151 Shaftesbury Avenue, London

Sustainability Statement

A6 – Issued for Planning Submission

29th May 2024

MAX FORDHA

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ISSUE HISTORY

Issue	Date	Description
C01	29/05/2024	Issue for planning

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1.0 EXECUTIVE SUMMARY

This statement summarises how the proposed 151 Shaftesbury Avenue mixed use office re-development and residential proposal fulfils the sustainability requirements set out in the London Plan and London Borough of Camden Local Plan. It describes the key design aspects and strategies that would be adopted during the construction and operational phases of the development.

The proposed development comprises complete refurbishment, retention and extension to optimise office floor space delivery and provide excellent sustainability credentials. In addition to work to the facades, the ground floor would be transformed and activated, enlivening this stretch of Shaftesbury Avenue.

The proposed works would revitalise the existing building and enhance the quality of the existing workspaces for all of the buildings occupiers. The proposed development would transform the existing arrival and entrance experience, providing high quality Grade A workspace with enhanced cycling and shower facilities.

1.1 Planning Requirements

A summary of the following key sustainability policies is provided in APPENDIX I Overview of Applicable Policies & Requirement. The proposed development adheres to these policies as outlined in Section 3 of this statement:

- National Planning Policy Framework (2023)
- GLA London Plan (2021)
- The Sustainable Design and Construction SPG (2014)
- Camden Local Plan 2017
- Energy efficiency and adaptation CPG (2021)

1.2 Energy Hierarchy and Emissions

The energy strategy for the project has been developed following the London Plan, and Camden planning guidance on energy strategies. The development achieves a significant reduction in emissions over Building Regulations Part L.

1.3 Sustainability Strategies

Climate Change Risk Adaption
The cooling hierarchy has been applied to minimise the risk of overheating.

Active cooling is required for the office which will include the following measures:

- Mechanical ventilation provided by MVHR units on the office floors
- Natural ventilation in the swing seasons
- AHU cooling coils
- Generation is provided using multifunction heat pump, allowing heat recovery to be used to provide heating and domestic hot water generation

Health and Well-being
Both noise and air pollution impact assessments have been undertaken for the proposed development with mitigation measures specified as required. A Security Needs Assessment has been carried out with suggestions to be implemented where required. Daylight impacts on the local areas have been assessed to be commensurate with prevailing levels within a central London location and the Central Activities Zone within which the site is located.

Nature, Landscape and Biodiversity
As the site boundary is the building footprint, there is no external spaces as part of the development aside from the roof terraces. These are provided on the 7th, 8th, and 9th floors. Biodiverse planting, seating areas and shading will be provided. A green roof will also be installed, with a robust biodiverse planting palette.

A Preliminary Ecological Appraisal was undertaken for the development, which concludes that the existing site is of limited ecological value.

Water Strategy
The 'Drainage Hierarchy' has been applied and a number of SuDS features are proposed including blue-green roofs, and permeable/porous paving. The surface water will be gradually discharged to the local sewer network improving against the existing situation. This aligns with planning policy and helps to reduce the risk of flooding downstream.

Materials and Waste
The building retains >90% of the structure. WLC carbon optioneering modelling has been carried out to optimise servicing and architectural strategies during Stage 2. following the methods set out in RICS Whole Life Carbon Assessment for The Built Environment and using One Click LCA Software.

Whole life carbon optioneering studies were undertaken to understand the carbon implications of a number of alternative façade systems. The study explored a brick faced cladding option with traditional handset brick and cladding with K-briq, an alternative brick option made with recycled materials.

Commitments have been made to source materials responsibly and reduce embodied carbon impacts by specifying low carbon material options.

	Stage 2 *(15% buffer)*
Upfront Carbon A1-A5 *($kgCO_2e/m^2$)*	312
Embodied Carbon A1-C4 (excl. B6 & B7) *($kgCO_2e/m^2$)*	653

Construction impacts
The contractor will follow responsible construction practices in reducing construction impact on the neighbours as well as the environment, by following the Considerate Construction Scheme and aspire for a 4 star or above rating.

Transport
The transport strategy for the development has been developed following the Healthy Streets approach by prioritising walking and cycling and minimising and managing trips by motorised vehicles.

The development has removed car parking spaces and replaced these with best-in-class cycle parking facilities. Cycle parking is as per London Plan requirements adhering to London Cycling Design standards.

BREEAM
The project is aiming to achieve at least BREEAM 'Excellent' under BREEAM Refurbishment and Fit-out 2014.

An initial BREEAM strategy for the project has been developed achieving a targeted score of 88.7%.

Additionally, in accordance with the Camden Local Plan Policy CC2 the development target achieving 60% of all available Energy and Water credits and 40% of available Materials credits.

For further information please refer to APPENDIX III BREEAM Pre-Assessment.

2.0 INTRODUCTION

2.1 Proposed Development

The description of development is as follows and Planning Permission is sought for the following:

Refurbishment of existing building; demolition of existing rooftop plant level and replacement with two new setback floors at levels 8-9 (Class E(g)(i)); partial infill extensions to rear of building at levels 5-8; partial change of use at ground and lower ground floor level for use as either bar/drinking establishment (Sui Generis) and/or Commercial, Business & Service uses (Class E); retention of existing Commercial, Business & Service (Class E) floorspace elsewhere in the building; replacement of existing façades and provision of cycle parking and associated end of trip facilities at lower ground floor level.

2.2 Site Location

The site is located in the London Borough of Camden, at the southwest corner of the junction of Shaftesbury Avenue and St Giles Passage. The site is surrounded by a mixed use of buildings, including the Seven Dials Conservation Area.

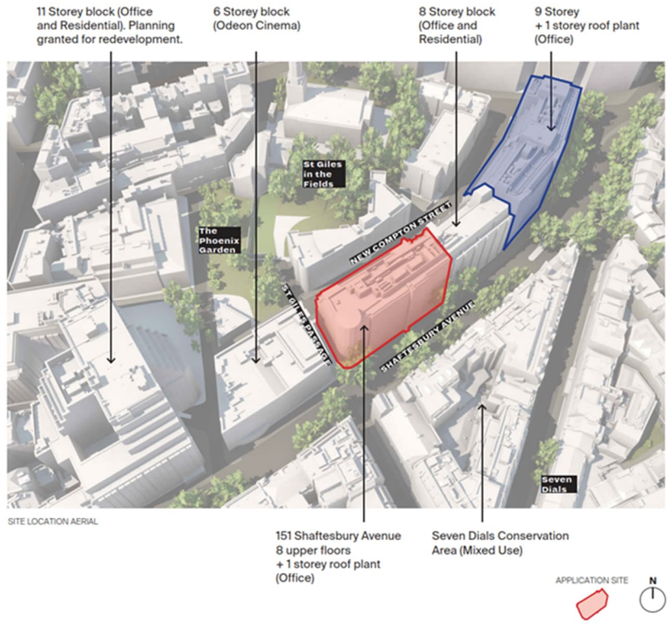

Figure 2 - Site Location Plan (BGY)

Figure 1 : Proposed Development (BGY)

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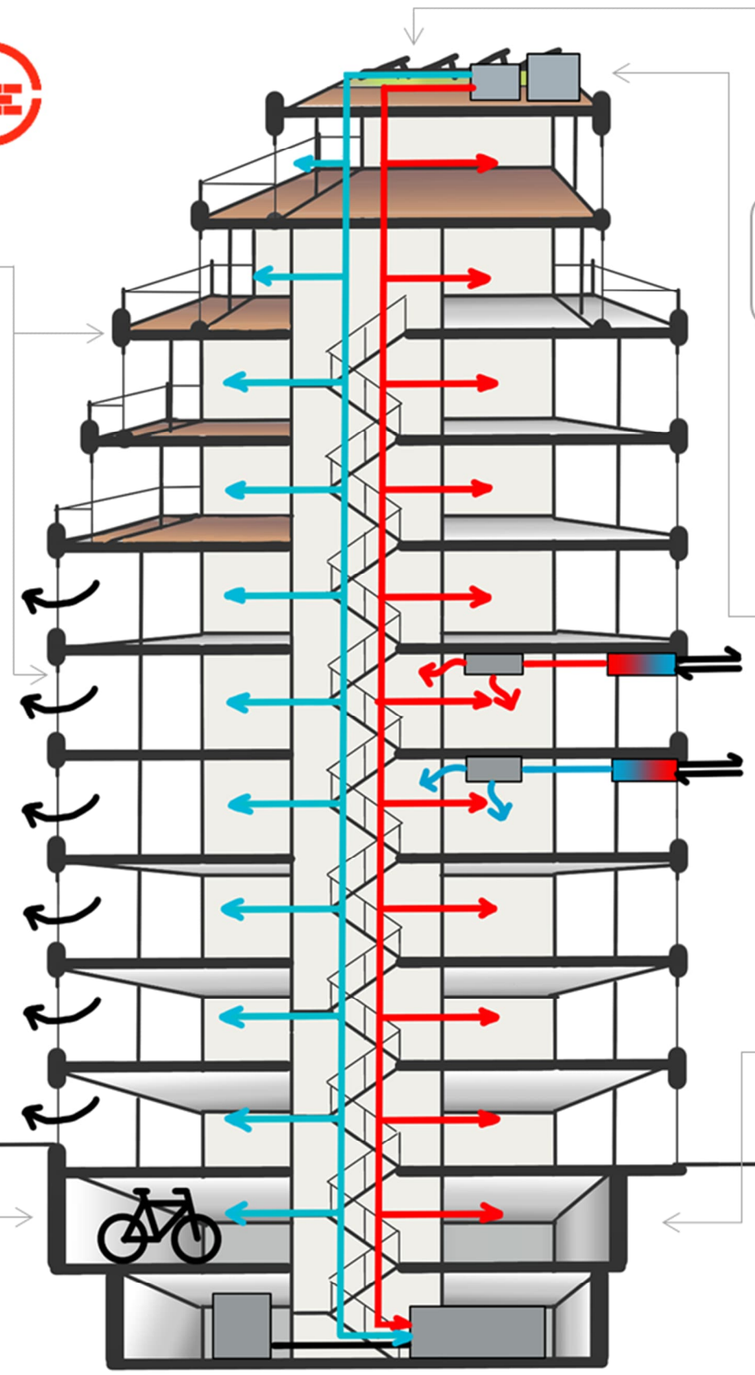
3.0 OVERARCHING SUSTAINABILITY STRATEGY

- New timber structural elements for the extension
- Existing raised access floor to be reused where possible
- Re-use tracker for materials in the existing building
- >90% of structure retained
- Intention to incorporate recycled materials, bricks, finishes.



Green roof with biodiverse planting to achieve at least 10% net gain in biodiversity

- Outdoor amenity space for wellbeing
- Low carbon travel: Replacement of car parking with cycle facilities
- Optimised glazing ratio to reduce overheating risk

- Efficient mixed mode ventilation
- Low GWP refrigerant
- ASHPs supplying heating/cooling
- Maximised PVs on roof including covering plant enclosure
- BMS and metering in use
- Post occupancy and aftercare to be undertaken to optimise in use

- Improved surface water run-off with blue roof system
- Low flow sanitaryware to reduce water consumption

CODE FOR A SUSTAINABLE BUILT ENVIRONMENT
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4.0 RESPONSE TO SUSTAINABILITY POLICY

4.1 Energy and As Built Performance

Principles of sustainable design and construction have been adopted into the design in line with the London Plan Policy SI2 'Minimising Greenhouse Gas Emissions' and Camden's Energy Efficiency and Adaptation Supplementary Planning Guidance January 2021.

Energy demand reduction (Be Lean)
Massing and orientation
The architectural building form factor of 151 Shaftesbury Avenue is efficient, minimising external envelope area and maximising the use of the footprint of the site.

Office space has optimised glazing to benefit from natural daylight whilst controlling unwanted solar gains.

Back of house facilities are located to the basement where access to daylight is a lesser demand.

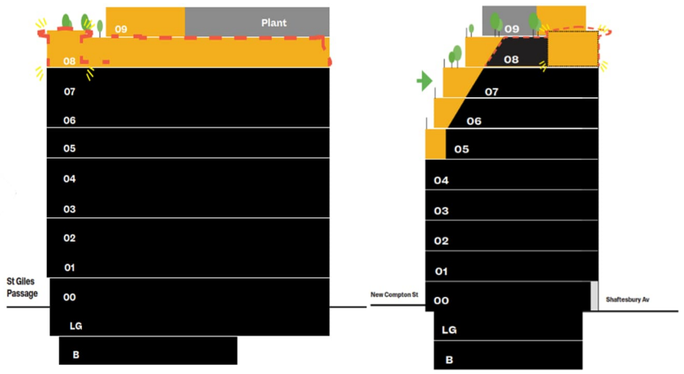

Figure 3 : Proposed building massing (BGY)

Building Fabric
An indicative Building Fabric specification has been selected to improve the building fabric performance. New construction fabric performance shall improve beyond the current Building Regulation notional specification.

Envelope Performance Parameters	Proposed Specification	Notional Building Specification
Thermal Transmittance U-values in W/ (m².K):		
Flat Roofs	0.15	0.18
External walls (solid wall construction)	0.18	0.26
Floors	0.16	0.18
Windows and transparent curtain walling (whole window, i.e., inc. frames)	1.3	1.6
Personnel doors	1.24	1.6
Glazing Solar and Optical Properties:		
g-value	0.23-0.3	0.28
Light transmittance	0.6	0.6
Airtightness:		
Air permeability (m³/ (h.m²) at 50 Pa)	3m³/(h.m²)	8m³/(h.m²)

Table 1 : Indicative Building Fabric Performance Values

Design of windows and openings
Windows and opening have been designed to maximise natural daylight and views, whilst controlling unwanted solar gains. The façade self-shading and glazing proportions have been developed to mitigate unwanted solar gains and promote good daylight and considered views out.

The existing building façade is heavily glazed on the south-east facing façade with aglazing ratio of 80%. Reducing this ratio was key in achieving the internal comfort and RLMIS'S sustainability targets. Optimum glazing ratios were calculated for every orientation of the facades by Hilson Moran. The design development has been considering how to work to these requirements and has aimed to keep below 45% window to wall ratio on the proposed building, and still achieve a good level of daylight on the building floorplate.

The windows have been designed with deep reveals across the façade to facilitate self-shading. As the feature corner is the most directly south-facing part of the building, stepped reveals have been designed to increase the level of shading on these windows.

On-street tree planting will offer some shading for the lower floors of the building.

Figure 4 : Stepped reveals on corner façade (BGY)

No change in window facades is proposed for the residential units. The existing window proportions are appropriately sized to not attract large solar gains (including no floor level glazing). Proximity to the opposite residential units also limits solar exposure.

Daylight
Well-proportioned glazing and façade design provides generous natural light and views out from the office floors. Natural light coupled with daylight dimming and lighting controls will reduce the artificial lighting demand.

Passive Cooling
The GLA cooling hierarchy has been followed in order to minimise the annual cooling demands. Active cooling is proposed for the mixed-use building at 151 Shaftesbury Avenue. Due to the internal heat gains of the proposed office and retail space, passive cooling and other measures alone will not be enough to mitigate overheating.

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	Cooling Hierarchy	Steps taken
1	Reduce the amount of heat entering the building through orientation, shading, high albedo materials, fenestration, insulation, and the provision of green infrastructure	The external façade form and façade windows placement is designed to provide external shading using deep window reveals on all façade. High performance solar controlled glass is proposed to help manage solar gains. Green roof area provided to limit conductive heat gains through the fabric at roof level.
2	Minimise internal heat generation through energy efficient design	High efficiency lighting to reduce associated waste heat. Heating distribution is insulated, and primary distribution installed in vertical riser. Major plant rooms are located in the basement and at roof level limiting unwanted internal heat gain contribution to occupied spaces. Point of use water heaters for WC spaces are used to reduce hot water distribution and reduce heat gains.
3	Manage the heat within the building through exposed internal thermal mass and high ceilings	Office levels are provided with good ceiling clearances. Thermal mass for passive cooling is not employed as a strategy due to the lightweight structure.
4	Passive ventilation	Natural ventilation to office is limited by the street side pollution and background noise. Openable windows provided in the façade allow for natural ventilation of the space during the day.
5	Mechanical ventilation	Spaces have mechanical ventilation with variable heat recovery system for summer mode operation.
6	Provide active cooling	Active cooling is proposed for office floors and retail. Generation is provided using multifunction heat pump, allowing heat recovery to be used to provide heating and domestic hot water generation, offering high seasonal energy efficiency ratios, exceeding the NCM notional building values.

Table 2: Summary of Steps following cooling hierarchy

Energy demand reduction: energy efficient services
Space heating and cooling in the main office space is provided by multifunction electric air source heat pumps delivering low temperature and chilled water to building demands. The heat pumps proposed include internal heat recovery, allowing heat rejection from the cooling system to be recycled into simultaneous heating, increasing the total heating and cooling plant efficiency.

Mechanical ventilation with heat recovery is provided to all spaces. This will be situated as close to the façade as possible in order to minimise ventilation heat loss whilst ensuring sufficient fresh air rates. During warmer weather natural ventilation allows management of internal temperatures. Single light indicators will be included at each openable window, illuminating to indicate when not to open windows.

On floor MVHRs are provided to each office floor, allowing controlled ventilation that responds to office demand sensors.

Lighting levels will be reduced to 300 lux where possible. Efficient lighting controls will be provided to spaces to reduce lighting consumption:

- Offices: Absence control and occupancy switching, with automatic daylight dimming control
- Reception: Scene setting control
- Circulation: Presence detection
- Toilet/Showers: Presence detection
- Ancillary/Plantroom: Manual switching

Connected heat, electrical and water meters will monitor energy use to allow the building occupants to understand and monitor where energy is being used. The landlord energy usage will be monitored to help the landlord reduce their energy usage. Major plant shall be monitored and alarmed should they be operating outside of range.

Office floors will be served by electric water heaters to reduce hot water circulation heat losses with highly efficient taps, reducing hot water consumption.

Heating Infrastructure (Be Clean)
In response to London Plan Policy SI3 'Energy Infrastructure' and Policy 37 'Energy'

A review has been completed for district heating networks in the vicinity of the site, either existing or planned in the future.

Figure 5 : London Heat Map area

As there is no current or planned site wide heat network in the vicinity of the site the development will not include connection for a future heat network and will instead its own low-carbon heating systems.

The proposal for 151 Shaftesbury Avenue mixed use office development is to provide a building level heating and cooling system provided by low-carbon heat pumps. The central plant shall utilise multifunction air source heat pumps with the ability to produce simultaneous heating and cooling recovering waste heat and thus increasing plant efficiency and maximise carbon efficiency. The plant schematic proposal is presented below.

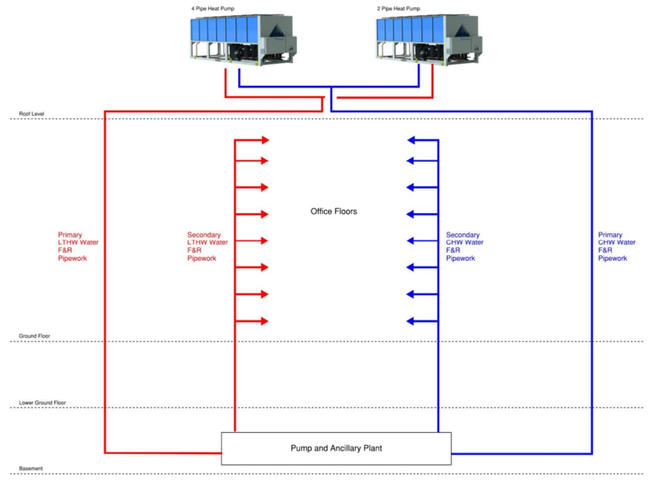

Figure 6 Proposed heating and cooling plant schematic (HM)

Renewable Energy (Be Green)
In Response to London Plan Policy SI2 'Minimising Greenhouse Gas Emissions'

Consideration of low and zero carbon technologies
A review of the low and zero carbon technologies has been undertaken and concludes that the most appropriate options are the use of air source heat pump for heating and cooling, and on site solar photovoltaic electrical generation.

For 151 Shaftesbury Avenue, the annual solar exposure modelling shows upper roof level and roof top terraces as having significant solar access. However, PV panels cannot be installed on the terraces and a raised PV frame above this would not be visually acceptable from the surrounding views. When coordinating with rooftop exclusion zones for plant equipment and terraces the resulting area for PVs is shown on the upper roof scape.

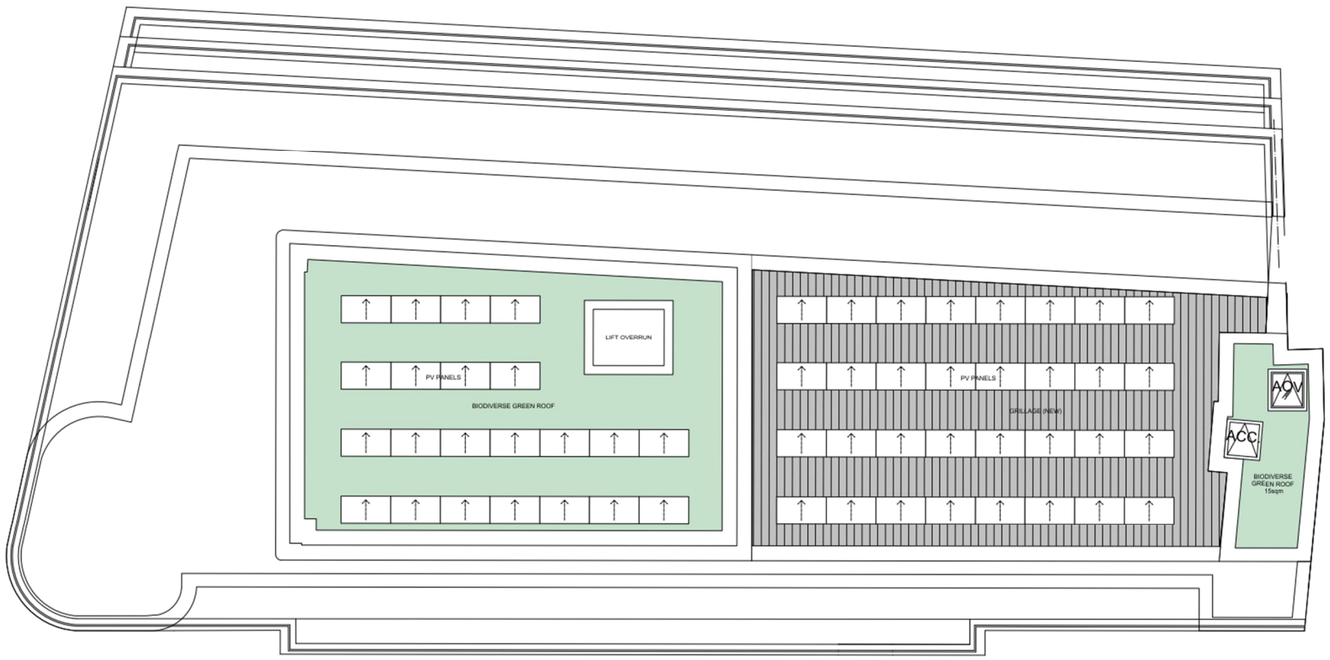

Figure 9 Proposed roofscape PV layout (HM)

4.2 Resilience / Climate Change Risk Adaptations

Measures to reduce overheating

In Response to London Plan Policy GC6 'Increasing Efficiency and Resilience' and SI4 'Managing Heat Risk', as well as Camden Core strategy Policy CC2 Adapting to climate change

A climate change risk assessment has been produced covering the range of climate hazards in line with BREEAM 2014 Wst 05 requirements. Potential overheating risk has been identified early in the design process and suitable passive measures have been incorporated within the building envelope and services design to mitigate overheating and reduce cooling demand.

Overheating risk analysis

A thermal comfort analysis was carried out using the EDSL TAS modelling software. The GLA Energy Assessment Guidance states that both domestic and non-domestic developments should be assessed using the DSY1 (Design Summer Year) 2020 High emissions, 50% scenario weather file. The results of the analysis confirm that the overheating risk is mitigated under current and future weather scenarios.

Further detail of the modelling can be found in the Energy Statement.

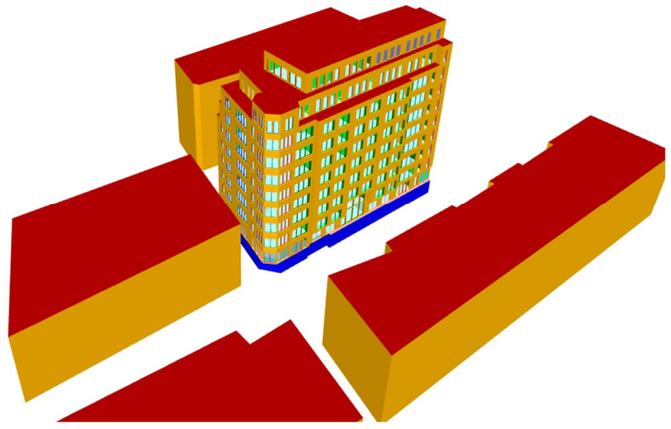

Figure 7 : Dynamic simulation overheating model (HM)

No changes are to be made to the existing glazed areas for the residential units. The units have limited ceiling heights and increasing the window size would require use of space currently used for heating and storage. As the residential part of the façade is North-West facing and does not extend to the full height of the building, there is lower risk of overheating from sunlight exposure than other facades.

Figure 8 : Existing window in residential area

Flood Risk

A Flood Risk Assessment (FRA) and Sustainable Drainage Systems (SuDS) report is provided as part of the planning application.

The Flood Risk Assessment demonstrates that the proposed development complies with the NPPF and local planning policy with respect to flood risk and as such is an appropriate development at this location. The assessment confirms that the development is at low risk from river and coastal flooding. The site is categorised as high-risk for surface water flooding. Flood mitigation measures are proposed through the use of SuDS and the existing basement waterproofing measures.

With the proposed measures in place, the risk of flooding from all sources is reduced to low. A surface water run-off assessment has determined that rates have improved over the existing condition.

Adapting to climate change

Additional climate change adaptation measures have been included in the development scheme including:

- Bio-diverse roofs
- Combination green and blue roofs
- Permeable surface
- Openable windows to allow mixed mode options in the office in the future

Impact on microclimate

The construction of the proposed development is for the similar scale to the existing buildings and will therefore have minimal variation on the local microclimate.

Heat rejection plant such as ASHP is located on the upper roof of 151 Shaftesbury Avenue and will therefore make minimal impact in term temperature variations to the surrounding area.

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4.3 Health and Well-being (including Air Quality)

Air quality
In response to London Plan Policy SI1 'Improving Air Quality', Camden Local Plan Policy CC4 Air Quality and Camden CPG Air Quality Jan 2021

The Air Quality Assessment (AQA) has been carried out and this demonstrated that air quality neutral will be achieved.

AQS objectives for baseline levels of nitrogen dioxide (60µg/m3), PM10 (40µg/m3) and PM2.5 (20µg/m3) hourly mean concentrations have been met.

The proposed development is considered air quality neutral in relation to the proposed transport emissions.

All heating and hot water will be provided using Air Source Heat Pumps (ASHP) and point-of-use electric heaters. Therefore, an air quality neutral assessment for building emissions does not need to be undertaken as gas will not be utilised on site.

A qualitative assessment of dust levels associated with the proposed development has been carried out. The impact of dust soiling and PM10 can be reduced to negligible through appropriate mitigation measures. These measures can be found in the Air Quality Assessment undertaken by Hilson Moran. Implementation of these Best Practice Measures will help reduce the impact of the construction activities.

Noise Impact
In response to Camden Local Plan Policy A4 Noise and Vibration

The Camden Local Plan 2017 states:

> *"A relevant standard or guidance document should be referenced when determining values for LOAEL and SOAEL for non-anonymous noise. Where appropriate and within the scope of the document it is expected that British Standard 4142:2014 'Methods for rating and assessing industrial and commercial sound' (BS 4142) will be used. For such cases a 'Rating Level' of 10 dB below background (15dB if tonal components are present) should be considered as the design criterion)."*

Two long term unattended noise surveys were undertaken at the site of the proposed development to determine typical average (LAeq), background (LA90), and noise events (LAfmax) sound levels in the noise environment surrounding the site.

To assess the impact of the plant equipment noise at noise sensitive receivers a 3D environmental noise model has been created. The model shows that using representative noise spectrum for the plant equipment with proposed noise control solutions the targets of rating level 10 dB below background noise levels. The noise level prediction respect to background also represents a low impact under a BS 4142:2014 assessment. It is therefore considered unlikely that noise from plant will have an adverse impact.

Security
The scheme has been developed with consideration of creating a safe and secure site. A Security Needs Assessment has been carried out for the development by Toren Consulting.

A CCTV camera system will be used to enhance security to the ground floor reception area, deliveries entrance and all external areas. The monitoring system location will be within the Lower Ground floor of the building.

The design shall consider advice from the Met Police in relation to Secure by Design and counter-terrorism issues.

Further information can be referred in the Design and Access Statement.

Daylight & Sunlight
Please refer to the Daylight and Sunlight Report undertaken by DPR.

Placemaking
The main building entrance and retail units are orientated to the south façade and are accessed from the street level. As this façade is naturally shaded, generous glazing provides an open and inviting entrance and active street frontage. The main entrance is slightly pushed back from the rest of the façade.

4.4 Nature, Landscape & Biodiversity

In response to London Plan Policy G1 'Green Infrastructure', Policy G4 'Open Space', Policy G5 'Urban Greening', Policy G6 'Biodiversity and access to nature', Policy G7 'Trees', Camden Local Plan Policy A3 Biodiversity, and CPG Biodiversity March 2018

Public Realm Design
The external public realms at the entrance to the buildings shall be enhanced to the connected public highway interfaces. The street facing façades have been designed to improve the street frontage experience, whilst retaining the existing pavement space.

Figure 10 : Proposed pavement space (BGY)

Figure 11 : Proposed Street frontage (BGY)

Green Infrastructure
The development proposed a sustainable landscape scheme for a new office building. The scheme's green infrastructure includes:

- Biodiverse roof planting.
- External terraces on upper levels accessible by all office users
- Seating and planting across terraces (design of this to be dveloped in Stage 3)
- A robust, biodiverse planting pallet

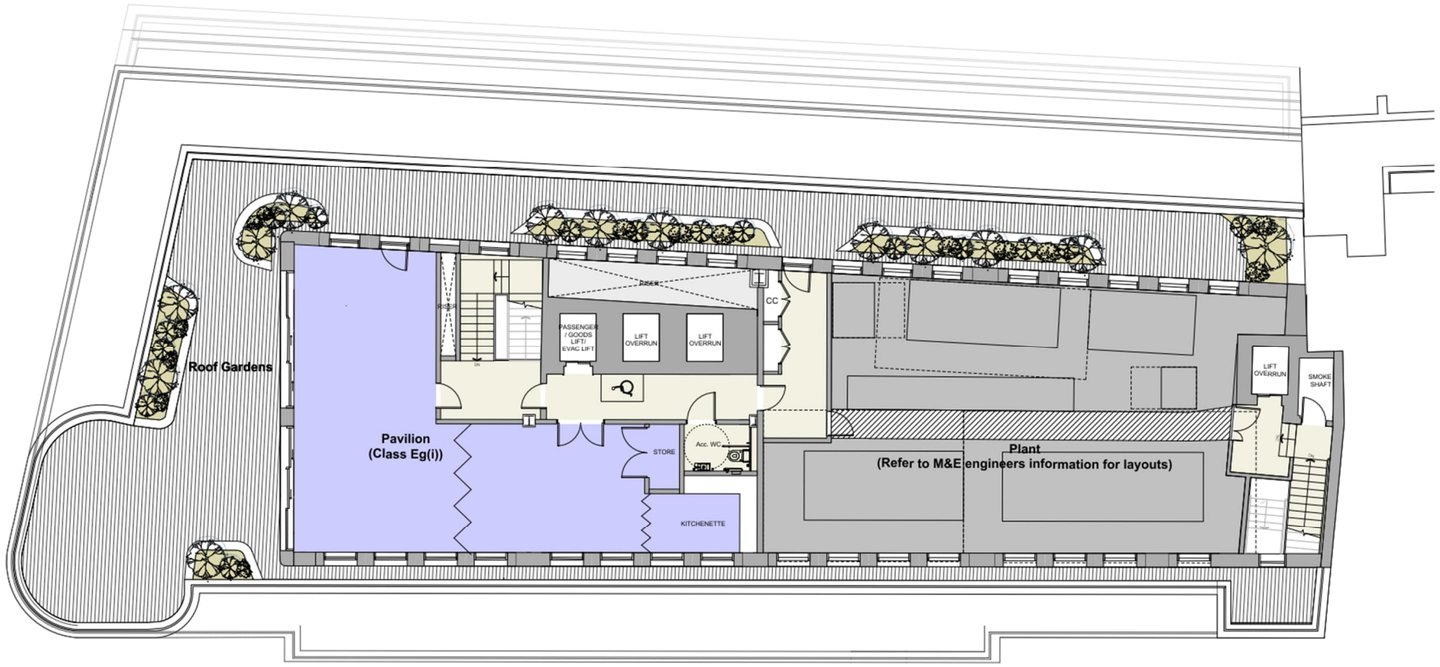

Figure 12 : Roof plan showing terrace and rough planting locations (BGY)

Ecological Appraisal Assessment and Biodiversity Net Gain Plan
Hilson Moran are appointed as the ecologist and have carried out their baseline ecological survey and appraisal work in accordance with BREEAM credits.

The Site is currently of limited ecological value, being dominated by built form. No potential protected species were identified as nesting or roosting on site, with the only potential use of the area by any species being foraging for bats.

The site supports no notable and/or protected habitats. There are no designated sites or habitats in the likely zone of influence. Overall, the baseline ecological survey identified that no irreplaceable habitats are present within the redline boundary.

The proposed development incorporates a range of planting that will significantly enhance the ecological value of the development site and the surrounding area,

Recommendations for habitat creation and the increase in biodiversity value are made in the Ecology Appraisal Assessment which will be incorporated into the rooftop planting. It is recommended that the project produce a Landscape and Ecology Management Plan (LEMP) for the Site. *For further details refer to 32099-HML-XX-ZZ-RP-U-880001 Ecological Appraisal*

4.5 Water and Surface Water Run-off

Water Strategy
In response to London Plan Policy SI5 'Water Infrastructure', Camden Local Plan Policy CC1 Climate change mitigation, Policy CC3 Water and flooding and Camden CPG Energy Efficiency and Adaptation January 2021

The water supply for the new construction shall be provided to serve the domestic water demands and firefighting commercial sprinkler demands of the building.

The domestic water supply shall be supplied via a new water storage tank and cold-water booster set to provide adequate pressure to all tenant spaces. A separate centralised supply with backflow prevention Category 5 (AA air gap) will be provided using a separate smaller water booster, to supply relevant uses including mechanical plant, taps in bin stores and external hose points.

Domestic Hot Water Strategy
Domestic Hot Water will be provided via a Water Source Heat Pump located in the basement. This will be connected to the primary LTHW circuit. DHW generation can be controlled and is efficient, using waste heat from the cooling system.

Office floors will be served by electric water heaters to reduce hot water circulation heat losses with highly efficient taps reducing hot water consumption.

Sustainable Urban Drainage
In response to London Plan Policy SI13 'Sustainable Drainage' and Camden Local Plan Policy CC3 Water and flooding

A Flood Risk Assessment (FRA) and Sustainable Drainage Systems (SuDS) report is provided as part of the planning application.

The proposals are to provide blue-green roofs at flat roofs and certain terraces for 151 Shaftesbury Avenue. All run-off from the site is routed to a form of sustainable drainage.

An assessment compares the existing discharge with the proposed discharge rate betterment for 151 Shaftesbury Avenue. The introduction of blue roofs provides a significant improvement on the existing situation. The stormwater storage provided achieves the 30% reduction in runoff required for the 1 in 100 year, 6-hour rainfall scenario, as well as for the additional 40% allowance for climate change. This strategy ensures that the discharge rate is restricted as far as possible without the need to provide a pump.

No rainwater harvesting system is proposed for the development due to spatial restrictions. The feasibility of this was assessed early on in relation to the achievability of BREEAM Wat 01 credits. As there is limited space on the rooftop and basement plantroom, it was decided that the SuDS measures proposed would be sufficient for improving on the existing drainage strategy.

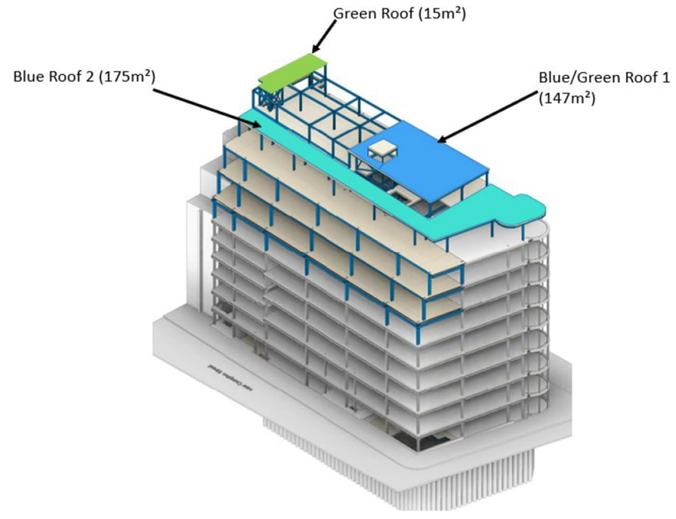

Figure 13 : SUDS design proposal (HTS)

For further details refer to the Flood Risk Assessment and SuDS strategy.

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4.6 Whole lifecycle carbon

Reuse and optimising resource efficiency
In response to CPG Energy Efficiency and Adaptation January 2021 and Camden Local Plan Policy CC1 Climate change mitigation

The existing building on the site has undergone a detailed review to assess the potential to reuse elements from the existing building and explore development options in order to provide a sustainable development.

As part of the pre-application stages condition and feasibility studies have been carried out for the whole building in order to provide a transparent and holistic approach to assessing options. These studies are summarised in the *Whole Life Carbon and Circular Economy Statement*.

Development options
The extent of the refurbishment was considered in early stages. Retention of the existing façade was considered as it was expected that this would be one of the larger contributing factors to the Upfront Carbon of the development. The existing façade is heavily glazed and performs thermally ineffiecient in use, contributing to overheating. Significant interventions would be required to achieve the energy performance the project seeks. The integrity of each panel would need to be tested for this strategy to be viable.

A pre-redevelopment audit was carried out in the early project stages. The solid panels have studs welded to the back and fixed back to the slab making decoupling of the panels, without damage, extremely unlikely. Thererfore the project is now pursuing a reclad of the building which will provide a fully compliant, thermally improved facade in line with our sustainability ambitions.

Whole Lifecycle Carbon (WLC) Modelling
In response to London Plan Policy SI2 'Minimising Greenhouse Gas Emissions'

WLC modelling has been carried following the methods set out in RICS Whole Life Carbon Assessment for The Built Environment and using the One Click LCA Software, by Bionova. The software tool makes use of several databases of materials, building products, Environmental Product Declarations (EPDs) and in-house environmental data. An allowance for a 10% design margin is included for future variation and additional items not yet included.

The table and figures below illustrate the modelling results for the proposed building. The modelling estimate values just above the LETI 2030 and RIBA 2030 targets.

	Module A1-A5 (excluding sequestered carbon)	Modules B-C (excl B6 & B7)	Modules A-C (excl B6 & B7; including sequestered carbon)
TOTAL kg CO_2e	2,512,732	2,744,810	5,257,542
TOTAL kg CO2e/m2 GIA	312	341	653
WLC Benchmark	950	450	1400
Aspirational WLC Benchmark	600	370	970

Table 3: Modelling results for the development

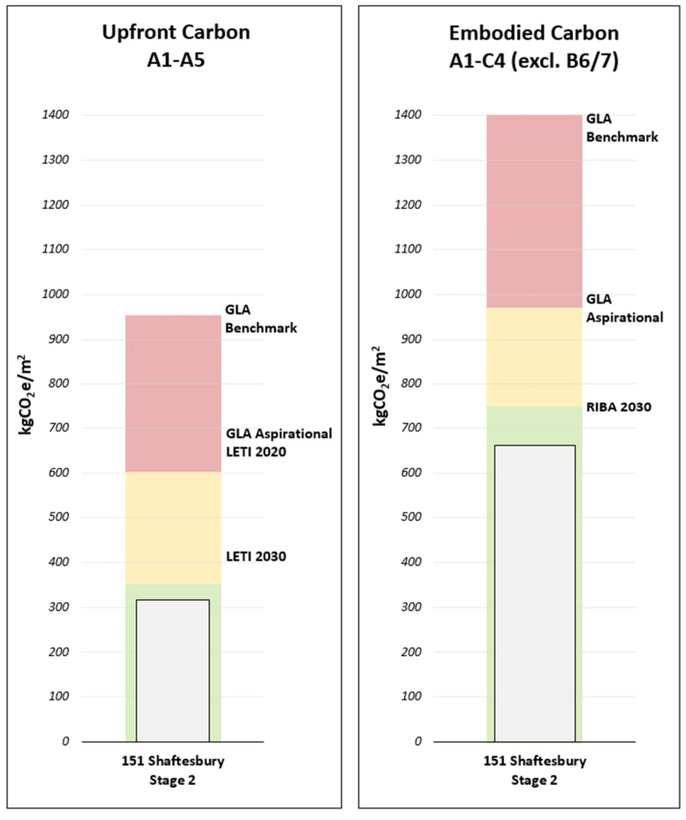


Figure 14 : Upfront (A1-A5) and Embodied carbon (A-C)

4.7 Materials, Circular Economy, and Waste

Construction, demolition, and excavation waste
In order to meet the London Plan requirement to divert a minimum of 95% (either by volume or tonnage) of all construction and excavation waste from landfill, the Principal contractor will be required to implement routes for Best practice recovery of waste streams. Key actions will include:

- Following the waste hierarchy and provide adequate space and facilities for efficient segregation and processing of waste streams.
- Minimisation of water and energy use during construction through management procedures and monitoring; and in-use through low carbon design and specification of energy and water efficient equipment

Material Selection and procurement
Commitments have been made to source materials responsibly and reduce embodied carbon impacts by specifying low carbon material options. The proposed approach is follows:

- A 20% total material by value are responsibly sourced against BES 6001 certification (or equivalent)
- All timber will be FSC certified and legally sourced
- Preferential specification of low GWP refrigerants options

Managing the construction impacts
The main contractor will be contractually required to deliver responsible construction and reduce environmental impacts during construction. This will be implemented by following best practice approaches, such as registering the scheme with Considerate Construction Scheme, aiming for a 4 star or above rating and adopting responsible Construction Practices.

Circular Economy
In response to London Plan Policy SI7 - Reducing Waste and Supporting the Circular Economy and Camden Local Plan Policy CC5 Waste

The development is being designed to incorporate circular economy principles. A circular economy workshop was carried out in the concept design stage, and the team has been checking in regularly on circular economy during the design process. A reuse tracker of materials from the existing building is used to assess the opportunities and feasibility of reuse. The proposals meet the London Plan's requirements for diverting waste from landfill, recycled content, and putting excavation waste to beneficial use, as well as longer term targets for municipal waste recycling.

Operational waste
In response to Camden's CPG 'Design' January 2021

The development's municipal site waste management plan outlines the waste forecasts, storage, and collection arrangements. Sufficient storage is provided on the ground floor for mixed recycling, another for general waste and a food waste. For the office and retail spaces, 70% of commercial waste storage is provided for recyclable waste.

Refer to the Whole Life Carbon and Circular Economy Statement for more details.

4.8 Sustainable Transport

Cycling
In response to the London Plan Policy T5 'Cycling', Camden Local Plan Policy T1 Prioritising walking, cycling and public transport and Camden CPG Transport January 2021

In accordance with London Plan guidance (2021) and BREEAM guidance, 137 spaces will be provided within the development in secure and covered cycle stores at basement level for the building, this represents a shift from on-site car parking to high quality cycle parking. A delivery and servicing plan has been produced by Hilson Moran as part of this planning activity.

The cycle parking will comprise of two tiers of cycle parking, with a capacity of up to 100 bikes, 21 lockers for folding bikes, 6 Sheffield stands with a capacity for up to 12 bikes, 2 e-bike charging stations, 2 accessible parking spaces and a bike repair station.

Enhancements to the changing room and shower facilities for active travellers is also proposed, with enhanced facilities in the basement, compliant with both The London Plan and BREEAM requirements.

To support and encourage cycling, 154 appropriately sized lockers will be provided in or adjacent to the changing areas. There will be 11 showers, as well as 1 accessible shower.

Please refer to 32099-HML-XX-XX-RP-U-780001 Transport and Travel Plan for full breakdown of calculations.

Car Parking and vehicle access arrangement
In response to Camden Local Plan Policy T2 parking and car free development

The development is proposed to be car free with no on-site parking provided. As there will be no vehicular access to the building, the waste facilities are to be improved and will be accessed via an external door on New Compton Street. A Delivery and Servicing plan has been prepared as part of the planning application.

The site is very well-connected to public transport services and scores a PTAL score of 6b (best). Tottenham Court Road, Leicester Square and Covent Garden underground stations are all situated a 5-minute walk from the site, serving the Piccadilly, Central, Elizabeth and Northern lines. Charing Cross station is a 12-minute walk away, giving access to Southwestern rail.

Disabled Access
In response to Camden Local Plan Policy C6 Access for All

151 Shaftesbury Avenue shall be provided with access for all. All floors including the top roof terraces have vertical lift level access. Firefighting and evacuation lifts are provided in accordance with the London Plan guidance.

Low Carbon Vehicles
In response to Camden CPG Design January 2021

As a car free development with no associated on-site parking no electric vehicle charging is provided in the scheme.

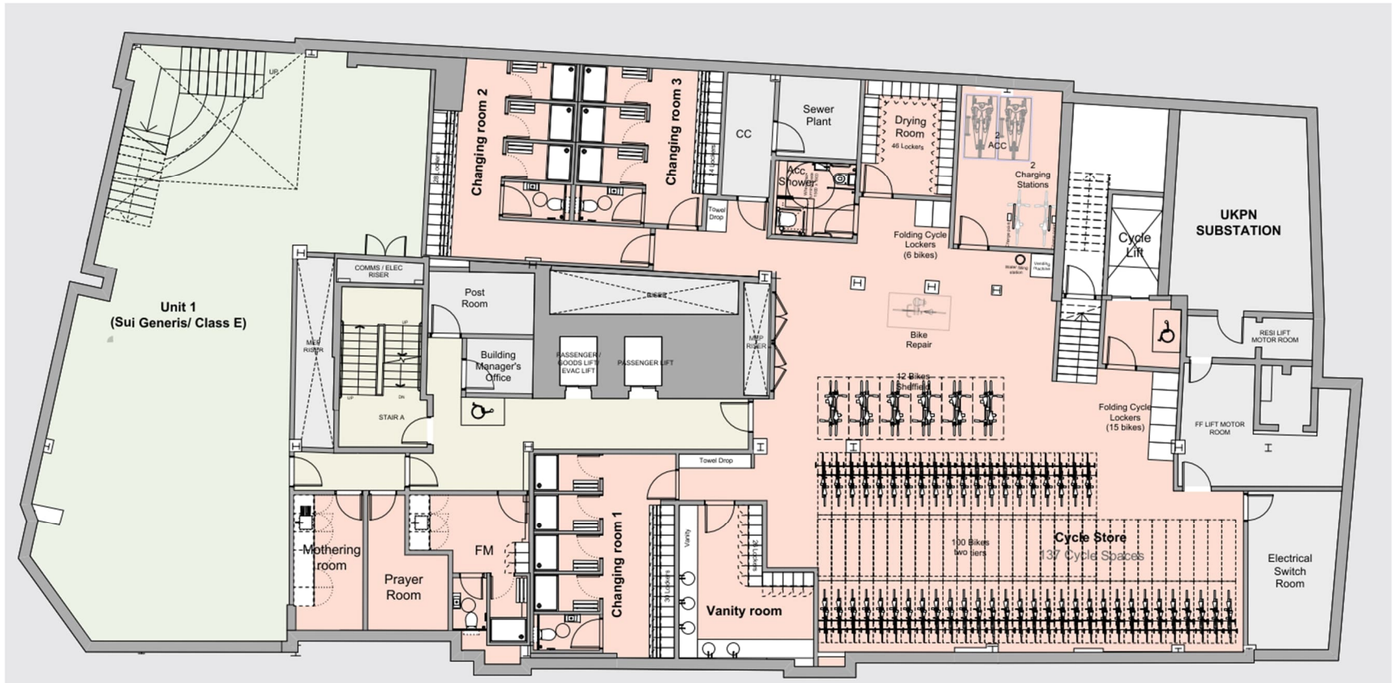


Figure 15 : Lower ground floor plan showing cycle facilities (BGY)

4.9 BREEAM

The project is aiming to achieve at least BREEAM 'Excellent' under BREEAM Refurbishment and Fit-Out 2014. The assessment will cover the office areas of the development. The residential area is not large enough to require a BREEAM Assessment.

A BREEAM pre-assessment strategy for the project has been developed for 151 Shaftesbury Avenue, achieving a score of 88.70%. The Design Team have been advised that all time the project should maintain a contingency to provide a healthy buffer as it moves through design and construction. All the minimum requirements are on track to be achieved.

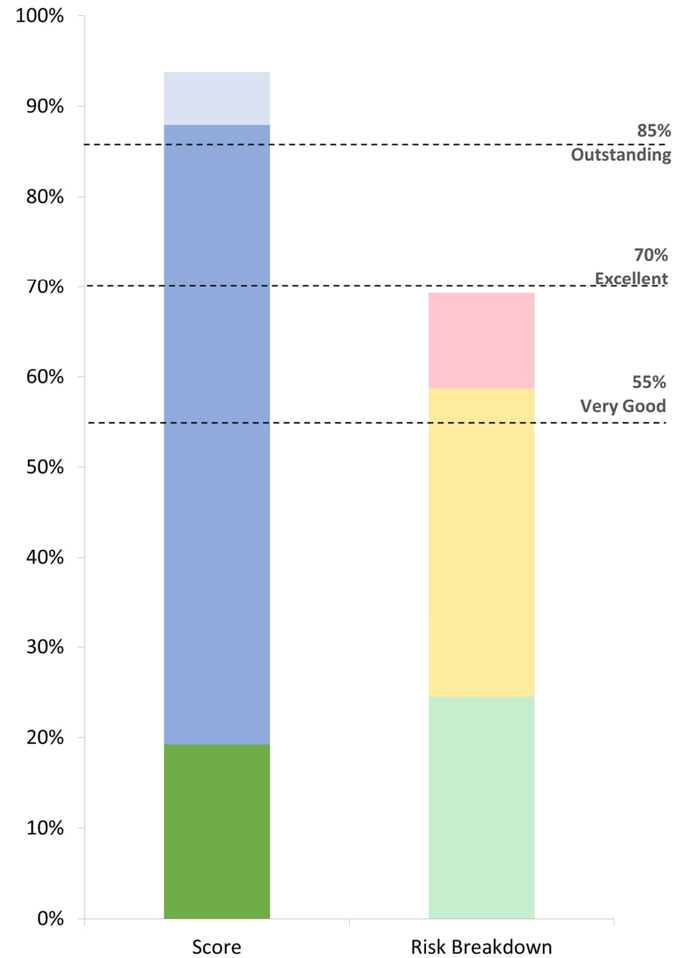


Figure 16 : Current BREEAM score and risk breakdown

MAX FORDHAM

The following sections outline key BREEAM criteria that are targeted by the design:

Management
To ensure the building's systems perform as they are intended, a thorough commissioning process will be followed by the design and construction team. This will ensure the building doesn't use more energy than predicted and deliver the desired occupant comfort levels.

The integrity of the building fabric will be quality assured through completion of post construction testing and inspection. This likely to include a thermographic survey as well as an airtightness test and inspection by a qualified professional. Any defects will be rectified prior to building handover/close out. A Building User Guide will be included as part of the handover process to ensure efficient use of the building.

The contractor will be expected to exceed compliance with the Considerate Constructors Scheme in order to demonstrate that the construction site is managed in an environmentally and socially considerate, responsible, and accountable manner. Similarly, construction site impacts will be monitored, for example, through the recording of energy, water, and transport usage.

Health and Wellbeing
An Indoor Air Quality plan has been created with the objective of facilitating a process that leads to design, specification and installation decisions, and actions, which minimise indoor air pollution during occupation of the building. Additionally, low VOC finishes will be specified to ensure the risk of indoor toxins are minimised post construction.

To ensure a thermally comfortable environment for occupants, calculations are being undertaken so that the comfort criteria in CIBSE Guide A are met. The building design and services strategy will deliver the required thermal comfort levels in all occupied spaces. The design team are targeting best practice levels of acoustic performance and sound insulation.

Energy
To achieve a rating of BREEAM 'Excellent', it is important to achieve a good number of credits for reducing CO_2 emissions over the existing building. The design team is carrying out predictive energy modelling of the design, which includes the consideration of 'unregulated' energy loads.

A combination of measures is being incorporated to ensure high levels of energy efficiency are met. These include passive design measures, energy high fabric energy performance, and a fully electric heating strategy. For full details, see the Energy Statement.

Transport
A variety of sustainable transport solutions are being included such as the replacement of existing car parking space with cyclist facilities. The building is close to a number of public transport facilities and various other amenities. A travel plan will be completed for the development.

Water
Sanitaryware will need to be specified to meet a 25% reduction in water consumption compared to a base building of the same type.

To encourage further reductions in water consumption, a water meter will be installed on the mains water supply and sub-meters fitted to water-consuming plant or building areas which consume 10% or more of the building's total water demand. In addition, a leak detection system will be fitted to the mains water supply within the building and between the building and the utilities meter. Similarly, flow control devices will be fitted to each WC area to ensure water is only supplied when needed.

Materials
Materials used within the main building elements will be sourced, wherever possible, to have a minimal environmental impact. This includes the walls, floors, roof, windows, floor finishes, insulation, and hard landscaping. A Life Cycle Assessment (LCA) study has been carried out at Concept Design and findings shared with the team to help inform the design. A further analysis is to be carried at technical design stage.

Key building materials will also be sourced based on industry-wide responsible sourcing standards, such as FSC, BES 6001 and ISO 14001. This will also be facilitated through a responsible sourcing plan that will be produced.

Waste
Procedures and commitments for minimising construction waste will be set by the contractor to ensure high levels of resource efficiency. Waste is to be diverted from landfill through employing methods such as: reusing materials on site, using reclaimed materials, returning waste to suppliers via 'take-back' schemes and using an approved waste management contractor to recover and recycle waste. An appropriately sized space for the segregation and storage of operational recyclable waste is provided in the development.

Land Use and Ecology
An ecologist has been appointed to ensure that the site manages to maximise the biodiverse potential for the development area. Recommendations will be provided for protection of local habitat during works as well as a management plan.

Pollution
An effort is being made to only specify refrigerants which have low life cycle Global Warming Potential, thus reducing the level of greenhouse gas emissions arising from the leakage of refrigerants from building systems.

Surface water is proposed to be attenuated before leaving the site, aiming to minimise any stress placed on the local water system.

Finally, noise sources from the development must not exceed ambient noise level; with attenuation measures employed where this is not possible (See Acoustician's report).

4.10 Conclusion

In conclusion, the proposed 151 Shaftesbury Avenue development fulfils the sustainability delivery requirements. The submission has demonstrated that the proposal complies with the NPPF, London Plan and Camden planning policy with respect to sustainable development at this location.

Figure 17 - Proposed development (BGY)

APPENDIX I OVERVIEW OF APPLICABLE POLICIES & REQUIREMENT

Introduction

The proposed development is submitted within the context of national, regional, and local planning policies that seek to address the challenges of climate change and sustainable development.

National Policy and Legislation

- Climate Change Act (2008): 80% reduction in greenhouse gas (GHG) emissions compared to 1990 levels by 2050.
- Current 2021 Part L of the Building Regulations for England & Wales: Sets out maximum levels of CO_2 emissions by comparing the actual buildings, to a notional building.
- Consideration of High-efficiency Alternative Systems: Building Standards requires the technical, environmental, and economic feasibility of high-efficiency alternative systems such as renewables, cogeneration, district heating and heat pumps to be considered.
- National Planning Policy Framework (2023): Mitigating and adapt to climate change, including taking account of flood risk, water supply and biodiversity.

Local Planning Policy

- London Plan (2021):
- London Borough of Camden:
    - Camden Local Plan (2017)
    - Camden Climate Action Plan 2020-25
    - Biodiversity CPG (2018)
    - Energy efficiency and adaptation CPG (2021)
- London Air Quality Management Areas

The London Plan 2021

The London Plan 'Spatial Development Strategy for Greater London', published in March 2021, forms the statutory development plan for Greater London.

Relevant policies in relation to sustainability are the following:

Policy GG6 'Increasing Efficiency and Resilience'
Help London become a more efficient and resilient city:

- Improve energy efficiency and support move toward a low carbon circular economy
- Building designed to adapt to a changing climate

Policy G1 'Green Infrastructure'
Development proposals should incorporate appropriate elements of green infrastructure.

Policy G4 'Open Space'
Development proposals should not result in a loss of protected open space.

Policy G5 'Urban Greening'
Proposals should contribute to the greening of London by including urban greening as a fundamental element of site and building design.

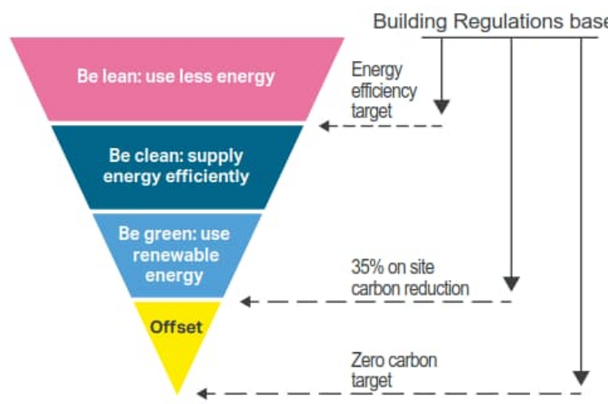
Boroughs should develop an Urban Greening Factor (UGF) to identify the appropriate amount of urban greening required in new developments.

Policy G6 Biodiversity and access to nature
Development proposals should manage impacts on biodiversity and aim to secure net biodiversity gain.

Policy SI1 'Improving Air Quality'
- developments should be at least air quality neutral.
- All energy proposals should have emissions lower than those generated by ultra-low NOx emission gas boilers.

Policy SI2 'Minimising Greenhouse Gas Emissions'
The existing requirements have been strengthened, and some aspirations of the previous plan have been clarified:

The New Energy Hierarchy:



Be Lean: Use less energy and manage demand during operation

Be Clean: Exploit local energy resources (such as secondary heat) and supply energy efficiently and cleanly

Be Green: Maximise opportunities for renewable energy by producing, storing, and using renewable energy onsite

Be Seen: Monitor, verify and report on energy performance

Policy SI3 'Energy Infrastructure'
The heat source for the communal heating system should be selected in accordance with the following heating hierarchy:

a) connect to local existing or planned heat networks
b) use available zero-emission or local secondary heat sources (in conjunction with heat pump, if required
c) Use low-emission combined heat and power (CHP) (only where there is a case for CHP to enable the delivery of an area-wide heat network).
d) Use ultra-low NOx gas boilers.

Policy SI4 'Managing Heat Risk'
Show steps to minimise overheating and avoid active cooling:

1) minimise internal heat generation
2) reduce the amount of heat entering a building
3) manage the heat within the building
4) provide passive ventilation
5) provide mechanical ventilation
6) Provide active cooling systems.

Policy SI5 'Water Infrastructure'
In order to minimise the use of mains water, water supplies and resources should be protected and conserved in a sustainable manner.

Encourage to incorporate measures such as smart metering, water saving and recycling measures, including retrofitting.

Policy SI7 'Reducing Waste and Supporting the Circular Economy'
Waste reduction, increases in material re-use and recycling and reductions in waste going for disposal will be achieved by:

1) Promoting a more circular economy that improves resources efficiency and innovation.
2) Encouraging waste minimisation and waste avoidance.
3) Ensuring that is zero biodegradable or recyclable waste to landfill by 2026.
4) Meeting or exceeding the recycling targets for each of the following waste streams and generating low-carbon energy in London from suitable remaining waste:
    a) Municipal waste – 65% by 2030.
    b) Construction, demolition, and excavation waste – 95% by 2020.
5) Designing developments with adequate and easily accessible storage space that supports the separate collection of dry recyclables and food.

Referable applications should promote circular economy outcomes and aim to be net zero-waste. A circular economy statement should be submitted.

Policy SI12 'Flood Risk Management'
Current and expected flood risk from all sources across London should be managed in a sustainable and cost-effective way.

Policy SI13 ‘Sustainable Drainage’
Development proposals should aim to achieve greenfield run-off rates and ensure that surface water run-off is managed as close to its source as possible in line with the drainage hierarchy:

Drainage should be designed and implemented in ways that address issues of water use efficiency, river water quality, biodiversity, amenity, and recreation.

Policy T2 ‘Healthy Streets’
Development proposal should:

1) Demonstrate how they will deliver improvements that support the ten healthy streets indicators in line with transport for London guidance.
2) Reduce dominance of vehicles on London’s streets whether stationary or moving.
3) be permeable by foot and cycle and connect to local walking and cycling networks as well as public transport.

Policy T5 ‘Cycling’
(…) development proposals should help remove barriers to cycling and create a healthy environment in which people choose to cycle.

Camden Local Plan

C1 Health and Wellbeing
Development to positively contribute to creating high quality, active, safe, and accessible places.

C6 Access for all
All buildings and places to meet the highest practicable standards of accessible and inclusive design so they can be used safely, easily and with dignity by all. Development should encourage accessible public transport and secure car parking for disabled people.

T1 Prioritising walking, cycling and public transport
Provide for accessible, secure cycle parking facilities with provision for high quality facilities that promoting cycle usage.

T2 parking and car free development
Limit on-site parking to spaces designated for disabled people where necessary and/or essential operational or servicing needs.

A3 Biodiversity
Realise benefits for biodiversity through the layout, design and materials used in the built structure and landscaping elements. Incorporate additional trees and vegetation wherever possible.

CC1 Climate change mitigation
The Council will require all development to minimise the effects of climate change and encourage all developments to meet the highest feasible environmental standards that are financially viable during construction and occupation.

All developments to optimise resource efficiency by:

- reducing waste;
- reducing energy and water use during construction;
- minimising materials required;
- using materials with low embodied carbon content; and
- enabling low energy and water demands once the building is in use.

All developments involving five or more dwellings and/or more than 500 sqm gross internal floor space are encouraged to assess the embodied carbon emissions associated with the development

CC2 Adapting to climate change
All developments should adopt appropriate climate change adaptation measures, such as:

a. the protection of existing green spaces and promoting new appropriate green infrastructure;
b. not increasing, and wherever possible reducing, surface water runoff through increasing permeable surfaces and use of Sustainable Drainage Systems;
c. incorporating bio-diverse roofs, combination green and blue roofs and green walls where appropriate; and
d. measures to reduce the impact of urban and dwelling overheating, including application of the cooling hierarchy.

Non-domestic developments of 500 sqm of floorspace or above to achieve “excellent” in BREEAM assessments and encouraging zero carbon in new development from 2019.

All new developments will be expected to submit a statement demonstrating how the London Plan’s ‘cooling hierarchy’ has informed the building design.

CC3 Water and flooding
Development to incorporate water efficiency measures;

Development should not increase flood risk and reduce the risk of flooding where possible. Where an assessment of flood risk is required, developments should consider surface water flooding in detail and groundwater flooding where applicable.

Refurbishments and other non-domestic development will be expected to meet BREEAM water efficiency credits.

CC4 Air Quality
Air Quality Assessments (AQAs) are required where development is likely to expose residents to high levels of air pollution. Development that involves significant demolition, construction or earthworks will also be required to assess the risk of dust and emissions impacts in an AQA and include appropriate mitigation measures to be secured in a Construction Management Plan.

CC5 Waste
Developments should include facilities for the storage and collection of waste and recycling.

The Council will encourage the submission of a site waste management plan prior to construction.

Energy efficiency and adaptation CPG (2021)
- Developments are to target a 20% reduction in carbon dioxide emissions from on-site renewable energy technologies
- Energy statements should demonstrate how a development has been designed following the steps in the energy hierarchy
- Deep refurbishments (i.e. refurbishments assessed under Building Regulations Part L1A/L2A) should also meet the London Plan carbon reduction targets for new buildings.
    - Zero carbon, minimum 35% reduction below Part L Building Regulations onsite, with 15% reduction through on-site energy efficiency measures) (London Plan Local Plan CC1)
- Condition and feasibility study, and options appraisal. (applies to major redevelopment applications, any development proposing substantial demolition)
- Whole Life Carbon assessment and pre-demolition audit. (All applications where the option is substantial demolition)

Design CPG (2021)
Developers should ensure that all waste systems and storage areas in new developments or refurbished developments are:

- designed to provide adequate space for the temporary storage of all types of waste, including internal storage areas with sufficient space for the separation of temporary storage of all recycling, food waste and residual waste;
- sensitively designed and located in relation to the local environment;
- safely located and accessible for all users;
- sufficiently flexible to accommodate future increases in recycling targets;
- designed to include innovative waste management solutions.

APPENDIX II ENERGY AND SUSTAINABILITY PROFORMA

MAX FORDHAM

TABLE 1. APPLICATION DETAILS	Response						Further notes
Application number (when known)							
Scheme name (if applicable)	151 Shaftesbury Avenue						
Scheme address	151 Shaftesbury Avenue , London						
Postcode	WC2H 8AL						
Type of development (choose drop down options)	Mixed use			Refurbished			Major development is > 1000 sq.m **or** 10+ residential units
No. of residential units	4						
Scale of development details (m^2)	Existing	Proposed					Developments over 1,000sq.m are a major development, this includes proposals involving substantial refurbishment (that requires planning permission)
	TOTAL pre-development	For demolition	New-build incl. infills, re-build, extensions	Retained (refurbished or Change of Use)	TOTAL post-development	Net UPLIFT post-development	
Total floor area of development (GIA)	7291	0	763	7291	8054	763	
of which residential	531	0		531	531	0	
of which non- residential	6760	0	763	6760	7523	763	
Energy Statement document details	Energy Statement, M Daccache (Hilson Moran), 28/2/24, PO1						Full title, author, date and version
Sustainability Plan document details	Sustainability Statement, M Ferguson (Max Fordham). 01/04/24, PO2 and Whole						Full title, author, date and version

TABLE 2. KEY METRICS			Further notes
CO2e savings against baseline	tonnes/yr	50.80	Populated from sheets, CO2e savings beyond the Baseline (Building Regs Part L 2021)
Renewable Capacity Installed	kWp	11.39	Total capacity of renewables installed
Green Infrastructure Installed	m²	152.00	Total area of green infrastructure i.e. green roofs, rain gardens and other vegetated areas
			Further guidance can be found in London Plan Guidance on Urban Greening Factors (London Plan Policy G5)

TABLE 2. ENERGY STATEMENT — **Further notes**

Complete relevant tabs to populate tables automatically

Carbon Factor	SAP 10.2

SAP 10.2 should be used for all submissions after 1st January 2023 - Please contact your planning case officer if another carbon factor has to be used for any reason.

	New Development Total SAP 10.2			
	Total tCO2e	Stage reduction, tCO2	Stage reduction, %	
Baseline	0.00	N/A	N/A	
Be Lean	0.00	0.00	0.0%	Be Lean reduction requirements apply separately for residential 10% and non-residential 15% - **see specific tabs**. (London Plan SI 2)
Be Clean	0.00	0.00	0.0%	Relevant if connecting to or creating a Heat Network only (London Plan Policy SI 3)
Be Green	0.00	0.00	0.0%	Be Green reductions are a minimum 20% from on-site renewable generation for all new Major developments. (Local Plan 8.11)
TOTAL	**0.00**	**0.00**	**0.0%**	
Target	0.00	0.00	100.0%	
Shortfall	0.00	0.00	100.0%	
Offset payment	£0			Whole site should aim for zero carbon and a minimum of 35% reduction. A carbon offset applies to any residual emissions, currently £95/t for 30 years (London Plan SI 2)

	Refurbished Development Total SAP 10.2			
	Total tCO2e	Stage reduction, tCO2	Stage reduction, %	
Baseline	80.20	N/A	N/A	
Be Lean	32.10	48.10	60.0%	Be Lean should **aim for** 10% residential and 15% non-residential reduction - see specific tabs (London Plan 9.2.1)
Be Clean	32.10	0.00	0.0%	20% reduction in carbon from on site renewables, after energy efficiency measures (Local Plan 8.11)
Be Green	29.40	2.70	8.4%	
TOTAL	**29.40**	**50.80**	**63.3%**	Whole site should aim for zero carbon, carbon offset only applies to new build elements

	Whole Development Total SAP 10.2			
	Total tCO2e	Stage reduction, tCO2	Stage reduction, %	
Baseline	80.20	N/A	N/A	
Be Lean	32.10	48.10	60.0%	
Be Clean	32.10	0.00	0.0%	
Be Green	29.40	2.70	8.4%	
TOTAL	29.40	**50.80**	**63.3%**	
Target	0.00	80.20	100.0%	Whole site should aim for zero carbon but carbon offset only applies to new build elements
Shortfall	29.40	29.40	36.7%	
Offset payment	£0			New build elements only @ £95/tonne for 30 years

Major Refurbishment Non-Dwelling

Details of Refurbishment Non-Dwelling proposals:

Name of applicable buildings / blocks / units	151 Shaftesbury Avenue
Floor area (GIA) m2	7523

Energy Statement

1. Carbon Reductions

	SAP10.2		
	Total tCO2e per annum	Stage reduction, tCO2	Stage reduction, %
Baseline	80.20		
Be Lean	32.10	48.10	60.0%
Be Clean	32.10	0.00	0.0%
Be Green	29.40	2.70	8.4%
TOTAL	**29.40**	**50.80**	**63.3%**
Target	*N/A*	*N/A*	*N/A*
Shortfall	*N/A*	*N/A*	*N/A*
Offset payment	N/A		

2. Regulated and whole life carbon emissions

Regulated and whole life carbon	Yes / No
a. Worksheets provided (BRUKL for each stage)	Yes
b. Whole Life Carbon Assessment provided	Yes

3. Be Lean

a. Building Fabric	Yes / No	
i. Meets all Building Regulation part L2 Limiting Fabric Parameters	Yes	
ii. Meets all Part L2 Notional Non-Dwelling Specification	Yes	
iii. What is the proposed Air permeability?	3	m3/(h·m2) @ 50Pa
b. Active design measures	Yes / No	
i. Efficient centralised MVHR or individual units next to external wall	Yes	

4. Be Clean

Potential decentralised energy network	Yes / No
a. Is the site within 500m of existing network?	No
b. If no to a) Within 1km of existing or potential network?	No
c. If yes to b) Future proofing checklist completed?	No
d. Is a site wide heat network proposed?	No
f. CHP and District Heating Feasibility Checklist completed?	No

5.Be Green

Minimum 20% reduction in CO2 from on-site renewable energy technologies	Viable (Yes /No)	Proposed (kW)	Expected tCO_2 saved per annum	COP (at rating conditions in BS EN 14511-2)
a. Solar PV (photovoltaics)	Yes	11.39	1.8	
b. Solar Thermal (water heating)	No			
c. Air source heat pump (air to water)	Yes		0.9	

Location of justification / supporting Information		Further notes
Document	Page/ section reference	**See GLA Energy Assessment Guidance & Camden Planning Guidance (CPG) on Energy Efficiency for detailed guidance.**
		Referables should also complete GLA Carbon emission reporting spreadsheet
Energy Statemer	Section 3.3	
Energy Statemer	Section 3.3	Should not increase. 15% reduction in CO2 at be lean
Energy Statemer	Section 3.3	Relevant if connecting to or creating a Heat Network only (London Plan Policy SI 3)
Energy Statemer	Section 3.3	Greatest possible reduction after energy efficiency measures incorporated
Energy Statemer	Section 3.3	Major refurbishments should aim for the greatest possible reduction, as close to zero carbon as possible.
		CPG Energy Efficiency and Adaptation Chts 6 & 9
Energy Statement	Appendix 1	This should include baseline calculations.
WLC/CE Statem	Section 1.8	Required for referrable applications or if there is 'substantial demolition'. Refer to GLA Whole Life Carbon Assessment Guidance.
Energy Statemer	Table 4.1	Clearly justify if not met
Energy Statemer	Section 4	Clearly justify if not met
Energy Statemer	Table 4.1	
Energy Statemer	Table 4.1	
		Camden Local Plan Policy CC1, London Plan SI 3, CPG Energy Efficiency and Adaptation Chapter 4 (includes link to Camden's Borough Wide Heat Demand and Heat Source Mapping
Energy Statemer	Section 5.2	State location & detail feasibility of connection.
Energy Statemer	Section 5.2	State location & detail future proofing of connection.
Energy Statemer	Section 5.2	See Appendix 3 of CPG Energy Efficiency and Adaptation
Energy Statemer	Section 5.2	
Energy Statemer	Section 5.2	
		London Plan Policy SI 2 ,Camden Local Plan Policy CC1 and section 8.11
		A robust renewable feasibility assessment should be completed and installation of renewable technologies should be maximised. See Chapter 5 of the CPG on Energy Efficiency and Adaptation.
Energy Statemer	Section 6.1	Detail array size, layout drawings, estimated generation, CO2 savings, overshadowing assessment.
Energy Statemer	Section 6.1	
Energy Statemer	Section 6.1	Details required include type of system / details of the Coefficient of Performance (COP) and Energy

d. Air source heat pump (air to air)		No				Energy Statemer	Section 6.1
e. Ground source heat pump		No				Energy Statemer	Section 6.1
f. Other please state							
g. Other please state							

6. Be Seen

a. Building management, metering and monitoring		Yes / No					
i. Will there be a whole-building energy management system (BEMS)?		Yes				Energy Statemer	Section 7
ii. Will all units be individually metered?		Yes				Energy Statemer	Section 7
iii. Will key plant be monitored post construction?		Yes				Energy Statemer	Section 7
b. Be Seen reporting requirements to Greater London Authority (GLA)		Yes / No					
i. Required data will be uploaded to GLA 'Be Seen' portal		Yes				Energy Statemer	Section 7

Efficiency Ration (EER) / CO2 savings / noise and visual effects / commitment to monitoring the performance post-construction /information to and control by end-users

Details required technical details, CO2 savings, air quality impacts, visual or noise implications

London Plan Policy SI 2, Camden Local Plan section 8.28, CPG Energy Efficiency and Adaptatic

See GLA Be Seen Energy Monitoring Guidance.

Sustainability Statement

Location of justification / supporting Information

Further notes

7. Overheating

Overheating / cooling		Yes / No			Document	Page/ section reference
a. Applied cooling hierarchy, passive design measures included?		Yes			Sustainability Sta	Section 4.1
c. Overheating - dynamic thermal modelling completed?		Yes			Sustainability Sta	Section 4.2
d. Is active cooling proposed?		Yes			Energy Statemer	Table 4.1
Passive measures		Yes / No				
i. Orientation and site layout optimised		No			Sustainability Statement	Section 4.1
ii. Units at least dual aspect and designed to allow natural ventilation		Yes			Sustainability Sta	Section 4.2
iii. Solar shading incorporated into the design		Yes			Sustainability Sta	Section 4.1/4.2
iv. Exposed internal thermal mass and night time purge ventilation		No			Energy Statemer	Table 4.1
v. Other please state						

Local Plan Policy CC2, London Plan Policy SI 4, GLA Energy Assessment Guidance Cha

See GLA Energy Assessment Guidance Chapter 8.

Design must be informed by the cooling hierarchy, passive design measure should be incorporated before any active cooling.

CPG Energy Efficiency and Adaptation Cht 3

Details should be set out as in 7.5 & 7.6 of GLA Energy Assessment Guidance

8. Reducing Waste and the Circular Economy

Material and waste		Response				
a. Pre-demolition audit completed?		Yes			WLC/CE Statem	Appendix I
b. Whole life carbon assessment submitted? (see note)		Yes			WLC/CE Statem	Section 1.8
c. % of construction & demolition waste be reused/recycled?		95	%		WLC/CE Statem	Executive Summa
d. % of excavation waste be put to beneficial use?		95	%		WLC/CE Statem	Executive Summa
e. Circular economy statement submitted (see note)		Yes			WLC/CE Statem	See statement

Local Plan Policy CC1, London Plan SI 7, CPG Energy Efficiency and Adaptation Cht 9

Significant demolition must justify why the existing buildings can't be retained Local Plan policy CC1.

Required if referable to the Mayor **and/or** there is significant demolition. Local Plan CC1, London Plan

95% of construction and demolition waste should be reused/recycled London Plan Policy SI7

95% beneficial use of inert excavation waste London Plan Policy SI7

Required if referable to the Mayor, London Plan policy SI7

9. Green infrastructure

Green infrastructure and biodiversity		Area m^2				
a. Green/blue roof		152			Sustainability Statement	Section 4.4
b. Green roof		0				
c. Green wall		0				
d. Vegetated SuDs features i.e. Rain Gardens, Tree pits		0				
e. Other Green infrastructure please state:						

Camden Local Plan CC2, London Plan Policy G5, CPG Energy Efficiency and Adaptation Cht 10

The Council will expect all developments to incorporate green infrastructure unless it is demonstrated this is not possible or appropriate. This includes new and existing buildings. Please refer to CPG Energy Efficiency and Adaptation chapter 10 & London Plan Guidance on Urban Greening Factors (London Plan Policy G5)

10. Water

Water		Response	Unit			
a. Greywater/rainwater harvesting system feasibility assessment?		Yes			Sustainability Sta	Section 4.5
b. Greywater harvesting capacity proposed		0	m^3			
c. Rainwater harvesting capacity proposed		0	m^3			

Local Plan CC3 + section 8.55, London Plan SI 13

The Camden Local plan section 8.55 states 'Major developments and high or intense water use developments, such as hotels, hostels and student housing, should include a grey water and rainwater harvesting system. Where such a system is not feasible or practical, developers must demonstrate to the Council's satisfaction that this is the case.'

11. Adapting to Climate Change

BREEAM - Overall		Score				
a. Overall rating		Excellent			Sustainability Sta	Section 4.9 and A
b. Overall % score		88.73			Sustainability Sta	Section 4.9 and A

Local Plan Policy CC2 and section 8.46 to 8.49 CPG Energy Efficiency Cht 11

At least BREEAM Excellent Is required for 500sqm or more floorspace

More than 70% required to meet 'Excellent'

BREEAM - Categories	Available credits	Targeted	%			
c. Energy	24	18	75.0%	Sustainability Sta	Section 4.9 and A	At least 60% of unweighted credits
d. Water	9	7	77.8%	Sustainability Sta	Section 4.9 and A	At least 60% of unweighted credits
e. Materials	13	13	100.0%	Sustainability Sta	Section 4.9 and A	At least 40% of unweighted credits

Additional comments / notes:

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APPENDIX III BREEAM PRE-ASSESSMENT

151 Shaftesbury Avenue

BREEAM Pre-Assessment

Stage 2

30th April 2024

MAX FORDHA

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ISSUE HISTORY

Issue	Date	Description
P01	20/02/2024	Issue for review
P02	30/04/2024	Final issue

MAX FORDHAM LLP

Engineer	Role
Mari Ferguson	BREEAM Assessor
Hero Bennett	BREEAM AP

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CONTENTS

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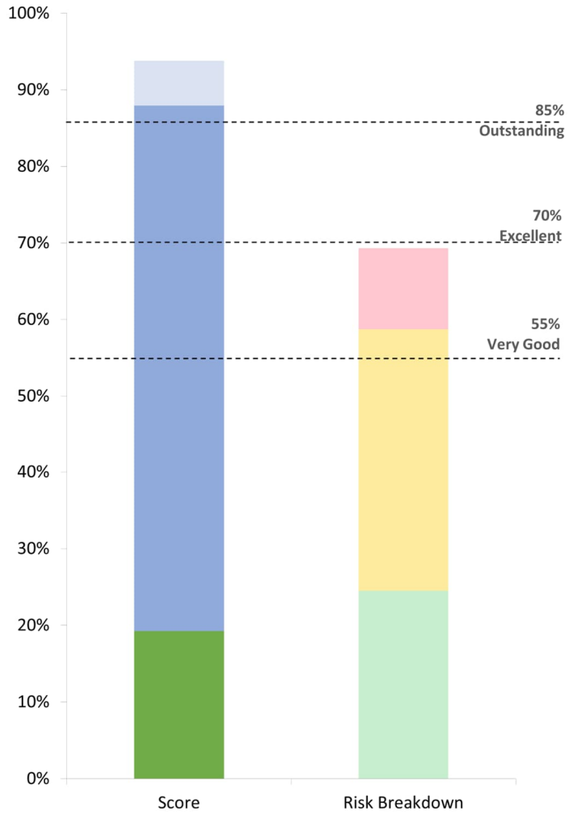
1.0 EXECUTIVE SUMMARY

151 Shaftesbury Avenue is required to achieve a BREEAM 'Excellent' under the relevant scheme rating as per the Camden Council planning requirements.

An initial BREEAM strategy for the building has been developed under the Refurbishment and Fit-Out 2014 scheme, achieving a targeted score of 88.7%. This equates to an 'Excellent' rating, with a large buffer. The Design Team have been advised that at all times the project should maintain a contingency of 3-5% in the expected score, i.e., the score should never drop below 75%. All of the minimum requirements are on track to be achieved.

To eliminate any risk in not achieving BREEAM Excellent, selections of additional possible credits have been identified in the pre- assessment scoring matrix (Section 4.0) that is worth 5.47%. The team should stay aware of these credits for use as contingency credits in case currently targeted credits are lost as the design progresses. The level of risk to achieving each credit has also been assessed by the design team, based on difficulty and project specific parameters.

The graphs opposite illustrate the score and how the project is expected to perform in each of the ten BREEAM categories.



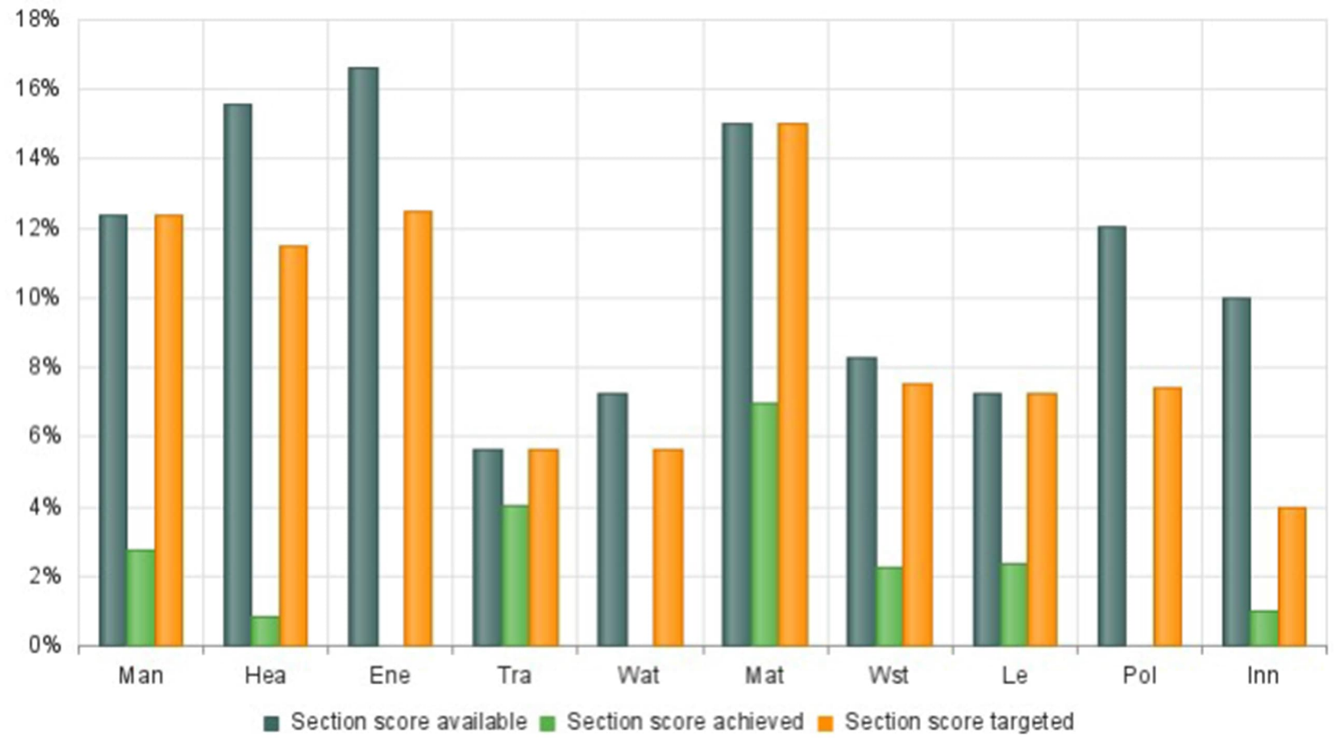


Figure 1: Graph showing current targeted scores

2.0 ASSESSMENT PROCESS

2.1 About BREEAM Refurbishment and Fit-Out 2014

The project has been registered under BREEAM Refurbishment and Fit-out 2014. The registration code is BREEAM-0122-2553.

The Building Research Establishment Environmental Assessment Method for Refurbishment and Fit-Out 2014 (BREEAM Refurbishment and Fit-Out 2014) helps Clients and Local Authorities to set environmental targets and demonstrate environmental performance for refurbished non-domestic buildings. To date over 200,000 buildings have been certified under BREEAM worldwide since it was first launched in 1990. Figure 1 below illustrates countries in which BREEAM assessments have taken or are currently taking place.

Figure 2: Countries in which BREEAM is present

Countries with BREEAM Certified Buildings
Countries to have developed their own BREEAM Scheme

BREEAM Refurbishment and Fit-out 2014 incorporates the following categories:

- Management
- Health and Wellbeing
- Energy
- Transport
- Water
- Materials
- Waste
- Land use and Ecology
- Pollution

There is also an Innovation Category, where additional Credits can be awarded for exemplary performance and any innovative features of the building project that are not assessed as standard and that the design team feel are worth a credit. An application for these additional Credits has to be made to BRE for approval. As the 151 Shaftesbury Avenue design develops, areas of the design will be assessed for eligibility for Innovation Credits.

2.2 Scoring Process

Credits are allocated under each category and a weighting is applied to determine an overall building score. The building will be allocated a rating of Unclassified, Pass, Good, Very Good, Excellent, or Outstanding as follows:

BREEAM RATING	% SCORE
Outstanding	85
Excellent	70
Very Good	55
Good	45
Pass	30
Unclassified	<30

Table 1: BREEAM rating scores

2.3 Assessment Stages

As part of the assessment scheme, two formal assessments will be required. The first assessment is to take place during design stages following the appointment of the contractor (Interim or Design Stage Certification). Design-based evidence and commitments from the team are required as evidence at this stage.

The final assessment will take place following Practical Completion (Post Construction Certification). A second batch of As-built information will be required that will confirm that the design stage information is valid. This will be carried out by a combination of on-site assessor auditing and additional as-built drawings / records. The general BREEAM process is outlined in Figure 2 below.

In BREEAM Refurbishment and Fit-out 2014, there are minimum standards required for an 'Excellent' rating. These are summarised in Section 3.0 on the following page. The current status for the proposed 151 Shaftesbury Avenue development confirms that all mandatory requirements are being addressed and are on track to be achieved.

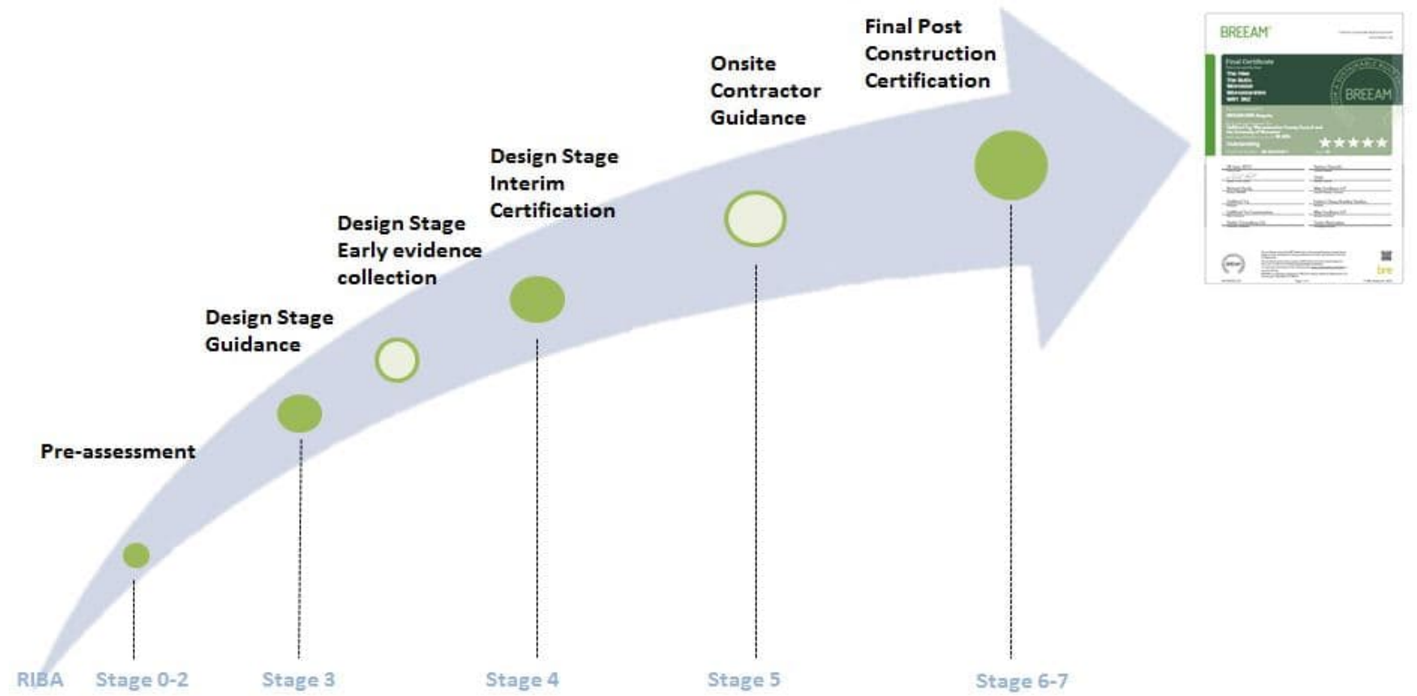


Figure 3: BREEAM Assessment Stages

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2.4 Section Weighting

The table outlines the weightings for each of the ten environmental sections included in the BREEAM UK 2014 Refurbishment and Fit-out scheme.

In the Refurbishment and Fit-Out scheme, the weightings change based on the scope of the assessment. The scope changes the applicable credits, and therefore the weightings. Full details of how this works can be found in *APPENDIX I Section of Manual Explaining the Scope of Assessment*.

BREEAM RATING	Weighting
Management	12.38 %
Health & Wellbeing	15.59 %
Energy	16.63 %
Transport	5.62 %
Water	7.22 %
Materials	15.04 %
Waste	8.27 %
Land Use & Ecology	7.22 %
Pollution	12.03 %
Innovation	10%

Table 2: BREEAM section weightings

2.5 BREEAM AP

Hero Bennett has been appointed as a BREEAM Accredited Professional on the project starting from Stage 1 (preparation and brief) and have been involved in key project meetings from Stage 1. The role is to facilitate the setting and achievement of BREEAM performance target for the project and to monitor progress against the agreed BREEAM performance target during the design stage.

The target rating of 'Excellent' has now been agreed between all parties and will be a contractual requirement under planning.

2.6 Achieving an 'Excellent' rating and project risks

The BREEAM process requires engagement and commitment from all members of the design and client team. It is the responsibility of each individual discipline to ensure they understand the requirements of the credits to which they've been assigned as the owner. There is always a risk that team members do not fully understand the requirements but do not raise concerns early enough for them to be addressed.

Equally there are risks that the design changes and the assessor and AP are not made aware of the changes to advise on credit impacts and problems are only discovered later when it is too late.

The assessor and AP are available to answer any queries or concerns but we rely on team members to let us know if there are problems or to flag design changes.

2.7 Potential Credits

To eliminate risk in not achieving BREEAM Excellent, selections of additional possible credits have been identified in the pre-assessment scoring matrix (Section 4.0) that is worth 5.47%. The team should stay aware of these credits for use as contingency credits in case currently targeted credits are lost as the design progresses.

3.0 MANDATORY AND PRIORITY CREDITS

Table 5 below lists the Mandatory requirements for Excellent, i.e. the minimum number of Credits required in specified sections. The BREEAM assessor will monitor these credits to ensure they accounted for in the design.

Mandatory Requirements				
BREEAM 2014 issues	Excellent	Owner	Status	Comments
Man 03: Responsible construction practices	Criterion 2 One credit (Considerate construction)	Contractor	✓	Contractor to sign up to CCS. Requirements to be included in Prelims
Man 04: Commissioning and handover	Criterion 9 (Building User Guide)	Contractor	✓	A requirement to produce a building user guide is to be passed onto the Contractor
Ene 01: Reduction of energy use and carbon emissions	Six credits	Hilson Moran	✓	Energy model currently being developed, Credits TBC once Part L model and initial BRUKL completed.
Ene 02: Energy monitoring	One credit (First sub-metering credit)	Hilson Moran	✓	Metering strategy to comply.
Wat 01: Water consumption	One credit	Buckley Gray Yeoman	✓	Low flow taps & low flush volume WCs to be specified.
Wat 02: Water monitoring	Criterion 1 only	Hilson Moran	✓	Water meter will be connected to BMS.
Mat 03: Responsible sourcing of materials	Criterion 1 only	Buckley Gray Yeoman	✓	All timber will be sustainably sourced.
Wst 03: Operational waste	One credit	Buckley Gray Yeoman	✓	Compliant waste storage to be designed.

Table 3: Mandatory requirements for an 'Excellent' Rating

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4.0 SCORE & ACTIONS MATRIX

The following matrix lists all credits within the assessment and identifies whether they are currently expected or possible / additional cost Credits. A commentary is provided which explains the status and risk of each Credit, and who the responsibility lays with interms of addressing requirements within the design and providing documentation

Note that these requirements are to be read in conjunction with the full BREEAM 2014 manual however the detailed requirements will be communicated by the Assessor as the project enters the detailed design stages.

4.1 Collaboration to date

The Design Team has been involved in the BREEAM process during Stages 1 and 2. There has been discussions regarding which credits should be targeted and the team has reviewd the pre-assessment in terms of achievability and risk, to ensure confidence in achieving the targeted score.

4.2 Risk categorisation

Each issue has been assigned a risk rating; Critical, High, Medium or Low. The purpose of this rating is to make the Client and Design Team aware of issues where extra attention should be paid.

An issue is likely to be flagged as ‘High’ or ‘Critical’ risk where there is a time dependent action to be undertaken or an additional appointment/additional cost is required.

Risk/Status Category	Description	Symbol
Low risk	Credit though to be achievable, technically simple or have been shown historically to be low risk	L
Medium risk	The credit has some uncertainty in the predicted score at this stage and/or it is technically complex and therefore liable to non-compliance issues	M
High risk	May be highly uncertain, expensive, or historically has been found to be difficult to achieve	H
Critical risk	Requires immediate action	C

Table 5: Risk applied to BREEAM credits