the highest feasible and viable sustainability standards in line with London Plan Policies (GLA 2016 a specification for a biodiverse / biosolar roof will be developed by a company with a proven track record in delivering these features in London. The biodiverse green roof will support at least 25 plant species.

A biodiverse green roof would provide additional benefits such as protecting and prolonging the life of the roof membrane, reducing building energy use by insulating the building in winter and keeping it cooler in summer, providing a SuDS function by reducing storm water run-off from the roof, reducing the urban heat island effect and local air/noise pollution. Combining a biodiverse roof with PV panels (biosolar roof) would also provide further benefits, such as the cooling effect the vegetation has on the PV cells, increasing their productivity in hot weather, as well as resulting in a more efficient use of roof space.

The green roof will follow UK standards (GRO, 2014) and include additional habitat features such as deadwood and varying substrate depths. This will provide good habitat for a range of insects and birds including London Biodiversity Action Plan (BAP) species.

Native scrub and tree planting
Native tree and scrub species will be included within the landscaping to enhance the site. Wildlife planting should be integral to any soft landscape plans and should include native species and/or species of recognised wildlife value. The use of nectar-rich and berry producing plants will attract a wider range of insects, birds and mammals and continue to accommodate those already utilising the site. Where possible, larger shrubs/trees will be under-planted to create greater structure and cover for wildlife.

Provision of bird nesting opportunities
Consideration is made for nest boxes suitable to support black redstart mounted at roof level on the proposed buildings, in close proximity to the biodiverse roofs. Woodcrete nest boxes suitable to support house sparrow should also be positioned in the courtyard areas on site. Woodcrete boxes are recommended as they are long lasting compared to wooden boxes and insulate occupants from extremes of temperature and condensation. Where specified these should be secured using galvanised nails/screws and should be accessible for maintenance.

London Plan Policies: 5.3, 5.17
Camden Policies: CS 15, DP 22,

Tackling increased temperature and drought

Policy Requirements

- Developers should aim to reduce the effects of and adapting to climate change by minimising the need to travel by car and help support local energy networks, promoting the efficient use of land and buildings, minimising carbon emissions from the redevelopment, construction and occupation of buildings by implementing, the Be Lean, Be Clean, Be Green energy hierarchy and designing buildings that facilitate climate change adaptation.
    - Supporting local energy generation and networks
    - Minimising the potential for surface water flooding – developments to incorporate efficient water and foul water infrastructure, to avoid harm to the water environment, water quality or drainage systems and to prevent or mitigates local surface water and downstream flooding.
    - Minimising carbon emissions

- The Council will require development to incorporate sustainable design and construction measures.

- Developers should include measures, in the design of their schemes, in line with the cooling hierarchy set out in London Plan policy 5.9 to prevent overheating over the scheme's lifetime.

- The design of developments should prioritise landscape planting that is drought resistant and has a low water demand for supplementary watering.

- Developers should consider any long-term potential for extreme weather events to affect a building's foundations and to ensure they are robust

Development response

The development has been designed based around limiting the internal heat gains and optimising the façade to minimise the need for cooling [Ref 1]. The approach to the design has followed the cooling hierarchy as set out in Policy 5.9 of the London Plan:

1. Minimising internal heat generation through energy efficient design:
    - All distribution pipework will be thermally insulated in compliance with minimum Part L standards.
    - Pipe lengths will be minimised, particularly lateral pipework in corridors
    - Pipe configurations will minimise heat loss e.g. through twin pipe / flow and return configurations.
    - Specification of energy efficient lighting will reduce the internal heat gains.
2. Reducing the amount of heat entering the building in summer:
    - All new facades have been carefully designed to incorporate shading measures, including deep reveals and shading from surrounding buildings. In addition, the use of high performance solar control glass will limit solar heat gains.
    - High reflective internal roller blinds with low transmittance will be installed in both new and refurbished part of the development.
3. Use of thermal mass and high ceilings to manage heat within the building
    - Thermal mass has been considered; however, given the limited exposed facades and glazing, the amount of area receiving direct sunlight would not be sufficient to justify its use.
    - The floor to ceiling heights are largely set by the existing slab to slab heights. Where possible, the ceiling heights have been maximised by minimising the depth of the services void and use of cellular structural beams in the extended areas which maximise the floor to ceiling heights
4. Passive ventilation
    - Due to the urban location of the development and impact from noise and air pollution, the development will use fixed windows in all office areas.
    - A natural ventilation strategy will however be incorporated in the double height restaurant facing the central courtyard. Actuated low and high-level openings, along with large operable doors will provide natural ventilation during mid seasons. The incorporation of automatic control will also provide potential for night cooling of the space.
5. Mechanical ventilation:
    - All ventilation systems will comprise low pressure ductwork, variable speed drives, heat recovery with a minimum efficiency of 81% and low specific fan powers.

The design has been tested against Building Regulation Part L2A, Criterion 3 which assesses how the building has been designed to limit heat gains in the summer. As a result of the features detailed above, the building complies with the minimum performance standards set out in the regulation.

The proposed planting for the green roof will include native species that are tolerant of UK climatic conditions [Ref 2]. This is in line with the targeted BREEAM credit (LE04). The Ecologist has provided recommendations for a biodiverse green roof which would provide additional benefits such as protecting and prolonging the life of the roof membrane, reducing building energy use by insulating the building in winter and keeping it cooler in summer, providing a SuDS function by reducing storm water run-off from the roof, reducing the urban heat island effect and local air/noise pollution. Combining a biodiverse roof with PV panels (biosolar roof) would also provide further benefits, such as the cooling effect the vegetation has on the PV cells, increasing their productivity in hot weather, as well as resulting in a more efficient use of roof space.

Consideration has been given to the potential impacts, risks and mitigation measures as a result of extreme weather events based on climate change scenarios [Ref 12] including UKCP09 data. The specification for the building's structure allows for potential changes in temperature, precipitation, humidity and groundwater, sea level, wind speeds and snow fall.

London Plan Policies: 5.3, 5.9, 5.10, 5.15, 7.6
Camden Policies: CS 13, DP 22, D1, CC1, CC2, CC3

Flooding and water pollution

Policy Requirements

- Design of the drainage system to the 20% climate change allowance on top of the 1 in 100-year storms. Then a sensitivity test against the 40% allowance to ensure that the additional runoff is wholly contained within the site and there is no increase in the rate of runoff discharged from the site safe.
- Developments are to achieve a greenfield run off rate once SuDS have been installed. Where it can be demonstrated that this is not feasible, a minimum of 50% reduction in run off rate across the development is required. When designing their schemes developers should follow the drainage hierarchy set out in London Plan policy 5.13
- Developers should design Sustainable Drainage Systems (SuDS) into their schemes that incorporate attenuation for surface water runoff as well as habitat, water quality and amenity benefits.
- Development in areas at risk from any form of flooding should include flood resistance and resilience measures in line with industry best practice.
- Developments are designed to be flexible and capable of being adapted to and mitigating the potential increase in flood risk because of climate change.
- Developments incorporate the recommendation of the TE2100 plan for the future tidal flood risk management in the Thames estuary.
- Where development is permitted in a flood risk zone, appropriate residual risk management measures are to be incorporated into the design to ensure resilience and the safety of occupiers.
- All sources of flooding need to be considered when designing and constructing developments.

Development response

The site lies completely within Flood Zone 1 [Ref 5] which is assessed as having a very low risk of flooding from rivers or tidal sources less than 1 in 1000 annual probability of river or sea flooding (<0.1%).

The London Borough of Camden Strategic Flood Risk Assessment has been reviewed along with the flood maps which indicate that the Application site is within the Group3_003 Critical Drainage Area and is also close to the Local Flood Risk Zone of Farringdon, although this is outside of the Bough of Camden.

As the proposed development is an extension of the internal office space by the construction of an extension to the existing buildings over an existing basement, it is proposed that only the extension is subject to the restrictions imposed on surface water flow. The site constraints do not allow for the use of soakaways or open water/pond storage for attenuation. Additionally, there are no watercourses or surface water sewers within the area.

Therefore, it is proposed to discharge surface water into the combined public sewer network via an existing outfall. If it is found following the receipt the public sewer records that there is surface water sewer within the area of the building this strategy will be reviewed.

The discharge for the extension section of building will be restricted to a flow rate equal to a 50% betterment on existing brownfield rates. The other existing surface water outfalls from the site will remain unchanged. It is proposed that the discharge from the extension will be at a variable rate to suit differing storm return periods, however if this is not possible the discharge will be attenuated to 50% of the existing 1 in 1-year rate where reasonably practicable. However, if it is found that this rate is less than 5l/s it is proposed to discharge at 5l/s. Surface water run-off will be attenuated up to and including a 1 in 100-year 6-hour event +20% Climate Change allowance. An impact assessment will be undertaken for the 1 in 100 year + 40% Climate Change event.

The above strategy has been submitted to The London Borough of Camden by the Drainage Engineer [Ref 6].

London Plan Policies: 5.3, 5.12, 5.13
Camden Policies: CS 13, DP 22, DP 23, DP 27, D1, CC1, CC2, CC3

Land Pollution

Policy Requirements

- Developers should set out how existing land contamination will be addressed prior to the commencement of their development.
- Potentially polluting uses are to incorporate suitable mitigation measures.

Development response

The existing development and proposed areas have not been identified as having any signs of contamination. Given the age of the development, there is the potential for asbestos to be present on site which will be checked prior to construction works.

London Plan Policies: 3.2, 5.3, 5.21
Camden Policies: DP 22, C1, D1

Noise Pollution

Policy Requirements

- Noise and vibration from developments must be controlled and managed to avoid noise pollution during construction and operation.
- Noise should be reduced at source, and then designed out of a scheme to reduce the need for mitigation measures.

Development response

An environmental noise assessment [Ref 7] has been undertaken determine the existing ambient background noise level representative of the worst affected dwellings to the proposed development. Based on this level, a maximum noise rating target has been specified for proposed plant, such that there will be no adverse impact to nearby sensitive receptors.

In order to assess noise emissions from the proposed condenser units, an assessment has been carried out to BS 4142: 2014 "Methods for rating and assessing industrial and commercial sound".

The nearest residential noise sensitive receptors are in the rear courtyard and adjacent residential flats adjacent to Saffron Hill.

The assessment has specified the maximum rating level limits for the proposed plant which is located at roof level, such that it is in line with the provisions of BS 4142: 2014. As such, the proposed plant will not cause an adverse noise impact at the worst affected noise sensitive receptors. This level of performance is an improvement over the BREEAM Pol 05 Noise Attenuation requirements which will therefore be met by default.

London Plan Policies: 3.2, 5.3, 7.6,.7 .15
Camden Policies: DP 28, A4, D1

Light Pollution

Policy Requirements

- The Council will require development to incorporate sustainable design and construction measures. Schemes must: demonstrate how sustainable development principles, have been incorporated into the design and proposed implementation;
- Developments and lighting schemes should be designed to minimise light pollution.

Development response

External lighting will be designed by a specialist lighting designer who will be appointed during the detailed design stage. To reduce nuisance on neighbouring properties, the following measures will be integrated into the design [Ref 1]:

- External lighting will be designed to meet the Institution of Lighting Professionals (ILP) guidance notes for the reduction of obtrusive light.
- All external lighting will be controlled by a timer or a presence detector to have the capability to be switched off at night time.
- Safety or security lighting required to stay on during night time will be designed in compliance with the lower levels of lighting recommended during these hours in Table 2 of the ILP's guidance notes.

London Plan Policies: 5.2, 5.3, 6.7
Camden Policies: CS 15, DP 22, D1

Air Pollution

Policy Requirements

- Encourages developments to continue to improve facilities for cyclists, minimise provision for private parking, promote the use of low emission vehicles (including through the provision of electric charging points) and ensure that growth and development has regard to Camden's road hierarchy and does not cause harm to the management of the road network.

- Developments to recognise the impact of poor air quality on health and implement Camden's Air Quality Action Plan which aims to reduce air pollution levels.

- The Council will require development to incorporate sustainable design and construction measures to reduce air pollution

- The Council will require air quality assessments where development could potentially cause significant harm to air quality.

- Developers are required to submit an Air Quality Assessment (AQA). In line with the EPUK Land-Use Planning & Development Control: Planning For Air Quality Guidance when doing an AQA. The AQA will need to clearly outline the methodology and include
    - an assessment of the impact of the development on local air quality during operation (Air Quality Neutral Assessment) All developments are expected to meet the Mayor's Air Quality Neutral requirements.
    - an assessment of the impact of the development on local air quality during construction. We expect developers to follow The Mayors SPG on Control of Dust and Emissions, in their AQAs and Construction Management Plans (CMP). Mitigation measures appropriate to the identified level of risk should be included and stated within the AQA. These will then be secured through the CMP.

- Developers are to design their schemes so that they are at least 'air quality neutral'.

- Developments should be designed to minimise the generation of air pollution.

- Developments should be designed to minimise and mitigate against increased exposure to poor air quality.

- Developers should select plant that meets the standards for emissions from combined heat and power and biomass plants set out in Appendix 7.

- Developers and contractors should follow the guidance set out in the emerging Minimising dust and emissions from construction and demolition SPG when constructing their development.

Development response

The potential impacts on air quality are from dust and particulate matter during the construction stage, vehicle exhaust emissions resulting from existing traffic and emissions from the operation of the existing gas boilers which will supply heating to The Extension block. An assessment of potential air quality impacts and mitigation measures has been undertaken [Ref 11] which considers national and local guidance in line with the relevant policies for air quality. To limit the intake of pollution into the building, mechanical ventilation will be utilised for the offices with air intakes located away from sources of pollution including roads.

London Plan Policies: 3.2, 5.3, 7.14
Camden Policies: CS 11, CS 16, DP 22, DP 32, C1, D1, CC1, CC4

Water Pollution

Policy Requirements

- Developments to reduce their water consumption, the pressure on the combined sewer network and the risk of flooding
- Design of the drainage system to the 20% climate change allowance on top of the 1 in 100-year storms. Then a sensitivity test against the 40% allowance to ensure that the additional runoff is wholly contained within the site and there is no increase in the rate of runoff discharged from the site safe.
- Developments are to achieve a greenfield run off rate once SuDS have been installed.
- Where it can be demonstrated that this is not feasible, a minimum of 50% reduction in run off rate across the development is required.
- Developments to incorporate efficient water and foul water infrastructure, to avoid harm to the water environment, water quality or drainage systems and to prevent or mitigates local surface water and downstream flooding.
- Developers should maximise all opportunities to achieve greenfield runoff rates in their developments.
- When designing their schemes developers should follow the drainage hierarchy set out in London Plan policy 5.13
- In their aim to achieve a greenfield runoff rate, developers should incorporate sustainable urban drainage systems (SuDS) into their schemes which also provide benefits for water quality.
- Commercial developments discharging trade effluent should connect to the public foul sewer or combined sewer network where it is reasonable to do so subject to a trade effluent consent from the relevant sewerage undertaker.
- Developments should be properly connected and post-construction checks should be made by developers to ensure that misconnections do not occur.

Development response

The site lies completely within Flood Zone 1 [Ref 5] which is assessed as having a very low risk of flooding from rivers or tidal sources less than 1 in 1000 annual probability of river or sea flooding (<0.1%). A detailed Flood Risk Assessment considering the risk of flooding from all sources of pollution will be undertaken by the Drainage Specialist.

The London Borough of Camden Strategic Flood Risk Assessment has been reviewed along with the flood maps which indicate that the Application site is within the Group3_003 Critical Drainage Area and is also close to the Local Flood Risk Zone of Farringdon, although this is outside of the Bough of Camden.

As the proposed development is an extension of the internal office space by the construction of an extension to the existing buildings over an existing basement, it is proposed that only the extension is subject to the restrictions imposed on surface water flow. The site constraints do not allow for the use of soakaways or open water/pond storage for attenuation. Additionally, there are no watercourses or surface water sewers within the area.

Therefore, it is proposed to discharge surface water into the combined public sewer network via an existing outfall. If it is found following the receipt the public sewer records that there is surface water sewer within the area of the building this strategy will be reviewed.

The discharge for the extension section of building will be restricted to a flow rate equal to a 50% betterment on existing brownfield rates. The other existing surface water outfalls from the site will remain unchanged. It is proposed that the discharge from the extension will be at a variable rate to suit differing storm return periods, however if this is not possible the discharge will be attenuated to 50% of the existing 1 in 1-year rate where reasonably practicable. However, if it is found that this rate is less than 5l/s it is proposed to discharge at 5l/s. Surface water run-off will be attenuated up to and including a 1 in 100 year 6-hour event +20% Climate Change allowance. An impact assessment will be undertaken for the 1 in 100 year + 40% Climate Change event.

London Plan Policies: 5.3, 5.13, 5.14
Camden Policies: CS 13, DP 22, D1, CC1, CC2, CC3

Sustainable Transport

Policy Requirements

- In redevelopment schemes, the Council will consider retaining or re-providing existing parking provision where it can be demonstrated that the existing occupiers are to return to the address when the development is completed.

- Encourages developments to continue to improve facilities for cyclists, minimise provision for private parking, promote the use of low emission vehicles (including through the provision of electric charging points) and ensure that growth and development has regard to Camden's road hierarchy and does not cause harm to the management of the road network.

- Developments to assess: movements to, from and within the site, including links to existing transport networks; additional transport capacity off-site and likely impacts of the development and the steps that will be taken to mitigate those impacts; provide safe pick-up, drop-off and waiting areas for taxis, private cars and coaches, where this activity is likely.

- The Council will promote walking, cycling and public transport use. Development should make suitable provision for pedestrians, cyclists and public transport and, where appropriate, will also be required to provide for interchanging between different modes of transport.

- The Council will expect development to be car free in the Central London Area, the town centres of Camden Town, Finchley Road/Swiss Cottage, Kentish Town, Kilburn High Road and West Hampstead, and other areas within Controlled Parking Zones that are easily accessible by public transport.

- All buildings and places must meet the highest practicable standards of access and inclusion; encourage accessible public transport and secure parking for disabled people.

- Provides for accessible, secure cycle parking facilities exceeding minimum standards outlined within the London Plan and design requirements outlined within our supplementary planning document Camden Planning Guidance 7: Transport. Higher levels of provision may also be required in areas well served by cycle route infrastructure, taking into account the size and location of the development;

- Makes provision for high quality facilities that promote cycle usage including changing rooms, showers, dryers and lockers; and is easy and safe to cycle through ('permeable');

- Sustainable transport options will be supported and provided for, including the following priorities:
    - Providing for cycling facilities as part of all new development, including facilities for residents, workers and visitors as appropriate;
    - Reducing reliance on private motor vehicles and single person motor vehicle trips;
    - Prioritising parking provision for disabled, car sharing and alternative fuel vehicles;
    - Encouraging use of alternative sustainable fuels and technology.

Development response

A 'Transport Assessment' has been prepared for the proposed development and submitted as part of the planning application [Ref 8]. The assessment has been prepared in accordance with Transport for London's (TfL) Transport Assessment Guidance and examines all transport issues associated with the development including delivery, servicing and movement of employees and guests.

The site has a PTAL rating of 6b demonstrating its 'Excellent' access to public transport. The development is therefore very well served by public transport services,

The site is well located to the local bus network. The closest bus stops to the site are located outside of the site on Charterhouse Street (for eastbound services) and on Farringdon Street (for westbound services). The eastbound stop on Charterhouse Street provides access to the bus routes 17 and 45 and the bus stops on Farringdon Street provide access to the additional 63 and 172 bus services [Ref 8].

Farringdon London Underground Limited (LUL) station is situated to the north of the site, circa 200m, equivalent to a two-minute walk from the site. Farringdon LUL station is served by the Hammersmith and City and Circle lines which both typically run every 8-10 minutes on Monday to Friday during the peak periods. The Hammersmith and City lines provides frequent services towards Hammersmith and Liverpool Street and the Circle line provides frequent services towards Hammersmith and Edgware Road [REF 8].

The site is in close proximity to cycle hire facilities, including a Santander Cycle Hire docking stations which are located at to the east of the site at Hatton Garden Holborn, approximately 200m (three minutes' walk) from the site.

Cycle Superhighway 6 (CS6) will provide a direct route for cyclists across central London, between Elephant and Castle and King's Cross [REF 8]. The route will be either fully segregated or on quiet back streets. As part of the proposals, the new CS6 will provide the following within the vicinity of the site: new signalised pedestrian crossings on all arms of the junction of Charterhouse Street with Farringdon Street/ Road; Saffron Hill to be signed for northbound cyclists on quiet roads; and Greville Street to close to motor traffic at Farringdon Road, with new segregated track to link cyclists to Saffron Hill.

To promote cycle use, safe, secured, integrated, convenient and accessible cycling facilities will be provided for the development for staff and visitors. A total of 168no. cycle parking racks will be provided consisting of 75no. semi-vertical racks, 50no. two-tier rack system, and 28no. Sheffield stands. Additionally, 15no. disabled cycle parking spaces will be provided [Ref 9]. Cyclists will continue to access the site via the retained access on Saffron Hill to the rear. The development will provide new, secure and covered cycle parking spaces, accessible to the rear of the building, via Saffron Hill. The access on Saffron Hill is accessed via a secure gate which will provide access to staff only (via an electronic key fob). The proposal will also provide cyclist facilities such as changing rooms, showers and lockers which are located next to the cycle parking spaces to the rear.

The ground floor of the building is presently severed by the secure vehicular access to Charterhouse Street, with access across only available at first floor and above. The proposal therefore seeks to open-up the ground floor, with a new pedestrian entrance lobby to Charterhouse Street where the current secure vehicle entrance is [REF 9].

The site currently provides 12 car parking spaces however there is no requirement for car parking provision within the proposals and therefore these will be removed.

The car parking spaces will be for the use of a minority number of staff, with allocated permission. As set out in Policy T2 of the Local Plan, LBC will consider retaining or reproviding existing parking provision for redevelopment schemes where it can be demonstrated that the existing occupiers are to return to the address. As the Applicant will be returning to the site, it is considered that the parking provision is acceptable.

The planning application is supported by a Travel Plan [Ref 8] which sets out various measures to encourage sustainable travel to and from the site in addition to travel targets.

London Plan Policies: 4.5, 7.2 (plus Mayor's Transport Strategy, May 2010)
Camden Policies: CS 11, DP 16, DP 17, DP 18, DP 22, DP 29, C1, C6, D1

4. BREEAM PRE-ASSESSMENT

4. BREEAM PRE-ASSESSMENT

4.1 Introduction

London Borough of Camden planning policy requires all non-domestic development of more than 500m² to achieve a minimum BREEAM rating of 'Excellent'.

This section details the approach to BREEAM for the proposed scheme and how sustainability measures have been adopted within the principles, processes and design of 17 Charterhouse Street.

4.2 Applicable BREEAM scheme

Due to the complexity of the building, it has been advised that the project undertakes a BREEAM Bespoke scoping exercise to ensure that the criteria is tailored to account for the New Build and Refurbishment elements. Due to the timescales and level of information required for the application, it has not been feasible at the current project stage to submit the BRE bespoke application in advance of this application.

Subsequently, the BREEAM Licensed Assessor organisation, Twin and Earth, have adopted the BREEAM 2014 New Construction (Fully Fitted) criteria for the proposed development. The requirements for New Construction are typically more onerous than that required for refurbishment and as such the intention is that by adopting this approach, the design will be "future-proofed" upon receipt of the Bespoke criteria.

Pre-Application advice from the BRE indicates that the anticipated assessment type will be BREEAM 2014 Non-Domestic Refurbishment & Fit-Out – Bespoke (Offices).

As the building is an owner-occupied development the assessment scope will be based on fully-fitted criteria. This includes the shell and core works as well and the fit-out of local services including lighting, small power, ventilation, and heating and cooling which will be delivered by 4-pipe fan coil units. A fully-fitted Gym facility will also be provided with a dedicated shower and changing facility and a fully catered kitchen and restaurant area will be located at ground floor. All floor and ceiling finishes will be installed as part of the fit-out works.

A Pre-Assessment has been undertaken based on the following BREEAM criteria:

- Offices – BREEAM New Construction 2014 V5.0 – Fully-fitted

The project has not yet been registered with the BRE and is undergoing a Bespoke application to incorporate the full scope of works and new and refurbished elements.

It has been agreed by the project team that the project will maintain an aspiration to achieve BREEAM Excellent. Following development of the Bespoke criteria, a revised pre-assessment will be re-submitted to Camden.

4.3 BREEAM Scoring System

BREEAM New Construction 2014 evaluates the performance of buildings against eight environmental categories. Categories have a different weighting depending on whether the assessment scope. The table below shows the weightings for a fully fitted building applicable to the office development:

Environmental Category	Weighting Fully Fitted
Management	12.0%
Health & Wellbeing	15.0%
Energy	15.0%
Transport	9.0%
Water	7.0%
Materials	13.5%
Waste	8.5%
Land Use and Ecology	10.0%
Pollution	10.0%
Innovation	10.0%

Each of these categories have a number of credits that add up to a total score which is then multiplied by an environmental weighting for each category. The BREEAM rating is based on the score achieved by the development as follows.

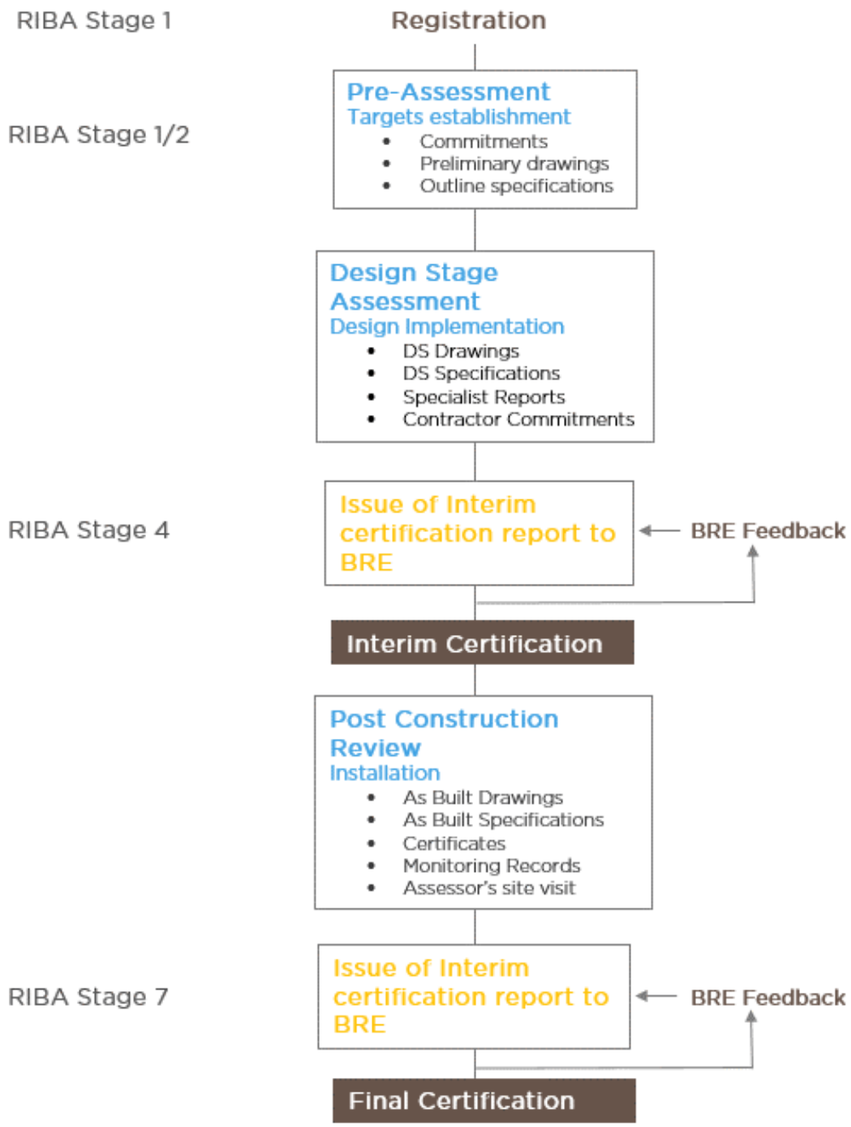
Rating	Minimum score
Pass	30%
Good	45%
Very Good	55%
Excellent	70%
Outstanding	85%

In addition to scoring the minimum percentage points required for the targeted level, achievement of BREEAM certification requires compliance with a set of minimum requirements associated with each rating.

Minimum requirements	Pass	Good	Very Good	Excellent	Outstanding
Man 03: Responsible construction practices				1	2
Man 04: Commissioning and handover				1	1
Man 5: Aftercare				1	1
Ene 01: Reduction of energy use and carbon emissions				5	8
Ene 02: Energy monitoring			1	1	1
Wat 01: Water consumption		1	1	1	2
Wat 02: Water monitoring		1	1	1	1
Mat 03: Responsible sourcing of materials	1	1	1	1	1
Wst 01: Construction waste management					1
Wst 03: Operational waste				1	1
LE 03: Minimising impact on existing site ecology			1	1	1

4.4 Assessment Structure

Three key stages can be identified in a BREEAM assessment: the Pre-Assessment, the Design Stage Assessment and the Post Construction Review.



4.4.1 Pre-Assessment Stage

A Pre-Assessment is an evaluation of the potential rating achievable for a development which is usually undertaken at RIBA Stage 1/2. The evaluation is generally based on desktop studies to review the design proposal as well as commitments to the incorporation of sustainable features into the design and to implementing sustainable practices.

A Pre-Assessment report can be required by regulatory bodies such as Local Authorities to be submitted as part of the planning application.

4.4.2 Design Stage Assessment Stage

A Design Stage Assessment is a formal step of the BREEAM process which allows the development to achieve Interim Certification of the building 'As Designed'. The Design Stage typically runs between RIBA stages 2 to 4 and is based on the following documentation:

Level of documentation
As Designed drawings & specifications
Specialist studies such as Ecology reports, Acoustic reports, Flood Risk Assessments, Daylight Studies, etc.
Commitments to manage the construction site in an environmentally friendly manner.

Once the information above has been provided and accepted as valid by the assessor, a Design Stage Assessment Certification report is developed and submitted to the BRE for formal QA and Interim Certification.

4.4.3 Post Construction Review Stage

When an Interim Certification has been achieved, the Post Construction Review consists of a verification that the development has been built in line with the specifications and that commitments made at design stage have been followed up and suitably implemented. The Post Construction Review runs through the construction period and is normally completed following PC based on the following information:

Level of documentation
As Built Drawings
Manufacturer's product details demonstrating compliance with the specifications
Site records and certifications demonstrating the implementation of sustainable construction practices
An Assessor's site inspection

Once the information above has been provided and accepted as valid by the assessor, a Post Construction Review Certification report is developed and submitted to the BRE for formal QA and Final Certification.

4.5 BREEAM Pre-assessment approach

Although a pre-assessment is an informal exercise not required for project BREEAM certification, it is fundamental to the success of the project as it enables the setting of targets and establishes the approach to meet the credit requirements.

Twin&Earth's approach to BREEAM pre-assessments includes three phases:

- Desktop pre-assessment – A BREEAM pre-assessment was undertaken by the assessor proposed offices based on the assessor's experience and available project information at this stage. Credits are classified in three categories depending on their achievability:

Targeted: credits which are deemed achievable at this stage.

Potential: credits which could be achieved, but which require further investigation and may have design and/or cost implications

Unobtainable: credits which cannot be achieved due to site or design constrains

- Pre-assessment workshop – A BREEAM pre-assessment workshop was held on the 21 June 2017 with the project team to review the desktop pre-assessment and agree specific credit targets. A Draft BREEAM pre-assessment report was issued to the design team on the 26 June 2017 indicating initial pre-assessed targets and detailing further investigation required from the project team.

- Pre-assessment targets confirmation – targets have been reviewed in line with the feedback provided by the design team as well as with the project design evolution to ensure an accurate representation of the anticipated performance of the development against the standard at this point in time. Scores at this stage still rely on a number of assumptions and compliance with the targeted credits will need to be demonstrated during detailed design and construction.

4.6 Offices – Pre-Assessed BREEAM Rating

The required BREEAM rating for planning of Excellent requires a minimum score of 70% plus compliance with all the applicable minimum requirements. An additional 5-10% over this minimum score is recommended in order to provide a buffer for potential credit losses during design development and construction.

The pre-assessment results show that credits deemed achievable (targeted) at this stage total a score of 68.49% which is currently 1.51% below the threshold for Excellent. There are 22.03% of potential credits which will be reviewed during the detailed design stages in order to determine any additional credits which could be achieved, therefore the project maintains an aspiration to achieve Excellent. At this stage, an 'Outstanding' rating is deemed to be unachievable due to the energy performance limitations imposed by the site location. A summary of the "potential" credit and their status have been provided within the BREEAM Pre-Assessment checklist (Appendix C).

Compliance with the Minimum Standards for Excellent have been achieved therefore all necessary pre-requisites have been met to ensure a BREEAM Excellent is possible.

Targeted: credits which are deemed achievable at this stage.

Potential: credits which could be achieved, but which require further investigation and may have design and/or cost implications

Unobtainable: credits which cannot be achieved due to site or design constrains

Figure 5. Targeted, potential and unobtainable credits – based on the pre-assessment

Figure 6. Assumed compliance with minimum requirements

The following un-weighted scores have been achieved at this stage of design for the proposed development in line with Camden Policy:

	Camden Policy target	Targeted Score	Potential Score
Energy	60%	65%	65%
Water	60%	78%	100%
Materials	40%	31%	62%

Table 2. Summary of performance against BREEAM categories in line with Camden policy

Compliance with the Energy and Water targets will be achieved; however, performance in the materials section will depend on the final specification of new building services. Additionally, credits in the Materials section have been limited by the uncertainty regarding the final BREEAM bespoke credits, and thereby ultimately creating a significant amount of uncertainty on how materials will be assessed as this varies between New Construction and Non-Domestic Refurbishment and Fit-Out.

REFERENCES

REFERENCES

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[2] Preliminary Ecological Appraisal, The Ecology Consultancy, 03 August 2017 [Ref. 6159_Burke Hunter Adams LLP_17 Charterhouse Street_PEA_V2.0]

[3] Below Ground Drainage Strategy, Ramboll, 01 August 2017 [Ref. 162003673-RAM-XX-XX-RP-D-00001]

[4] Current Waste Management Systems – 17 Charterhouse Street, Anglo-American and De Beers, July 2017

[5] Environment Agency Flood Map (https://flood-warning-information.service.gov.uk/long-term-flood-risk/map?easting=531478&northing=181651)

[6] Design Note – Surface Water Strategy (notes from meeting with Camden Council), Ramboll, 11 July 2017

[7] Noise Impact Assessment – 170713 - Project 2020 - Assessment BS4142 2014, Mach Acoustics, July 2017

[8] Transport Statement – 17 Charterhouse Street, i-Transport, 26 July 2017 [Ref: ITL13105-002]

[9] A-07-SIT-04 Traffic Management Study Cycles and Storage

[10] Strategy for Structural Demolition and Construction, Ramboll, August 2017 [Ref. 1620003673]

[11] Air Quality Assessment, RSK, August 2017

[12] Climate Change Resilience Report, Ramboll, 27 July 2017 [Ref. 1620003673]

APPENDICES

APPENDIX A: LONDON PLAN POLICIES

- Policy 2.18: Green Infrastructure - aims to protect, promote, expand and manage the extent and quality of, and access to, London's network of open and green spaces.
- Policy 3.2: Addressing health and reducing health inequalities - supports the provision and improvement of health facilities and encourages the design of buildings to promote healthy lifestyles.
- Policy 3.5: Quality and Design of housing development - introduces a presumption against development on back gardens or other private residential gardens.
- Policy 5.1: Climate change mitigation - sets out the Mayor's strategic target for the reduction of carbon dioxide emissions across London of 60 per cent (below 1990 levels) by 2025. It expects the GLA group, the boroughs and other organisations to make a contribution towards this target and that all new development fully contributes towards the London wide reduction target.
- Policy 5.2: Minimising carbon dioxide emissions - sets out the Mayor's energy hierarchy which developers are to follow when designing their schemes. It also sets out carbon dioxide reduction targets that developers are to aim for from their developments over the lifetime of the Plan and that where these can't be achieved an off-site or financial contribution in lieu can be sought by the local borough.
- Policy 5.4: Retrofitting - encourages the retro-fitting of measures to reduce carbon dioxide emissions, improve the efficiency of resource use (such as water) and minimise generation of pollution and waste from existing building stock and states that any opportunities created by new development for retro-fitting should be identified.
- Policy 5.5: Decentralised energy networks - sets out the Mayor's strategic target for decentralised energy, which is that 25% of the heat and power used in London is to be from local sources by 2025. The policy sets out how plans can identify and support opportunities for decentralised energy networks.
- Policy 5.6: Decentralised energy in proposals - sets out a hierarchy for selecting a development's heating system and states that the feasibility of combined heat and power (CHP) should be evaluated for the proposed development as well as the potential for extending the heating network beyond the site boundary.
- Policy 5.7: Renewable energy - seeks to increase the proportion of energy generated from renewable sources, including through their incorporation into new developments and by identifying specific opportunities within London.
- Policy 5.8: Innovative energy technologies - encourages the use of innovative energy technologies that will provide an alternative energy source and reduce carbon dioxide emissions.
- Policy 5.9: Overheating and cooling - states that developments should be designed to limit their contribution to the heat island effect and encourages spaces to be designed to avoid overheating, including by following the cooling hierarchy set out in the policy.
- Policy 5.10: Urban greening - encourages the greening of London's buildings and spaces and specifically those in central London by including a target for increasing the area of green space (including green roofs etc) within the Central Activities Zone.
- Policy 5.11: Green roofs and development site environs - specifically supports the inclusion of planting within developments and encourages boroughs to support the inclusion of green roofs.
- Policy 5.12: Flood risk management - outlines the requirement for boroughs and developers to carry out flood risk assessments and that developments must comply with national planning policy on flood risk assessments and management to ensure they are designed and built to be resilient to flooding.
- Policy 5.13: Sustainable drainage - promotes the inclusion of sustainable urban drainage systems in developments and sets out a drainage hierarchy that developers should follow when designing their schemes.
- Policy 5.14: Water quality and waste water infrastructure - seeks to ensure that adequate provision is made for waste water infrastructure, and that water quality is protected and improved.
- Policy 5.15: Water use and supplies - encourages developments to incorporate measures to minimise the use of mains water with a water consumption target for residential schemes of 105 litres or less per head per day.
- Policy 5.16: Waste self-sufficiency - sets out how the Mayor will support London authorities to manage as much of their waste as possible within London including through minimising waste generation and encouraging the reuse, recycling/composting and reduction in the use of materials.
- Policy 5.17: Waste capacity - sets out criteria for assessing waste management facilities and states that developments should include suitable waste and recycling storage facilities.
- Policy 5.20: Aggregates - sets targets for, and encourages the recycling or re-use of construction, demolition and excavation waste within London.
- Policy 5.21: Contaminated land - supports the remediation of contaminated sites and seeks to ensure that developments don't activate or spread contamination.
- Policy 6.1: Strategic approach - stresses the importance of integrating development with transport and encourages the reduction of car dependence.
- Policy 6.3: Assessing effects of development on transport capacity - sets out the necessity of assessing development impacts on transport capacity and the transport network at both corridor and local level.
- Policy 6.14: Freight - focuses on improving freight distribution including servicing and deliveries.
- Policy 7.6: Architecture - encourages the highest architectural quality, including so that development does harm privacy, overshadowing, wind and microclimate and so they incorporate best practice in resource management and climate change mitigation and adaptation.
- Policy 7.14: Improving air quality - aims to reduce exposure to poor air quality in London as well as reduce emissions from development, including during the demolition and construction phases and seeks new development to be 'air quality neutral'.
- Policy 7.15: Reducing noise and enhancing soundscapes - seeks to reduce overall exposure to noise within London as well as protect new occupiers from noise within their developments.
- Policy 7.19: Biodiversity and access to nature - seeks a proactive approach to the protection, enhancement, creation, promotion and management of biodiversity.
- Policy 7.20: Geological conservation - seeks to protect, enhance and enable access to areas of national, regional and locally important geological sites.
- Policy 7.21: Trees and woodlands - seeks to protect, maintain and enhance trees and woodlands on a strategic scale as well as protect and promote the provision of additional trees in the public realm as well as on development sites.
- Policy 7.22: Land for food - seeks to protect allotments and encourages the use of land for food growing close to urban areas.

APPENDIX B: CAMDEN'S LOCAL PLAN POLICIES

Camden Core Strategy (Adopted 2010)

- CS11 – Promoting sustainable and efficient travel
  Encourages developments to continue to improve facilities for cyclists, minimise provision for private parking, promote the use of low emission vehicles (including through the provision of electric charging points) and ensure that growth and development has regard to Camden's road hierarchy and does not cause harm to the management of the road network.
- CS13 – Tackling climate change through promoting higher environmental standards
  - Reducing the effects of and adapting to climate change by minimising the need to travel by car and help support local energy networks, promoting the efficient use of land and buildings, minimising carbon emissions from the redevelopment, construction and occupation of buildings by implementing, the Be Lean, Be Clean, Be Green energy hierarchy and designing buildings that facilitate climate change adaptation.
  - Supporting local energy generation and networks
  - Minimising the potential for surface water flooding – developments to incorporate efficient water and foul water infrastructure, to avoid harm to the water environment, water quality or drainage systems and to prevent or mitigates local surface water and downstream flooding.
  - Minimising carbon emissions
- CS15 – Protecting and improving our parks and open spaces and encouraging biodiversity
  Developments to support, where possible and suitable to the development scale, improvements to open spaces
- CS16 – Improving Camden's health and well-being
  Developments to recognise the impact of poor air quality on health and implement Camden's Air Quality Action Plan which aims to reduce air pollution levels.
- CS17 – Making Camden a safer place
  Developments to demonstrate that they have incorporated design principles which contribute to community safety and security, particularly in areas with relatively high levels of crime, in particular Camden Town, King's Cross, Bloomsbury, Covent Garden and Kilburn.
- CS18 – Dealing with our waste and encouraging recycling
  Developments to make sure that include facilities for the storage and collection of waste and recycling;
- DP16 – The transport implications of development
  Developments to assess: movements to, from and within the site, including links to existing transport networks; additional transport capacity off-site and likely impacts of the development and the steps that will be taken to mitigate those impacts; provide safe pick-up, drop-off and waiting areas for taxis, private cars and coaches, where this activity is likely.
- DP17 – Walking, cycling and public transport
  The Council will promote walking, cycling and public transport use. Development should make suitable provision for pedestrians, cyclists and public transport and, where appropriate, will also be required to provide for interchanging between different modes of transport.
- DP18 – Parking standards and limiting the availability of car parking
  The Council will expect development to be car free in the Central London Area, the town centres of Camden Town, Finchley Road/Swiss Cottage, Kentish Town, Kilburn High Road and West Hampstead, and other areas within Controlled Parking Zones that are easily accessible by public transport.
- DP22 – Promoting sustainable design and construction
  The Council will require development to incorporate sustainable design and construction measures. Schemes must:
  - demonstrate how sustainable development principles, have been incorporated into the design and proposed implementation; and incorporate green or brown roofs and green walls wherever suitable.
  - non-domestic developments of 500sqm of floorspace or above are expected to achieve BREEAM Excellent.
  - Developments to include appropriate climate change adaptation measures, such as: summer shading and planting; limiting run-off; reducing water consumption; reducing air pollution; and not locating vulnerable uses in basements in flood-prone areas.
- DP23 – Water
  Developments to reduce their water consumption, the pressure on the combined sewer network and the risk of flooding by:
  - incorporating water efficient features and equipment and capturing, retaining and re-using surface water and grey water on-site;
  - limiting the amount and rate of run-off and waste water entering the combined storm water and sewer network through the methods outlined in part a) and other sustainable urban drainage methods to reduce the risk of flooding;
  - reducing the pressure placed on the combined storm water and sewer network from foul water and surface water run-off and ensuring developments in the areas identified by the North London Strategic Flood Risk Assessment and shown on Map 2 as being at risk of surface water flooding are designed to cope with the potential flooding;
  - ensuring that developments are assessed for upstream and downstream groundwater flood risks in areas where historic underground streams are known to have been present; and
  - encouraging the provision of attractive and efficient water features.
- DP24 – Securing high quality design
  The Council will require all developments, including alterations and extensions to existing buildings, to be of the highest standard of design.
- DP28 – Noise and vibration
  Noise and vibration from developments must be controlled and managed to avoid noise pollution during construction and operation.
- DP29 – Improving access
  All buildings and places must meet the highest practicable standards of access and inclusion; encourage accessible public transport and secure parking for disabled people.
- DP32 – Air quality and Camden's Clear Zone
  The Council will require air quality assessments where development could potentially cause significant harm to air quality. Mitigation measures will be expected in developments that are located in areas of poor air quality. The Council will also only grant planning permission for development in the Clear Zone region that significantly increases travel demand where it considers that appropriate measures to minimise the transport impact of development are incorporated. We will use planning conditions and legal agreements to secure Clear Zone measures to avoid, remedy or mitigate the impacts of development schemes in the Central London Area.

Camden Local Plan (Adopted June 2017)

- Policy C1 Health and wellbeing
  Aims to improve and promote strong, vibrant and healthy communities through ensuring a high quality environment with local services to support health, social and cultural wellbeing and reduce inequalities. Developments are required to positively contribute to creating high quality, active, safe and accessible places; and b. proposals for major development schemes to include a Health Impact Assessment (HIA).
- Policy C5 Safety and security
  Aims to make Camden a safer place. Developments are required to:
  - Demonstrate that they have incorporated design principles which contribute to community safety and security, particularly in wards with relatively high levels of crime, such as Holborn and Covent Garden, Camden Town with Primrose Hill and Bloomsbury;
  - Incorporate appropriate security and community safety measures
- Policy C6 Access for all
  Aims to promote fair access and remove the barriers that prevent everyone from accessing facilities and opportunities. Developments should meet the highest practicable standards of accessible and inclusive design so they can be used safely, easily and with dignity by all.
- Policy A3 Biodiversity
  Aims to protect and enhance sites of nature conservation and biodiversity. Developments cannot directly or indirectly result in the loss or harm to a designated nature conservation site or adversely affect the status or population of priority habitats and species. Developments should:
  - Protect features with nature conservation value, including gardens, wherever possible.
  - Optimise biodiversity through the layout, design and materials used in the built structure and landscaping elements of a proposed development, proportionate to the scale of development proposed;

- require the demolition and construction to avoid disturbance to habitats and species and ecologically sensitive areas, and the spread of invasive species;
- secure management plans, where appropriate, to ensure that nature conservation objectives are met;
- protect existing trees and aim to increase provision of trees and vegetation.

- Policy A4 Noise and vibration
  Aims to ensure that noise and vibration is controlled and managed. Development should have regard to Camden's Noise and Vibration Thresholds and do not generate unacceptable noise and vibration impacts.
- Policy D1 Design
  Aims to secure high quality design in development. Developments should:
  - Be sustainable in design and construction, incorporating best practice in resource management and climate change mitigation and adaptation
  - Be of sustainable and durable construction and adaptable to different activities and land uses;
  - Be inclusive and accessible for all
  - Promotes health;
  - Be secure and designed to minimise crime and antisocial behaviour
  - Respond to natural features and preserves gardens and other open space;
  - Incorporate high quality landscape design (including public art, where appropriate) and maximise opportunities for greening for example through planting of trees and other soft landscaping
- Policy CC1 Climate change mitigation
  States that the Council will require all development to minimise the effects of climate change and encourage all developments to meet the highest feasible environmental standards that are financially viable during construction and occupation. Developments should:
  - Aim for Zero carbon and reduce carbon dioxide emissions through following the steps in the energy hierarchy;
  - Demonstrate how London Plan targets for carbon dioxide emissions have been met;
  - Ensure that the location and mix of land uses minimise the need to travel by car and help to support decentralised energy networks;
  - Support and encourage sensitive energy efficiency improvements to existing buildings;
  - Involve substantial demolition to demonstrate that it is not possible to retain and improve the existing building;
  - Optimise resource efficiency.
  - Assess the feasibility of connecting to an existing decentralised energy network, or where this is not possible establishing a new network – Major developments only.
  - Install appropriate monitoring equipment to ensure that the Council can monitor the effectiveness of renewable and low carbon technologies – major developments only.
- Policy CC2 Adapting to climate change
  Aims to ensure that development are resilient to climate change. All developments should adopt appropriate climate change adaptation measures such as:
  - The protection of existing green spaces and promoting new appropriate green infrastructure;
  - Not increasing, and wherever possible reducing, surface water runoff through increasing permeable surfaces and use of Sustainable Drainage Systems; Incorporating bio-diverse roofs, combination green and blue roofs and green walls where appropriate; and d. measures to reduce the impact of urban and dwelling overheating, including application of the cooling hierarchy.

  Developments should also:
  - Demonstrate how adaptation measures and sustainable development principles have been incorporated into the design and proposed implementation;
  - Achieve BREEAM Excellent and be zero carbon from 2019 – applicable to non-domestic developments of 500 sqm of floorspace or above.
- Policy CC3 Water and flooding
  Aims to ensure that development does not increase flood risk and reduces the risk of flooding where possible. Developments should:
  - Incorporate water efficiency measures;
  - Avoid harm to the water environment and improve water quality;
  - Consider the impact of development in areas at risk of flooding (including drainage)
  - Incorporate flood resilient measures in areas prone to flooding;
  - Utilise Sustainable Drainage Systems (SuDS) in line with the drainage hierarchy to achieve a greenfield run-off rate where feasible
  - And not be located in flood-prone areas when of vulnerable nature.
  - Where an assessment of flood risk is required, developments should consider surface water flooding in detail and groundwater flooding where applicable.
- Policy CC4 Air quality
  Aims to ensure that exposure to poor air quality is reduced in the borough. Developments should consider air quality in relation to both: exposure of occupants to air pollution and the effect of the development on air quality. Consideration must be taken to the actions identified in the Council's Air Quality Action Plan. Air Quality Assessments (AQAs) are required where development is likely to expose residents to high levels of air pollution.
  When involving significant demolition, construction or earthworks the risk of dust and emissions impacts in an AQA should be assessed and appropriate mitigation measures included in a Construction Management Plan.
- Policy CC5 Waste
  Aims to make Camden a low waste borough. To support this, developments should ensure that facilities for the storage and collection of waste and recycling are included.
- Policy T1 Prioritising walking, cycling and public transport
  Aims to promote sustainable transport by prioritising walking, cycling and public transport in the borough. Developments should:
  - Improve the pedestrian environment
  - Be easy and safe to walk and cycle through ('permeable') and adequately lit;
  - Provide high quality and suitably sized footpaths and pavements
  - Provide for and make contributions towards connected, high quality, convenient and safe cycle routes
  - Provide for accessible, secure cycle parking facilities exceeding minimum standards outlined within the London Plan (Table 6.3) and design requirements outlined within Camden Planning Guidance on transport.
  - Make provision for high quality cyclists facilities (changing rooms, showers, dryers and lockers)
- Policy T2 Parking and car-free development
  Aims to limit the availability of parking and require all new developments in the borough to be car-free.
  Policy T4 Sustainable movement of goods and materials
  Aims to promote the sustainable movement of goods and materials and to minimise the movement of goods and materials by road.

APPENDIX C: BREEAM PRE-ASSESSMENT CHECKLIST

BREEAM PRE-ASSESSMENT RESULTS

Project 2020
BREEAM NC 2014 - Offices
V5.0

Key
Av = Available
T=Targeted
P=Potential
U=Unobtainable
Minimum Requirements

	Av	MANAGEMENT - Requirements	T	P	U	Comments
MAN 01 - Project Brief and Design	1	**One credit-Stakeholder consultation (project delivery)** 1. Project delivery stakeholders meet no later than RIBA Stage 2 to identify and define their roles, responsibilities and contributions for each of the key phases of project delivery. 2. Defining the roles and responsibilities for each key phase of the project, including (but not limited to): end user requirements, occupiers budget and technical expertise in maintaining any proposed systems, maintainability and adaptability requirements for training and aftercare support. 3. Demonstrate how the outcomes of the consultation process have influenced or changed the Initial Project Brief, including if appropriate, the Project Execution Plan, Communication Strategy, and the Concept Design. A clear sustainability brief is developed prior to Concept Design which sets out: a. Client requirements e.g. internal environmental conditions required b. Sustainability objectives and targets including target BREEAM rating, business objectives etc. c. Timescales and budget d. List of consultees and professional appointments that may be required e.g. Suitably Qualified Acoustician etc. e. Constraints for the project e.g. technical, legal, physical, environmental.	1			A project sustainability brief and consultation strategy is being implemented with a clear schedule of roles and responsibilities for each key proejct stage.
	1	**One credit-Stakeholder consultation (third party)** Similar to the above, but with more onerous consultation content and undertaken by a third party (meaning someone not involved in the design). Consultation must be undertaken by Concept Design, feedback must be incorporated into the proposal and consultation feedback must be given to and received by, all relevant parties no later than detailed Design (RIBA Stage 4).	1			Extensive consultation is being undertaken with relevant third parties to provide input on the design proposals
	1	**One credit-Sustainability Champion (design)** 1. A Sustainability Champion (BREEAM AP) is appointed no later than RIBA Stage 1. 2. BREEAM Rating Target is set by the Sustainability champion and agreed by client and design team no later than RIBA Stage 2. 3. The targeted BREEAM rating is achieved.	1			Twin and Earth have been appointed as BREEAM AP for the scheme.
	1	**One credit-Sustainability Champion (monitoring)** 1. The credit above is achieved. 2. The Sustainability Champion is appointed to monitor and report progress throughout the project. As a minimum must attend key project/design team meetings during the Concept Design, Developed Design and Technical Design stages and reporting during, and prior to, completion of each stage.		1		This credit is potential and will be considered at the detailed design phases should the required rating not be achieved.
MAN 02 - Life cycle cost and service life planning	2	**Two credits-Elemental life cycle cost (LCC)** 1. An elemental life cycle cost (LCC) analysis has been carried out, at RIBA Stage 2 together with any design option appraisals in line with 'Standardised method of life cycle costing for construction procurement' PD 156865:2008. 2. The LCC analysis shows options for basic structure and envelope also covering multiple cash flow scenarios e.g. 20, 30, 50+ years; It must also include a fabric and servicing strategy for the project outlining services component and fit-out options (if applicable) over a 15-year period.	2			A specialist has been appointed to undertake an elemental life cycle cost analysis in line with PD 156865:2008.
	1	**One credit-Component level LCC Plan** 1. A component level LCC plan has been developed by the end of RIBA Stage 4 in line with PD 156865:2008 and includes: Envelope, Services, Finishes and External spaces. 2. Demonstrate, how the LCC plan has influenced building and systems design/specification to minimise life cycle costs and maximise critical value.		1		This credit is potential and will be considered at the detailed design phases should the required rating not be achieved.
	1	**One credit-Capital Cost Reporting** 1. Report the capital cost for the building in pounds per square metre (£k/ m2), via the BREEAM Assessment Scoring and Reporting tool, Assessment Issue Scoring tab, Management section. Data will be treated as confidential and will only be used anonymously. Data for Design Stage compliance can be based on predicted capital cost, including contingencies.	1			Workshop 21/06/2017 BHA confirmed that this credit will be pursued.
e construction practices		**Pre-requisite** All timber and timber based products used on the project is 'Legally harvested and traded timber'.				This is a minimum requirement and therefore the Contractor will be required to ensure that timber is legally sourced.
	1	**One credit-Environmental management** 1. The principal contractor operates an environmental management system (EMS) covering their main operations (ISO 14001/EMAS) or equivalent standard; or have a structure that is in compliance with BS 8555:2003 and has reached phase four of the implementation stage, 'implementation and operation of the environmental management system', and has completed phase audits one to four, as defined in BS 8555. 2. The principal contractor implements best practice on-site in accordance with Pollution Prevention Guidelines, Working at construction and demolition-sites: PPG61.	1			The Contractor will be required to have an EMS in place. Requirement would need to be included in tender specification. Included in Twin & Earth BREEAM Contractor's Requirements Report.
	1	**One credit-Sustainability Champion** 1. A Sustainability Champion (like the contractor's environmental manager) to monitor environmental performance and ensure implementation of relevant measures during the Construction, Handover and Close Out stages 2. Will ideally be site based or will visit the site regularly to carry out spot checks (and record evidence including photos), with the relevant authority to do so and require action to be taken to address shortcomings in compliance, which should be reported at relevant project team meetings. 3. The BREEAM target rating forms a requirement of the principal contractor's contract and the rating is achieve at PC.	1			The Contractor would be required to have a sustainability champion on board during the construction phase. Requirement would need to be included in tender specification. Included in Twin & Earth BREEAM Contractor's Requirements Report.

MAN 03 - Responsible	2	**Two credits-Considerate construction** 1. One credit: a CCS score between 25 and 34 with at least 5 points achieved per section. 2. Two credits: a CCS score between 35 and 39 with at least 7 points achieved per section. **1 credit minimum requirement for Excellent rating.** **2 credits minimum requirement for Outstanding rating.**	2			2 BREEAM credits should be attainable - although the requirement for minimum CCS scores should be included in the tender specification. Included in Twin & Earth BREEAM Contractor's Requirements Report.
		EXEMPLARY CRITERIA - Considerate construction A CCS score of 40 or more with at least 7 points achieved per section is achieved.	1			Workshop 12/07/2017 design team advsed that the Client has high standards for construction management and that the nature of the project will demand a Contractor capable of delivering this.
	2	**Two credits-Monitoring of construction-site impacts** 1. One credit: monitoring of water and energy consumption. 2. Two credits: monitoring of transport of construction materials to site and waste from site.	2			The Contractor will be required to undertake monitoring in line with the credit requirements to achieve two points. Included in Twin & Earth BREEAM Contractor's Requirements Report.
MAN 04 - Commissioning and handover	1	**One credit-Commissioning and testing schedule and responsibilities** 1. Commissioning schedule covering commissioning and re-commissioning of building services and control systems and testing and inspecting building fabric. 2. The schedule will identify the appropriate standards such as current Building Regulations, BSRIA and CIBSE guidelines. Specific requirements apply to BMS commissioning. 3. An appropriate project team member(s) is appointed to monitor and programme pre-commissioning, commissioning, testing and, where necessary, re-commissioning activities on behalf of the client. 4. The principal contractor accounts for the commissioning and testing programme, responsibilities and criteria within their budget and main programme of works.	1			It is assumed that commissioning will be undertaken in line with the credit requirements. Included in Twin & Earth BREEAM Contractor's Requirements Report.
	1	**One credit-Commissioning Building Services** 1. The above credit is achieved. 2. A specialist commissioning manager is appointed for complex building systems during the design stage (by either the client or the principal contractor) with responsibility for: - Undertaking design reviews and giving advice on suitability for ease of commissioning. - Providing commissioning management input to construction programming and during installation stages. - Management of commissioning, performance testing and handover/post-handover stages.		1		This credit is potential and will be considered at the detailed design phases should the required rating not be achieved.
	1	**One credit-Testing and inspection building fabric** 1. The commissioning and testing schedule and responsibilities credit is achieved. 2. A thermographic survey as well as an airtightness test and inspection is undertaken by a Suitably Qualified Professional in accordance with the appropriate standard. 3. Any defects identified are rectified prior to building handover and close out.	1			This credit is sought where the contractor will be required to undertake a full thermographic survey of the building and identify any defects and remediate accordingly.
	1	**One credit-Handover** 1. A Building User Guide (BUG) is developed **This is a minimum requirement for Excellent and Outstanding ratings.** 2. A training schedule is prepared for building occupiers/premises managers, timed appropriately around handover and proposed occupation plans, which includes the following content as a minimum: - The building's design intent - The available aftercare provision and aftercare team main contact(s), including any scheduled seasonal commissioning and post occupancy evaluation - Introduction to, and demonstration of, installed systems and key features, particularly building management systems, controls and their interfaces - Introduction to the Building User Guide and other relevant building documentation, e.g. design data, technical guides, maintenance strategy, operations and maintenance (O&M) manual, commissioning records, log book etc. - Maintenance requirements, including any maintenance contracts and regimes in place.	1			This credit is sought where a programme of training and handover is delivered to the occupier by the contractor.
MAN 05 - Aftercare	1	**One credit-Aftercare support** 1.The following will be provided: - A meeting between the aftercare team/individual and the building occupier/management (prior to initial occupation, or as soon as possible thereafter) to introduce the aftercare team and support (BUG and training schedule/content) AND Present key information about the building to ensure it operates as efficiently and effectively as possible. - On-site facilities management training. - Aftercare support for at least the first month of building occupation - on-site attendance on a weekly basis (flexible) to support building users and management. - Aftercare support provision for occupants for at least the first 12 months from occupation (helpline, nominated individual, etc.). 2. Collection and monitoring of energy and water consumption data for a minimum of 12 months, once the building is occupied.	1			It is assumed that this will be undertaken by the Contractor in line with the requirements. Included in Twin & Earth BREEAM Contractor's Requirements Report.
	1	**One credit-Seasonal commissioning** Seasonal commissioning activities will be completed over a minimum 12-month period, once the building becomes substantially occupied (building services testing, interview with occupants ,etc.). The seasonal commissioning must be carried out by the Specialist Commissioning Manager. **This is a minimum requirement for Excellent and Outstanding ratings.**	1			This is a minimum standard for Excellent and has therefore been targeted.
	1	**One credit-Post occupancy evaluation (POE)** 1. A POE is undertaken by the client or building occupant one year after initial building occupation. The POE can be carried out by a team member if evidence is provided that robustly demonstrates the independence of the consultation process. 2. Post occupancy performance information is disseminated internally and externally via case study publicly available (website, publicly available literature, press release etc.) unless confidentiality issues are demonstrated, in which case internal distribution only would be accepted.	1			A programme of POE willl be undertaken for a 12 month period.

		EXEMPLARY CRITERIA Provision of the following at quarterly intervals for the first three years of building occupation: - Collection and analysis of occupant satisfaction, energy consumption and water consumption data. - Setting targets for reducing water and energy consumption and monitor progress towards these. - Feedback any 'lessons learned' to the design team and developer. - Provision of the actual annual building energy, water consumption and occupant satisfaction data to BRE.	1			A three year aftercare protocol has been committed to by the Client.
	Av	**HEALTH & WELLBEING - Requirements**	T	P	U	**Comments**
HEA 01 - Visual Comfort	1	**One credit-Glare control** 1. Designing out glare out of all relevant building areas (workstations, projector screens etc.) through building form and layout and/or building design measures. Measures include: low eaves, occupant controlled blinds - transmittance value is < 0.1 (10%), external shading. 2. The strategy must avoid increasing lighting energy consumption, by taking daylight access into consideration and ensuring that the use or location of shading does not conflict with the operation of lighting control systems.	1			The design team have confirmed that measures will be specified to design out glare through external shading and internal blinds where required.
	1	**One credit-Daylighting** **ROUTE 1** When 80% of the occupied areas achieve an Average Daylight Factor (ADF) ≥2% AND one of the following: A uniformity ratio of at least 0.3 or a minimum point daylight factor of at least 0.3 times the above ADF. Glazed roofs, such as atria, must achieve a uniformity ratio of at least 0.7 or a minimum point daylight factor of at least 0.7 times the ADF. OR **ROUTE 2** When 80% of the other occupied areas achieve an average daylight illuminance of a least 300 lux for 2000 hours per year and a minimum daylight illuminance at worst lit point of at least 90 lux for 2000 hours per year.	1			The design proposals have considered optimising daylighting levels.
		EXEMPLARY CRITERIA-Daylighting One additional credit can be achieved for meeting the Exemplary Performance daylight levels established by BREEAM.			1	Credit requirements for Exemplary Performance are onerous and therefore compliance has been deemed unobtainable at this stage.
	1	**One credit-View out** 1. 95% of the floor area in relevant building areas (areas with workstations/benches or where close work will be undertaken or visual aids will be used) is within 7m of a wall with an adequate view out. 2. The window/opening is ≥ 20% of the surrounding wall area. Where the room depth >7m, compliance is only possible where the %window/opening ≥ values in table 1.0 of BS 8206.			1	This credit is not sought due to the proximity requirements not being feasible.
	1	**One credit-Internal and external lighting levels, zoning and control** **INTERNAL LIGHTING** - All fluorescent and compact fluorescent lamps are fitted with high frequency ballasts. - Illuminance levels in accordance with the SLL Code for Lighting 2012 and any other relevant industry standard. - Compliance with CIBSE LG7 for areas where computer screens are regularly used **EXTERNAL LIGHTING** Must be specified in accordance with BS 5489-1:2013 Lighting of roads and public amenity areas and BS EN 12464-2:2014 Light and lighting - Lighting of work places - Part 2: Outdoor work places. **ZONING AND OCCUPANT CONTROL** - Independent occupant control of areas including -but not limited to-: office zones of no more than four workplaces, workstations adjacent to windows/atria, presentation and audience areas in seminar and lecture rooms, zoning of seating areas, circulation space and lectern area in auditoria, servery and seating/dining areas in dining restaurant and café areas, bar and seating areas in bar areas.	1			A compliant internal and external lighting design will be specified with compliant levels of occupant user control.
HEA 02 - Indoor air quality	1	**One credit-Indoor air quality (IAQ) plan** An indoor air quality plan has been produced which considers: - Removal of contaminant sources, - Dilution and control of contaminant sources, - Procedures for pre-occupancy flush out, - Third party testing and analysis - Maintaining indoor air quality in-use.	1			An indoor air quality plan will be developed during the design stages.
	1	**One credit-Ventilation** 1. Provide fresh air into the building in accordance with the criteria of the relevant standard for ventilation. 2. The building's air intakes and exhausts are over 10m apart and intakes are over 20m from sources of external pollution (unless relative position is designed in accordance with BS EN 13779:2007 Annex A2). 3. In naturally ventilated buildings/spaces: openable windows/ventilators are over 10m from sources of external pollution. 4. Where present, HVAC systems must incorporate suitable filtration to minimise external air pollution, as defined in BS EN 13779:2007 Annex A3. Areas of the building subject to large and unpredictable or variable occupancy patterns have carbon dioxide (CO_2) or air quality sensors specified and: a. In mechanically ventilated buildings/spaces: sensor(s) are linked to the mechanical ventilation system and provide demand-controlled ventilation to the space. b. In naturally ventilated buildings/spaces: sensors either have the ability to alert the building owner or manager when CO_2 levels exceed the recommended set point, or are linked to controls with the ability to adjust the quantity of fresh air, i.e. automatic opening windows/roof vents.		1		This credit is potential as the current roof plant required detailed design to determine whether the location of inlets and exhausts can be sufficiently spaced to comply with BREEAM. All other requirements are met and BCO levels for fresh air are specified.
	1	**One credit-Volatile organic compound (VOC) emission levels (products)** 1. All decorative paints and varnishes specified meet the criteria established by BREEAM. 2. At least five of the seven remaining product categories meet the criteria established by BREEAM.	1			This credit is targeted where products with low VOCs will be specified.

HEA	1	**One credit-Volatile organic compound (VOC) emission levels (post construction)** 1. Formaldehyde and total volatile organic compound (TVOC) concentration level are measured post construction (but pre-occupancy) and comply with BREEAM maximum levels. 2. If levels are not met, the project team confirms the measures that have, or will be taken, in accordance with the IAQ plan, to reduce the levels to within these limits.	1			A programme of pre-completion indoor air testing for VOCs and formaldehyde is undertaken and relevant flush-out procedures.
		EXEMPLARY CRITERIA - VOC **One credit** 1. All seven product categories meet the testing requirements and emission levels criteria. 2. Tested product formaldehyde emission levels are ≥ 0.06mg/m3 air. Two credits 1. As above plus tested product formaldehyde emission levels are ≥ 0.01mg/m3 air.		1	1	This credit remains as potential as it requires that all products are specified to within the VOCs standards as well as a reduced testing performance level which may be onerous.
	1	**One credit-Adaptability - Potential for natural ventilation** 1. Room depths are designed in accordance with CIBSE AM10 (section 2.4) and the openable window area in each occupied space is equivalent to 5% of the gross internal floor area of that room/floor plate. OR Cross ventilation is demonstrated via CIBSE AM10 design tools. For a strategy which does not rely on openable windows, or which has occupied spaces with a plan depth greater than 15m, the design must demonstrate (in accordance with criterion 13.a.i. above) that the ventilation strategy can provide adequate cross flow of air to maintain the required thermal comfort conditions and ventilation rates. 2. The natural ventilation strategy is capable of providing at least two levels of user-control on the supply of fresh air.			1	This credit is not sought.
HEA 04 - Thermal comfort	1	**One credit-Thermal modelling** 1. Thermal modelling is carried out using CIBSE AM11 compliant software. 2. The modelling demonstrates compliance with CIBSE Guide A summer and winter operative temperatures for A/C buildings or compliance with CIBSE Guide A winter temperature and compliance with CIBSE TM52 for summer temperatures. 3. For air conditioned buildings, the PMV (predicted mean vote) and PPD (predicted percentage of dissatisfied) indices based on the above modelling are reported via the BREEAM assessment scoring and reporting tool.		1		This credit is potential as although the thermal comfort model will be undertaken, this requires detailed design input and ultimately compliance with the relevant standards, which itself presents a risk.
	1	**One credit-Adaptability - for a projected climate change scenario** 1. The above credit is achieved. 2.The thermal modelling demonstrates compliance with the requirements of the thermal comfort credit for a projected climate change environment. 3. Where criteria 2 is not met, the project team demonstrates how the building has been adapted, or designed to be easily adapted in future using passive design solutions in order to subsequently meet the requirements . 4. For air conditioned buildings, the PMV and PPD indices based on the above modelling are reported via the BREEAM assessment scoring and reporting tool.		1		As above, but for a climate change scenario. The spaces are mechanically cooled in the most part so should be achievable.
	1	**One credit-Thermal zoning and controls** 1. The thermal comfort credit is achieved. 2. The thermal modelling analysis has informed the temperature control strategy for the building and its users. 3. The strategy for proposed heating/cooling system(s) has addressed the following: - Zones within the building and how the building services could efficiently and appropriately heat or cool these areas (for example different requirements for the central and perimeter areas). - Degree of occupant control (based on discussions with the end user or alternatively design guidance, case studies, feedback) considers: User knowledge of building services, Occupancy type, patterns and room functions, How the user is likely to operate or interact with the system(s), The user expectations and degree of individual control, How the proposed systems will interact with each other and how this may affect the thermal comfort of the building occupants and The need or otherwise for an accessible building user actuated manual override for any automatic systems.		1		This credit is dependent on the first thermal comfort credit being achieved, therefore remains as potential.
HEA 05 - Acoustic performance	3	**Acoustic Performance - 3 credits** A suitable qualified acoustician is appointed during the design stages to develop an acoustic strategy in line with the BREEAM requirements. A programme of pre-completion acoustic testing is undertaken to confirm the acoustic levels, and where necessary, remediation is undertaken. **One credit-Sound Insulation** The sound insulation between acoustically sensitive rooms and other occupied areas complies with the performance criteria given in Section 7 of BS 8233:2014 - summary of key limits below. Pre-completion acoustic testing is carried out by a compliant test body in accordance with the acoustic testing and measurement procedures established by BREEAM. **One credit-Internal indoor ambient noise levels** Achieve indoor ambient noise levels that comply with the design ranges given in Section 7 of BS 8233:2014. A programme of acoustic measurements is carried out by a compliant test body in accordance with the acoustic testing and measurement procedures established by BREEAM. **One credit-Reverberation** Achieve reverberation times compliant with Section 2 of APS. In addition, or alternatively, if relevant to the assessed building; classrooms, seminar rooms and lecture theatres achieve reverberation times compliant with section 2 of APS.	2	1		Two credits are targeted for sound insulation and internal ambient noise levels. The third credit for reverberation will be reviewed at the detailed design following appointment of the acoustician.

HEA 06 - Safety and Security	1	**One credit-Safe access** 1. Dedicated cycle paths provide direct access from off-site cycle paths or the site entrance(s) to any cycle storage provided. 2. Footpaths on-site provide direct access from public footpaths off-site or the site entrance(s) to the building entrance(s). 3. Drop-off areas are designed off/adjoining to the access road and provide direct access to pedestrian footpaths avoiding the need for the pedestrian to cross vehicle access routes. - TBC 4. Dedicated pedestrian crossings provided where pedestrian routes cross vehicle access routes, and appropriate traffic calming measures are in place to slow traffic down at these crossing points. 5. For large developments with a high number of public users or visitors, pedestrian footpaths must be signposted to other local amenities and public transport nodes off-site (where existing). 6. The lighting is compliant with BS 5489-1:20131. 7. Delivery areas are not directly accessed through general parking areas and do not cross or share pedestrian and cyclist routes and other outside amenity areas accessible to building users and general public. 8. There is a dedicated parking/waiting area for goods vehicles with appropriate separation from the manoeuvring area and staff and visitor car parking 9. Parking and turning areas are designed for simple manoeuvring. - 10. There is a dedicated space for the storage of refuse skips and pallets away from the delivery vehicle manoeuvring area and staff/visitor car parking.	1			This credit is targeted where suitable and safe access for pedestrians, cyclists and vehicles is provided.
	1	**One credit-Security of site and building** 1. A Suitably Qualified Security Specialist (SQSS) conducts an evidence-based Security Needs Assessment (SNA) and develops a set of recommendations no later than RIBA Stage 2. 2. The recommendations are implemented.	1			A suitably qualified security consultant has been appointed to undertake a security needs assessment for the proposed site. The report and recommendations have been approved by the Desinging out crime officer at the Met Polce.
Av ENERGY - Requirements			T	P	U	Comments
ENE 01 - Reduction of energy use and carbon emissions	12	**Up to twelve credits** achieved depending on the energy performance of the building. **5 credits minimum requirement for Excellent rating.** **8 credits minimum requirement for Outstanding rating.**	5		7	Preliminary energy modelling demonstrate that 6 credits can be achieved.
		EXEMPLARY CRITERIA **Up to four credits - Zero regulated carbon** An equivalent percentage of the building's modelled 'regulated' operational energy consumption, is generated by carbon neutral on-site or near-site sources and used to meet energy demand from 'unregulated' building systems or processes. **Five credits - Carbon negative** The building is 'carbon negative' in terms of its total modelled operational energy consumption, including regulated and unregulated energy.			5	Innovation credits are not considered feasibile unless all credits in Ene 01 have been achieved.
ENE 02 - Energy monitoring	2	**One credit-Sub-metering of major energy consuming systems** 1.Energy metering systems are installed that enable at least 90% of the estimated annual energy consumption of each fuel. 2. Buildings with a total useful floor area > 1,000m2 are metered using an appropriate energy monitoring and management system (BMS or equivalent). 3. The end energy consuming uses are identifiable to the building users (labelling or data outputs). **This credit is a minimum requirement for Very Good, Excellent and Outstanding rating.** **One credit - Sub-metering of high energy load and tenancy areas** 5. An accessible energy monitoring and management system or separate accessible energy sub-meters with pulsed or other open protocol communication outputs to enable future connection to an energy monitoring and management system are provided, covering a significant majority of the energy supply to tenanted areas or, in the case of single occupancy buildings, relevant function areas or departments within the building/unit. 1. Office areas (metering by floor plate) 2. Catering	2			A compliant BEMS will be specified capable of monitoring all major energy consuming systems and high energy load / tenancy areas.
ENE 03 - Ext. lighting	1	**One credit-External lighting** The average initial luminous efficacy of the external light fittings is > 60 luminaire lumens per circuit Watt. All external light fittings are automatically controlled (timer or photocell).	1			The external lighting design is compliant.
Low carbon design	1	**One credit-Passive design analysis** 1. The thermal comfort credit has been achieved. 2. A passive design analysis is undertaken no later than RIBA Stage 2 or equivalent) 3. total heating, cooling, mechanical ventilation and lighting load reductions result on at least 5% of overall building energy demand and/or CO2 emissions savings.	1			A passive design analysis is being undertaken looking at reducing the CO2 emissions through passive solutions: Site location, Site weather, Microclimate, Building layout, Building orientation, Building form, Building fabric etc. Study would need to show >5% reduction in building loads from measures.
	1	**One credit-Free cooling** 1. The above credit has been achieved. 2. The passive design analysis reviews opportunities for the implementation of free cooling solutions. 3. Free cooling is provided. Free cooling includes: Night time cooling, Ground coupled air cooling, Displacement ventilation, Ground water cooling, Surface water cooling, Evaporative cooling, direct or indirect, Desiccant dehumidification and evaporative cooling using waste heat, Absorption cooling using waste heat and natural ventilation.			1	Free cooling is not an option available for the proposed scheme.

ENE 04 - Lo	1	**One credit-Low zero carbon feasibility study** 1. A feasibility study is carried out by an energy specialist no later than RIBA Stage 2. 2. LZC technologies are specified in line with the recommendations of the report and result on at least 5% of overall building energy demand and/or CO2 emissions savings.	1			A Low carbon feasibility study will be undertaken during the early stages. Anticipated that PV will be specified.
ENE 06 - Energy efficient transportation systems	1	**One credit-Energy consumption** 1. An analysis of the transportation demand and usage patterns for the building has been carried out to determine the optimum number and size of lifts, escalators and/or moving walks. 2. The energy consumption has been calculated in accordance with BS EN ISO 25745 for one of the following: At least two types of system, An arrangement of systems or A system strategy which is 'fit for purpose'. 3. Regenerative drives are specified where they save more energy than the additional standby energy used to support the drives (usually for high travel and high intensity use). 4. The transportation system with the lowest energy consumption is specified.	1			The 1st credit is achieved where the most energy efficient lift is specified based on the analysis. All energy efficient features to be specified. Current proposals include for new lifts throughout (passenger, goods, vehicular), no escalators present. The vehicle lift has extensive security requirements therefore the team did not feel that this credit could be achieved for such a lift. Query has been submitted to BRE to discount vehicle lift.
	2	**Two credits-Energy efficient features** 1. The first credit is achieved. 2. Standby condition during off-peak periods, energy efficient lift car lighting and display lighting (> 55 lamp lumens/circuit Watt) and variable speed, variable-voltage, and variable-frequency (VVVF) controllers are specified. 3. Regenerative drives are specified is demonstrated to save energy. NOTE: other criteria apply to escalators which must be considered if specified.	2			
ENE 8 - Energy efficient equipment	2	**Two credits-Energy efficient equipment** 1. Identify which of the following is the highest unregulated building energy demand: Small power & plug-in equipment, Swimming pool, Communal laundry facilities with commercial sized appliances, Data centres, IT-intensive operating areas, Residential areas with domestic scale appliances (individual and communal facilities), Healthcare and Kitchen and catering facilities. 2. Specify the energy efficiency measures established by BREEAM for that energy consumption and achieve a meaningful reduction.	2			Requires the identification of all unregulated energy consuming items which contribute to 90% of unregulated energy and then the specification of energy efficient systems in line with BREEAM. MEP confirmed that the following unregulated systems (small power, plug in/IT equipment, kitchen / catering, data centre) - Kitchen - MER (main equipment room) - Several SER rooms (secondary) - Above desk power / USB outlets - Small power

Av	TRANSPORT - Requirements	T	P	U	Comments
TRA 01 - Public transport accessibility	3	**Up to three credits- Accessibility to public transport** Achieved depending on the Accessibility Index of the site. NOTE: If no credits were achievable based on the AI, one credit could be achieved for the provision of a compliant dedicated bus service.	3			The proposed site has an accessibility index of 64.5 (6b).
TRA 02 - Proximity to amenities	1	**One credit-Proximity to amenities** The following amenities must be found within 500m of the building entrance: At least 2 of the following: food outlet, access to cash, access to a recreation/leisure facility for fitness/sports At least one of the following: access to an outdoor open space, publicly available postal facility, community facility, pharmacy, GP and child care facility or school.	1			It is assumed that the site will achieve this credit given the proximity to local amenities.
TRA 03 - Cyclist facilities	1	**One credit-Cycle store** Compliant, safe, covered and accessible cycle storage will be provided with a minimum of 1 cycle space per 10 building users. The following sliding scale of compliance can be adopted: 1. For buildings with more than 200 users but less than 300, the unit of measure can be increased by a ratio of 1.5. 2. For buildings with more than 300 users but less than 400, the unit of measure can be increased by a ratio of 2. 3. For buildings with more than 400 users, the unit of measure can be increased by a ratio of 2.5. For sites where at least 50% of the available BREEAM credits for Public transport accessibility (Tra 01) have been awarded (rounded to the nearest whole credit), the number of compliant cycle spaces required in Table - 1 can be reduced by 50%.	1			A total of 167 cycle storage spaces will be provided in line with the London Plan which is significantly more onerous than BREEAM. The facilities will be covered, well lit and secure.
	1	**One credit-Cyclist facilities** At least two of the following types of compliant cyclist facilities are provided - Showers - 1 per 10 cycle racks - Changing facilities (Toilet/shower cubicles cannot be counted as changing facilities) - Lockers - 1 per cycle rack - Dedicated drying space	1			Based on the cycle storage provision above, at least **two** of the following facilities are required: - Showers = 4 - Changing facilities (Toilet/shower cubicles cannot be counted as changing facilities - Lockers = 36 - Dedicated drying space The above have been confirmed.
TRA 04 - Maximum car parking capacity	2	**Two credits-Car parking capacity** For offices with AI <4, one credit achieved when no more that 1 car parking space per 3 building users is provided and two credits for less than 1 per 4.	2			As minimal car parking will be provided, both credits have been targeted.

	Av		T	P	U	Comments
TRA 05 - Travel plan	1	**One credit-Travel plan** Achieved when a BREEAM compliant site specific travel plan is developed and the recommendations are implemented. It must be noted that the Tenant may need to review/alter/extend the travel plan developed by the Landlord.	1			A Transport Statement and Travel plan will be developed.
WATER - Requirements						
WAT 01 - Water consumption	5	**Up to five credits-Water consumption** Achieved for reducing the water consumption on site via water efficient fittings and/or water recycling systems. The water consumption (L/person/day) is calculated based on the following 'domestic scale' water-consuming components: WCs, Urinals, Taps, Showers, Baths, Dishwashers (domestic and commercial sized) and Washing machines (domestic and commercial or industrial sized). Any greywater systems must be specified and installed in compliance with BS 8525-1:2010. **One credit minimum requirement for Very Good and Excellent ratings.** **Two credits minimum requirement for Outstanding rating.**	3	2		Three credits are targeted as a minimum where a specification of low flow sanitaryware and kitchen taps will be specified. Further improvements for additional credits will be considered at the next stage to incorporate any greywater /rainwater harvesting.
		EXEMPLARY CRITERIA One credit when a 65% water reduction over the BREEAM base case is achieved.			1	A 65% water reduction is considered challenging and therefore no credits have been targeted.
WAT 02 - Water monitoring	1	**One credit-Water monitoring** 1. A water meter on the mains water supply to each building is specified. **This is a minimum requirement for Good rating and above.** 2. Water-consuming plant or building areas, consuming 10% or more of the building's total water demand, are either fitted with easily accessible sub-meters or have water monitoring equipment integral to the plant or area. 3. Each meter (main and sub) has a pulsed output and is connected to the BMS is present.	1			A compliant water monitoring strategy will be in place.
WAT 03 - Major leak detection	1	**One credit-Water leak detection system** A leak detection system which is capable of detecting a major water leak on the mains water supply within the building and between the building and the utilities water meter is installed. The leak detection system must be: a. A permanent automated water leak detection system that alerts the building occupants to the leak OR an inbuilt automated diagnostic procedure for detecting leaks is installed. b. Activated when the flow of water passing through the water meter/data logger is at a flow rate above a pre-set maximum for a pre-set period of time. c. Able to identify different flow and therefore leakage rates, e.g. continuous, high and/or low level, over set time periods. d. Programmable to suit the owner/occupiers' water consumption criteria. e. Where applicable, designed to avoid false alarms caused by normal operation of large water-consuming plant such as chillers.	1			A compliant leak detection system will be specified.
	1	**One credit-Flow control device** A time controller, a programmed time controller, a volume controller, a presence detector and controller or a central control unit is installed to regulate the supply of water to each WC area/facility according to demand.	1			Flow control devices through sanitary supply shut-off controlled via PIR to WC areas will be specified.
WAT 04 - Water efficient equipment	1	**One credit-Water efficient equipment** 1. The design team has identified all unregulated water demands that could be realistically mitigated or reduced (typically irrigation and/or process water). 2. System(s) or processes have been identified to achieve a meaningful reduction of the unregulated water demand.	1			Irrigation to planting is to be delivered via rainwater / greywater harvesting.
MATERIALS - Requirements						
MAT 01 - Life cycle impacts	5	**Up to five credits-Life cycle impact** Achieved for using materials with an A/A+ rating in the Green Guide to Specification for main materials including: external walls, windows, roof, upper floor slab, internal walls and floor finishes/coverings. **Office type developments:** A maximum of 5 are available, Plus any Innovation credits.		2	3	Depending on how the BRE propose to assess the refurbishment areas, it is likely that a calculation of new vs. re-used materials will be required. Additional points for newly specified elements with EPDs. NDRFO 2014 Note: This requires an assessment of new vs. re-used elements rather than an assessment against the Green Guide. If the level of strip-out and new elements is significant, then products with EPDs should be considered to achieve credits here.
		EXEMPLARY CRITERIA-Life cycle impact Route 1: Using the Green Guide to Specification (elemental approach) - one credit Where assessing four or more applicable building elements, the building achieves at least two points over the required to achieve maximum credits under the standard BREEAM criteria or one point when fewer applicable building elements. Route 2: Life cycle assessment - two credits 1. Use IMPACT compliant software tool to measure the environmental impact of the building. 2. Demonstrate it has benefited the building in terms of measuring and reducing its environmental impact.		2		These credits are potential and may be sought during the detailed design if required.
MAT 02 - Hardscaping & boundary protection	1	**One credit-Hard landscaping and boundary protection** Where at least 80% of all external hard landscaping and 80% of all boundary protection (by area) in the construction zone achieves an A or A+ rating, as defined in the Green Guide to Specification. NOTE: If there are no external areas within the project boundary the credit can be achieved by default.		1		This credit is considered as potential as until input is provided from the Civil engineer and Landscape Architect.
		Pre-requisite All timber and timber based products used on the project is 'Legally harvested and traded timber' (see **This is a minimum requirement for achieving any BREEAM rating.**				Legally sourced timber is a minimum requirement and therefore compliance will be achieved by the contractor.

MAT 03 - Responsible sourcing of materials	1	**One credit - Sustainable procurement plan** The principal contractor sources materials for the project in accordance with a documented sustainable procurement plan covering: 1. Risks and opportunities are identified against a broad range of social, environmental and economic issues. BS 8902:2009 guidance. 2. Aims, objectives and targets to guide sustainable procurement activities. 3. The strategic assessment of sustainably sourced materials available locally and nationally. There should be a policy to procure materials locally where possible. 4. Procedures are in place to check and verify that the plan is being implemented/adhered to (KPI's).	1			It is assumed that the contractor will be required to put a sustainable procurement plan in place. This requirement will need to be included in the tender specification.
	3	**Up to three credits-Responsible sourcing of materials (RSM)** Credits can be achieved by ensuring that materials are responsibly sourced (BES 6001 certification, EMS/ISO14001 certification etc.). Availability of responsible sourcing certification should be checked with the manufacturer prior to procurement.	1	1	1	The Contractor will be encouraged to achieve full credits; however, feasibility of full responsible sourcing is sometimes not possible depending on the materials specification. One credit is deemed a reasonable target at this stage. To achieve further credits materials will need to be specified at the design stage with high levels of responsible sourcing.
		EXEMPLARY CRITERIA-Responsible sourcing of materials (RSM) When high levels of responsible sourcing (achievement of 70% of the available points) are achieved.			1	Responsible sourcing of 70% of the materials is an onerous requirements and compliance cannot be guaranteed at this stage.
MAT 04 - Insulation	1	**One credit - Embodied impact** Insulation specified for Building envelope and building services has an Insulation index no lower than 2.5. The Insulation Index is a parameter created by the BRE to measure Embodied Impact of materials which depends on the thermal properties of the insulation, the amount of insulation and the Green Guide rating of the product. Materials selected should have low thermal conductivity and a Green Guide rating of A or A+.	1			Low embodied impact insulation will be specified to achieve the credit.
MAT 05 - Designing for durability and resilience	1	**Protecting vulnerable parts of the building for damage** Measures to prevent damage to vulnerable parts of the internal and external building and landscaping elements are specified including: - Protection from the effects of high pedestrian traffic in main entrances, public areas and thoroughfares (corridors, lifts, stairs, doors etc.). - Protection against any internal vehicular/trolley movement within 1m of the internal building fabric in storage, delivery, corridor and kitchen areas. - Protection against, or prevention from, any potential vehicular collision where vehicular parking and manoeuvring occurs within 1m of the external building façade for all car parking areas and within 2m for all delivery areas.	1			Durability measures will be specified to protect vulnerable parts of the building and suitable consideration will be made of the potential for material degradation.
		Protecting exposed parts of the building from material degradation Measures prevent from environmental factors and biological factors are implemented to prevent degradation from: Corrosion, dimensional change, fading/discolouration, rotting, leaching, blistering, melting, salt crystallisation and abrasion.				
MAT 06 - Material efficiency	1	**One credit-Material efficiency** 1. Opportunities have been identified, and appropriate measures investigated and implemented, to optimise the use of materials in building design, procurement, construction, maintenance and end of life. Example measures are: reusing existing demolition/strip-out materials, procuring materials with higher levels of recycled content, off-site manufacture or use of pre-assembled service pods. 2. Review is carried out by the design/construction team in consultation with the relevant parties at: Preparation and Brief, Concept Design, Developed Design, Technical Design and Construction.			1	The appointment of the BREEAM consultant was past RIBA 1 therefore this credit cannot be sought.

Av	**WASTE - Requirements**	T	P	U	**Comments**
WST 01 - Construction waste management	3	**Up to three credits - Construction resource efficiency** 1. A Resource Management Plan (RMP) has been developed covering the non-hazardous waste related to on-site construction and dedicated off-site manufacture or fabrication (including demolition and excavation waste) generated by the building's design and construction. 2. Where construction waste related to on-site construction and dedicated off-site manufacture/fabrication (excluding demolition and excavation waste) meets or is lower than the following: - One credit ≤13.3m3 or ≤11.1 tonnes - Two credits ≤7.5m3 or ≤6.5 tonnes - Three credits ≤3.4 or ≤3.2 tonnes 3. Where existing buildings on the site will be demolished a pre-demolition audit of any existing buildings, structures or hard surfaces is completed and referenced in the RMP. **1 credit minimum requirement for Outstanding rating.** **Pre-Demolition Audit (Pre-requisite)** Where there is any demolition of existing buildings or structures, a pre-demolition audit must be undertaken and referenced within the resource management plan.	2	1		The Contractor will be encouraged to minimise the waste generation to achieve three credits; however, credit targets are onerous and therefore a commitment to achieve 2 credits is deemed a more reasonable target for this stage. There is a requirement to undertake a pre-demolition audit.
	1	**One credit - Diversion of resources from landfill** 1. The following percentages of non-hazardous construction (on-site and off-site manufacture/fabrication in a dedicated facility), demolition and excavation waste (where applicable) generated by the project have been diverted from landfill: - One credit: 70% by volume or 80% by weight of the construction waste and 80% by volume or 90% by weight of the demolition waste.	1			The Contractor will be required to achieve the BREEAM targets for diversion from landfill. This will need to be added as a requirement to the tender specification.
		EXEMPLARY CRITERIA When the above targets are increased as follows: - ≤1.6m3 or ≤1.9 tonnes -85% by volume or 90% by weight of the construction waste, 85% by volume or 95% by weight of the demolition waste and 95% by volume or 95% by weight of the excavation waste.			1	Credit targets are onerous and therefore compliance cannot be guaranteed at this stage.

WST 02 - Recycled aggregates	1	**One credit-Recycled aggregates** 1. At least 25% (by weight or volume) of the high grade aggregate specified is recycled or secondary aggregate. In addition to this, there are minimum % for each application that must be met. 2. The recycled or secondary aggregates must be either: Construction, demolition and excavation waste obtained on-site or off-site or secondary aggregates obtained from a non-construction post-consumer industrial by product source. Application and Recycled / Secondary Content - Structural frame 15% - Bitumen or hydraulically bound base, binder, and surface courses for paved areas & roads 30% - Building foundations 20% - Concrete road surfaces 15% - Pipe bedding 100% - Granular fill and capping 100%		1		The potential to achieve this credit will be explored during the detailed design stages.
		EXEMPLARY CRITERIA-Recycled aggregates 1. In addition to the above, the total high grade recycled aggregate specified is 35% (by weight or volume) and the contributing recycled or secondary aggregate are not be transported more than 30 km by road transport.			1	One additional credit could be achieved by increasing the above percentage to 35%. Potential to be confirmed by Structural Engineer
WST 03 - Operational waste	1	**One credit-Operational waste** 1. A dedicated, clearly labelled, and accessible area is provided for the storage of recyclable materials compliant with the following size: - At least 2m2 per 1000m2 of net floor area for buildings < 5000m - A minimum of 10m2 for buildings ≥5000m2 - An additional 2m2 per 1000m2 of net floor area where catering is provided (with an additional minimum of 10m2 for buildings ≥5000m2). The net floor area should be rounded up to the nearest 1000m 2. Where the consistent generation in volume of the appropriate operational waste streams is likely to exist, the following facilities are provided: - Static waste compactor(s) or baler(s); - Vessel(s) for composting OR adequate space(s) for storing segregated food waste and compostable organic material. - Where organic waste is to be stored/composted on-site, a water outlet is provided adjacent to or within the facility. **This credit is a minimum requirement for Excellent and Outstanding ratings.**	1			A compliant waste strategy is in place and includes segregation of waste streams. A compactor is also existing and will be maintained.
WST 04 - Speculative floor and ceiling finishes	1	**One credit-Speculative floor and ceiling finishes** For tenanted areas (where the future occupant is not known), prior to full fit-out works, carpets, other floor finishes and ceiling finishes have been installed in a show area only. In a building developed for a specific occupant, that occupant has selected (or agreed to) the specified floor and ceiling finishes.	1			As this is an occupant fit-out this credit will be achieved.
WST 05 - Adaptation to climate change	1	**One credit-Adaptation to climate change – structural and fabric resilience** Conduct a climate change adaptation strategy appraisal for structural and fabric resilience no later than RIBA Stage 2 or equivalent. The strategy should be based on an iterative risk assessment to identify and evaluate the impact on the building over its projected life cycle from expected extreme weather conditions arising from climate change and, where feasible, mitigate against these impacts. The assessment should cover the following stages: Hazard identification, Hazard assessment, Risk estimation, Risk evaluation and Risk management.	1			The design team have undertaken a climate change adaptation strategy which consider structural and fabric resillience in extreme conditions.
		EXEMPLARY CRITERIA In addition to the above, the following credits have been achieved: - HEA 04 thermal comfort credit - At least 8 credits under ENE 01 - The passive design credit of ENE 04 - A minimum of 3 credits under WAT 01 - Material degradation credit of MAT 05 - One flood risk credit and two surface run-off credits under POL 03		1		Potential to achieve this credit if the identified credits in the list are targeted.
WST 06 - Functional adaptability	1	**One credit-Functional adaptability** 1. A building-specific functional adaptation strategy study has been undertaken by the client and design team no later than RIBA Stage 2, which includes recommendations for measures to be incorporated to facilitate future adaptation. the strategy should consider: - The potential for major refurbishment, including replacing the façade. - Replacement of all major plant within the life of the building - Adaptability of the internal environment to accommodate changes in working practices. - Adaptability to change in-use. - Accessibility to local services. 2. Measures are adopted no later than RIBA Stage 4 unless unfeasibility is demonstrated.	1			The design team have undertaken a functional adaptability strategy looking at design measures to avoid significant redesign and wastage of the building should potential changes in function occur.

Av LAND USE AND ECOLOGY - Requirements

			T	P	U	
LE 01 - Site selection	1	**One credit-Previously occupied land** At least 75% of the proposed development's footprint is on an area of land which has previously been occupied by industrial, commercial or domestic buildings or fixed surface infrastructure.	1			The land is previously developed and therefore the credit will be achieved by default.
	1	**One credit-Contaminated land** 1. The site is deemed contaminated by a land specialist's site investigation, risk assessment and appraisal identifying: the degree of contamination, the contaminant sources/types and the options for remediating sources of contamination which present an unacceptable risk. 2. Remediation is undertaken.			1	There is no evidence that the land is significantly contaminated and will require remediation before development and therefore the credit cannot be achieved.

LE 02 - Ecological value of site and protection of	1	**One credit-Ecological value of the site** The BREEAM checklist for defining land of low ecological value.	1			The Ecology Consultancy were appointed at stage 2 and have provided a preliminary ecology report with a series of recommendations for green roofs, biodiverse / biosolar roofs, planting. Birds nesting has been identified as having potential for breeding. The site has been defined as being of "low ecological value".
	1	**One credit-Ecological value of the site** 1. All existing features of ecological value are adequately protected from damage in line with BS42020: 2013 2. The principal contractor constructs ecological protection recommended by the SQE, prior to any preliminary site construction or preparation works.	1			It is assumed that ecological features will be protected by the Contractor in line with the recommendations of the project ecologist. The Ecology Consultancy were appointed at stage 2 and have provided a preliminary ecology report with a series of recommendations for green roofs, biodiverse / biosolar roofs, planting. Birds nesting has been identified as having potential for breeding.
LE 03 - Minimising impact on existing site ecology	2	**Up to two credits-Improving the biodiversity of the site** - One credit when the change in ecological value of the site is no worse than minus 9 plant species. - Two credits when the change in ecological value of the site is equal to or greater than zero plant species. **1 credit minimum requirement for Very good and above ratings.** NOTE: Where it is not possible to implement ecological enhancements within the construction zone due to overriding security issues, or where space for ecological enhancements within the zone is severely limited, ecological enhancements made to other areas of the site can be taken into account and used to determine the number of BREEAM credits achieved. These enhancements must be made within the boundary of the wider existing development and be planned and commissioned on a similar timescale to the assessed development.	2			2 credits are targeted where the existing ecological value of the site is minimal and the current proposals consider Green walls / green roofs, terraces, landscaping in courtyard. Ecologist to provide recommendations for enhancing site ecology.
LE 04 - Enhancing site ecology	1	**One credit-Ecologist's report and recommendations** A suitably qualified ecologist (SQE) is appointed no later than RIBA Stage 1 an Ecology Report based on a site visit/survey by the SQE is developed no later than RIBA Stage 2 and the recommendations are implemented.	1			The Ecology Consultancy were appointed at stage 2 and have provided a preliminary ecology report with a series of recommendations for green roofs, biodiverse / biosolar roofs, planting. Birds nesting has been identified as having potential for breeding.
	1	**One credit-Increase in ecological value** 1. The above criteria is met. 2. An increase of six plant species or greater is achieved.	1			The Ecology Consultancy were appointed at stage 2 and have provided a preliminary ecology report with a series of recommendations for green roofs, biodiverse / biosolar roofs, planting
LE 05 - Long term impact on biodiversity	2	**Up to two credits-Long term impact on biodiversity** 1. A Suitably Qualified Ecologist (SQE) is appointed prior to commencement of activities on-site and they confirm that all relevant UK and EU legislation relating to the protection and enhancement of ecology has been complied with during the design and construction process. 2.A landscape and habitat management plan, is produced covering at least the first five years after project completion in accordance with BS 42020:2013 Section 11.1. 3.Where in addition to the above the below is implemented (2 measures - 1 point; 4 measures - 2 points). - The contractor nominates a Biodiversity Champion. - The contractor trains the site workforce on how to protect site ecology during the project. - The contractor records actions taken to protect biodiversity and monitor their effectiveness throughout key stages of the construction process. - Where a new ecologically valuable habitat appropriate to the local area is created. - Where flora and/or fauna habitats exist on-site, the contractor programmes site works to minimise disturbance to wildlife.		2		Potential credit to be reviewed at the next stage should the credits be required to achieve the required rating.

Av	POLLUTION Requirements	T	P	U	Comments
POL 01 - Impact of refrigerants	**Pre-requisite** All systems (with electric compressors) comply with the requirements of BS EN 378:2008 (parts 2 and 3) and where refrigeration systems containing ammonia are installed, the Institute of Refrigeration Ammonia Refrigeration Systems Code of Practice.				This is a minimum requirement and therefore compliance has been assumed.
2	**Up two credits - Impact of refrigerants** - Two credits - the Direct Effect Life Cycle CO2 equivalent emissions (DELC CO2e) ≤ 100 kgCO 2e /kW cooling/heating capacity or if GWP ≤10. - One credit - the DELC CO2e ≤ 1000 kgCO 2e /kW cooling/heating capacity.		1	1	Current heating / cooling strategy still under development and these credits will be reviewed at the next stage.
1	**One credit-Leak detection** 1. A permanent automated refrigerant leak detection system or an in-built automated diagnostic procedure for detecting leakage is installed. 2. The system must be capable of continuously monitoring for leaks and of automatically isolating and containing the remaining refrigerant(s) charge in response to a leak detection incident.	1			The proposals include for a refrigerant leak detection system.

POL 02 - NOx emissions	3	**Up to three credits-NOx emissions** Where NOx emissions associated to heating and hot water demand under normal operating conditions are as follows: - One credit ≤100 mg/kWh - Two credits ≤70mg/kWh - Three credits ≤40mg/kWh		1	2	Current heating / cooling strategy still under development. It is anticipated that the use of high efficiency boilers will achieve 1 credit.
POL 03 - Surface water run-off	2	**Up to two credits-Flood resilience** **Two credits - Low flood risk** 1. A site-specific flood risk assessment (FRA) confirms low annual probability of flooding from all sources. **One credit - Medium/high flood risk** 2. A site specific FRA confirms medium or high annual probability of flooding the is not in a functional floodplain and one of the following is achieved: - The ground level of the building and access to both the building and the site, are designed at least 600mm above the design flood level - The final design of the building and the wider site reflects the recommendations made by an appropriate consultant in accordance with the hierarchy approach outlined in section 5 of BS 8533:2011.	2			According to the EA flood risk map, the building is in an area of low flood risk. It is assumed that a flood risk assessment will be undertaken and it should be demonstrated that the site has low probability of flooding from all sources.
	2	**Two credits - Surface water run-off** Pre-requisite An Appropriate Consultant is appointed to confirm compliance with the credit requirements. One credit 1. The peak rate of run-off from the site to the watercourses (natural or municipal) is no greater post-development at the 1-year and 100-year return period events including climate change allowance. 2. Relevant maintenance agreements for the ownership, long term operation and maintenance of all specified SuDS are in place. One credit 1. Flooding will not occur in the event of local drainage system failure. 2. Post development run-off volume, over the development lifetime, is no greater than for the 100-year 6-hour event, including an allowance for climate change and any additional predicted volume of run-off for this event is prevented from leaving the site by using infiltration or other Sustainable Drainage System (SuDS) techniques. If the above is not feasible: -Justification from the Appropriate Consultant is provided and post development peak rate of run-off is reduced to the limiting discharge (the highest flow rate from: the pre-development 1-year peak flow rate (for 1-year return period event), the mean annual flow rate Qbar or 2L/s/ha.	2			In accordance with CN3.9: Where the man-made impermeable area draining to the watercourse (natural or municipal) has decreased or remains unchanged post development, the peak and volume rate of run-off requirements for the surface water run-off credits will be met by default. An FRA will still be required. The above is understood to be the case.
	1	**One credit-Minimising watercourse pollution** 1. There is no discharge from the developed site for rainfall up to 5mm. 2. Low risk source of watercourse pollution areas have appropriate SuDS techniques. 3. High risk areas have petrol and oil separators. 4. A means of containment is fitted to the site drainage system for chemical/liquid gas storage areas. 5. All water pollution prevention systems have been designed and installed in accordance with Pollution Prevention Guideline 3 (PPG 3). For vehicle washing areas systems comply with Pollution Prevention Guidelines 13 6. A comprehensive and up-to date drainage plan is developed. 7. Relevant maintenance agreements for the ownership, long term operation and maintenance of all specified SuDS must be in place. 8. All external storage and delivery areas designed and detailed in accordance with the current best practice planning guidance.		1		Ramboll have advised that options for a blue roof are being explored, however there is some concern regarding the 5mm criterion however in line with CN3.14 as long as measures to mitigate have been incorporated as far as possible, then the credit can still be awarded on the basis that the remaining criteria are met.
POL 04 - Reduction of night time light pollution	1	**One credit - Reduction of night time light pollution** 1. External lighting complies with Table 2 (and its accompanying notes) of the ILP Guidance notes for the reduction of obtrusive light, 2011. 2. All external lighting (except for safety and security lighting) can be automatically switched off between 23:00 and 07:00. 3. Safety or security lighting used between 23:00 and 07:00, complies with the lower levels of lighting in Table 2 of the ILP's Guidance notes. 4. Illuminated advertisements comply with ILE Technical Report 5 – The Brightness of Illuminated Advertisements. - N/A	1			Workshop 21.06.2017 GDM confirmed that this credit should be targeted.
POL 05 - Reduction of noise pollution	1	**One credit-Reduction of noise pollution** 1. The noise level from the proposed site/building, as measured in the locality of the nearest or most exposed noise-sensitive development (within 800m radius), is no greater than +5dB during the day (07:00 to 23:00) and +3dB at night (23:00 to 07:00) compared to the background noise level. The noise impact assessment must be undertaken by a suitably qualified acoustic consultant and must have been developed in compliance with BS 7445.	1			A suitably qualified acoustician has undertaken a Noise Impact Assessment for the proposed scheme and put together a strategy to limit noise level to no more than the background noise level in line with the planning requirements.

Av	INNOVATION Requirements	T	P	U	Comments
Innovation	1 Additional credits are available for Approved Innovations not currently recognised by an existing BREEAM issue.			1	No approved innovation credits targeted but will be reviewed as the design develops.