Sustainable Design and Construction Statement

Nos. 1-11 Euston Road, London, NW1

Prepared by

metropolis green

On behalf of

Gaylord Investments Ltd

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EXECUTIVE SUMMARY

This Sustainable Design and Construction Statement (SDCS) follows the Mayor of London's Supplementary Planning Guidance ensuring that the project is in compliance with London Plan policies on Sustainable Design and Construction.

The report details how the design team has considered the site's potential environmental impacts and how those impacts have been managed and mitigated in line with the prevailing spatial planning policies.

The proposed redevelopment of 1-11 Euston Road has targeted sustainability throughout the lifetime of the building. In particular the energy efficiency measures will be integral to the building's design and specification. Passive design measures will also feature within the building to prevent overheating and stop excessive requirements for heating.

A greywater recycling system will be specified to reduce mains water demand alongside the use of reduced flow fixtures to ensure excellent water efficiency. Sustainable drainage will be targeted through the incorporation of suitable Sustainable Drainage Systems (SUDS) on the proposed green roof.

All of the construction waste streams will be managed including the monitoring of water and CO_2 arising from site activities.

All of the proposed measures mentioned above reduce the site's detrimental impact on the environment and contribute to its sustainability. The proposed scheme satisfies the high standards of sustainability as prescribed by the relevant tiers of planning policy and stringent criteria required to achieve BREEAM Level Excellent.

CONTENTS

1.0 INTRODUCTION

1.1 This Sustainable Design and Construction Statement (SDCS) has been prepared by Metropolis Green to accompany the planning application submitted to London Borough of Camden by Gaylord Investments Ltd for the development of 1-11 Euston Road.

1.2 This SDCS addresses local and regional policies on sustainable buildings and is supported by a BREEAM Pre-Assessment, to assess the sustainability of the various parts of the development.

1.3 This project has targeted BREEAM level Excellent and Code for Sustainable Homes (Code) Level 4

1.4 This SDCS highlights where sustainability standards will be met and how the principle will be achieved. This report assumes a basic understanding of the BREEAM/ Code assessment methodology; however, for further information please refer to the BREEAM/Code Technical Guidance Document[1].

1.5 This SDCS should be read alongside the Energy Strategy produced by Metropolis Green, the Design and Access Statement produced by Metropolis Planning and Design and other supplemental environmental reports referenced at the end of this report.

1.6 This SDCS is laid out according to Section 1.6 in the Mayor's SPG Sustainable Design and Construction, as required by the Mayor's London Plan Policy 5.3, Sustainable Design and Construction.

1.7 Each section in this document demonstrates how the sustainability standards have been met and where a standard has not been met, justification is provided.

[1] (http://www.breeam.org/page.jsp?id=2)

2.0 SITE BACKGROUND AND PROPOSED DEVELOPMENT

2.1 Nos. 1-11 Euston ('the site') is located in the London Borough of Camden. The site is located on the south side of Euston Road directly opposite Kings Cross Station and is bounded by Birkenhead Street and Crestfield Street to the east and west respectively.

2.2 The existing site contains buildings four storeys in height and comprises the Northumberland Hotel, student accommodation, low grade office space and various commercial uses fronting Euston Road.

2.3 The site benefits from unparalleled accessibility in terms of its proximity to local, national and international transport interchanges.

2.4 The site occupies a truly strategic and sustainable location within the heart of the central London. The immediate Kings Cross/St. Pancras area is part of an international gateway that attracts tourists and other visitors.

2.5 The proposed development involves the demolition of the existing buildings on the site and their replacement with a comprehensive mixed use redevelopment scheme comprising a 167 bed hotel, 7 residential apartments and retail/restaurant/bar uses.

2.6 The proposed development will comprise 8 storeys plus a basement level.

3.0 POLICY CONTEXT

3.0.1 Sustainable development is the core principle underpinning planning. At the heart of sustainable development is the simple idea of ensuring a better quality of life for everyone, now and for future generations. A widely used definition was drawn up by the World Commission on Environment and Development in 1987: "development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

3.0.2 Planning has a key role to play in the creation of sustainable communities: communities that will stand the test of time, where people want to live, and which will enable people to meet their aspirations and potential.

3.2 National Policy

PPS1 Delivering Sustainable Development

3.2.1 PPS1 sets out the overarching planning policies on the delivery of sustainable development through the planning system.

3.2.2 A key principle of PPS1 is that sustainable development should be pursued in an integrated manner, in line with the principles for sustainable development set out in the UK strategy. Regional planning bodies and local planning authorities should ensure that development plans promote outcomes in which environmental, economic and social objectives are achieved together over time.

3.2.3 Sustainable Development can be achieved by ensuring:

- Social Cohesion and Inclusion
- Protection and Enhancement of the Environment
- Prudent use of Natural Resources
- Sustainable Economic Development
- Integration of Sustainable Development into Development Plans, Spatial Plans and Design
- Community Involvement

PPS1 Planning Policy Statement: Planning and Climate Change - Supplement to Planning Policy Statement 1

3.2.4 This PPS on climate sets out how planning should contribute to reducing emissions and stabilising climate change.

3.2.5 Applicants for planning permission should consider how well their proposals for development contribute to the Government's ambition of a low-carbon economy and how well adapted they are for the expected effects of climate change.

3.2.6 The guidance requests planning authorities, developers and other partners in the provision of new development to engage constructively and imaginatively to encourage the delivery of sustainable buildings.

3.3 Regional Policy

London Plan (LP) 2011:-

Policy 5.3 Sustainable Design and Construction

3.3.1 Development proposals should demonstrate that sustainable design standards are integral to the proposal, including its construction and operation, and ensure that they are considered at the beginning of the design process.

3.3.2 Major development proposals should meet the minimum standards outlined in the Mayor's supplementary planning guidance and this should be clearly demonstrated within a design and access statement. The standards include measures to achieve other policies in this Plan and the following sustainable design principles:

- *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 run-off)*
- *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.*

3.3.1 The subtext to policy 5.3 indicates that principles underlying sustainable design and construction reflect a number of policies in the LP.

3.3.2 The Mayor's approach to Sustainable Design is compatible with the Code for Sustainable Homes (Code). The Mayor also indicates his intention for the LP to be consistent with national standards for non-domestic buildings as they become adopted.

Policy 5.4 Retrofitting

3.3.1 The environmental impact of existing urban areas should be reduced through policies and programmes that bring existing buildings up to the Mayor's standards on sustainable design and construction. In particular programmes should reduce carbon dioxide emissions, improve the efficiency of resource use (such as water) and minimise the generation of pollution and waste from existing building stock. The environmental impact of existing urban areas should be reduced through policies and programmes that bring existing buildings up to the Mayor's standards on sustainable design and construction. In particular, programmes should reduce carbon dioxide emissions, improve the efficiency of resource use (such as water) and minimise the generation of pollution and waste from existing building stock.

3.3.2 Policy 5.4 subtext acknowledges the contribution that retrofitting buildings can make to climate change. Furthermore the mayor will support measures through the Building Regulations and other regulatory and funding mechanisms to improve the performance of London's existing buildings, increase energy and water efficiency, and o make full use of technologies such as decentralised energy and renewable energy.

3.4 Local Policy

3.4.1 London Borough of Camden's Development Plan includes the Local Development Framework which comprises a range of documents which, together with the London Plan (above), set out the planning

policies for Camden. The Core Strategy and Development Polices were both adopted by the Council in November 2010.

3.4.2 Core Strategy Policy CS13 - Tackling climate change through promoting higher environmental standards – covers:-

- measures and mechanisms to reduce the effects of and adapting to climate change during construction and occupation of developments.
- Promoting and protecting local energy generation within the Borough.
- Ensuring that the Borough is water efficient and minimises the potential for surface water flooding.

The strategic policies are

3.4.3 The Core strategy has informed the Council's Development Polices. Section 3 of this document set out a number of policies to promote sustainability and tackle climate change.

3.4.4 The objectives of Section 3 are enforced through policy DP22 Promoting sustainable design and construction and DP23 Water.

3.4.5 DP22 requires development to demonstrate how sustainable design and construction measures have been incorporated. This includes green and brown roofs wherever suitable.

3.4.6 The Council will expect new build housing to meet Code for Sustainable Homes Level 3 by 2010 and Code Level 4 by 2013 and encouraging Code Level 6 (zero carbon) by 2016.; whilst developments (except new build) of 500 sq m of residential floorspace or above or 5 or more dwellings to achieve "very good" in EcoHomes assessments prior to 2013 and encouraging "excellent" from 2013; non-domestic developments of 500sqm of floorspace or above will be expected to achieve achieve "very good" in BREEAM assessments and "excellent" from 2016 and encouraging zero carbon from 2019.

3.4.7 DP23 requires developments to reduce their water consumption, the pressure on the combined sewer network and the risk of flooding by amongst other measures incorporating water efficient features and equipment and capturing, retaining and re-using surface water and grey water on-site.

3.4.8 The subtext to this policy indicates that major developments and high or intense water use developments, such as hotels, hostels and student housing, should include a grey water harvesting system. Where this is not feasible or practical, developers must demonstrate

to the Council's satisfaction that this is the case. The performance of water-saving measures against the Water category in BREEAM, EcoHomes or the Code for Sustainable Homes assessments.

3.5 BRE: Environmental Assessment Methods (BREEAM & The Code for Sustainable Homes)

3.5.1 BREEAM is the world's leading and most widely used environmental assessment method for buildings. It sets the standard for best practice in sustainable design and is used to describe a building's environmental performance.

3.5.2 Credits are awarded in 8 categories according to performance. These credits are then added together to produce a single overall score on a scale of Pass, Good, Very Good, Excellent and Outstanding.

3.5.3 A BREEAM standard covers 8 categories of sustainability including:

- Energy
- Water
- Transport
- Land Use and Ecology
- Pollution
- Health & Wellbeing
- Materials
- Management

3.5.4 Each category consists of a number of issues and each issue seeks to mitigate the impact of a new build element of the building against performance targets and assessment criteria.

3.5.5 The majority of BREEAM issues are tradable, meaning that a design team/client can pick and choose which to comply with in order to build up their BREEAM performance score. However, there are a few mandatory requirements which need to be met in order to achieve the aspired BREEAM level.

3.5.6 A scheme can be assessed at Design Stage (DS) - leading to an Interim BREEAM Certificate and/or Post-Construction Stage (PCS) – leading to a Final BREEAM Certificate.

3.5.7 BREEAM ratings are classified from 'Pass' to 'Outstanding' dependent on the total score received from achieving credits across the various categories. In order to achieve 'Outstanding' there are also additional criteria to be met. For more detail on this, please refer to the BREEAM website.

BREEAM Rating	% score
UNCLASSIFIED	<30
PASS	≥30
GOOD	≥45
V GOOD	≥55
EXCELLENT	≥70
OUTSTANDING*	≥85

3.5.8 A BREEAM Bespoke assessment is considered as the most suitable assessment for the full assessment at Euston Road. The credits that are assessed in a Bespoke assessment are determined by BRE in terms of suitability to the particular development at the time of registration with the BRE.

3.5.9 As each BREEAM Bespoke assessment is unique, the BRE do not provide a pre-assessment tool for the scheme. In order to undertake a pre-assessment the BREEAM Multi-Residential scheme and pre-assessment tool has been applied to the proposed development at Euston Road, as it is deemed the most relevant standard scheme and most of the issues can be applied directly to the proposed development at Euston Road.

3.5.10 The Code for Sustainable Homes level 4 would be applied to the residential units, exceeding Camden's policy requirements for new dwellings.

3.5.11 The Code for Sustainable Homes (Code) is an environmental assessment for rating and certifying the performance of new dwellings. It is a national standard and was released by the Department for Communities and Local Government in December 2006. From April 2007, the Code replaced Ecohomes. The Building Research Establishment (BRE) are responsible for administering and monitoring the scheme and are also responsible for all certification and quality assurance of this national environmental standard for housing.

3.5.12 The Code measures the sustainability of a new home against 9 categories of sustainable design, (similar to BREEAM) rating the 'whole home' as a complete package. The Code uses a 1 to 6 star rating system to communicate the overall level of the environmental performance of the new home.

3.5.13 The Code assessment is completed in two phases – the Design Stage and the Post Construction Stage (PCS). Only after the PCS assessment has been completed and all the evidence for achieving the target level has been submitted will the final certification for the dwelling be issued by BRE.

4.0 RE-USE LAND & BUILDINGS

4.1 Introduction

4.1.1 London has a large population and a comparatively small land area; therefore land is a precious, finite resource. The efficient use of land requires that developments optimise the carrying capacity of land, that previously developed land is re-used, and that green spaces within London are protected and opportunities for the provision of new open space are maximised.

4.2. Land

Essential Standards

- *100% of development on previously developed land, unless very special circumstances can be demonstrated.*
- *Development density should be maximised based on local context and (Policy 4B.7) design principles (Policy 4B.1), open space provision (Policy 3D.10) and public transport capacity (Policy 3C.10).*

4.2.1 The site comprises 1013 sqm, and is previously developed land. The existing total GIA of the site is 3503 sqm over 4 floors including basement. The existing uses within the building include:

- Hotel accommodation and student accommodation – (47 bedrooms)
- Offices
- Bureau de change
- Fish and chip shop
- Bookmakers
- Chinese restaurant
- Amusement arcade

4.2.2 The proposed redevelopment will maximise the potential of the site by significantly increasing the site density. This is achieved though increasing the height of the building from 4 to 8 storeys plus basement level.

4.2.3 Across the development both private and communal space for hotel residents will be provided.

4.2.4 The development is extremely well served by public transport with Kings Cross and St. Pancras stations on the site's doorstep. The development meets the Mayor's Essential Standard in terms of existing transport capacity.

4.2.5 The site can be considered as a part of the 'gateway experience' for national and international visitors/commuters arriving in London via Kings Cross and St. Pancras stations. The existing buildings on the site do not contribute to this 'experience' and are not maximising the site's potential density based on its context. The proposed development will positively contribute to the arrival experience into London at this strategic location.

4.2.6 The new building not only makes good use of previously developed land and increases the footprint ratio, it is also a scheme that truly realises the site's potential in terms of its location.

4.3 Buildings

Essential Standard

- *Existing building reused where practicable, where the density of development and residential amenity are optimised and where the building conforms to or has the potential to meet the standards for energy, materials, biodiversity and water conservation set out in this SPG.*

Mayor's Preferred Standard

- *Existing roof space reused where practicable to create new outdoor spaces and enhance biodiversity alongside the integration of renewable energy (section 2.3.2)*

4.3.1 The proposal seeks to demolish and redevelop the existing buildings on the site.

4.3.2 Many of the existing buildings are not suitable for change of use or conversion. The existing buildings underutilise the sites strategic location as a major public transport node and gateway into London.

4.3.3 Complete redevelopment will ensure the site's potential is fully realised. The redevelopment will enable the site to respond to the changing built context whilst bringing the building on site up to BREEAM Level Excellent.

4.3.4 The new roof space will accommodate a green roof with Photovoltaic (PV) panels, and space has additionally been allocated for equipment

associated with the proposed air source heat pumps. It has been calculated that approximately 146 PV panels will be required across the roof. At the detailed design stage it will be ensured that compatible PV panels and green roof systems are specified to ensure the efficient and effective use of the roof space. The roof space will be utilised to its maximum potential and will actively contribute to the sustainability of the proposed development. This use of the roof space is in accordance with the Mayor's preferred standard.

4.3.5 As indicated in section 4.2.6, the land will be re-used. It is not considered practical or efficient to reuse the existing building for hotel, retail and residential purposes.

5.0 MAXIMISE THE USE OF NATURAL SYSTEMS

5.1 Introduction

5.1.1 The overriding principle is that location, urban design, passive solar design and maximizing the use of natural ventilation should be used to minimise resource use and maximise the comfort of users over the lifetime of the development. The main climatic influences on internal comfort include solar heat and air flow. Building facades are the interface between the external and internal climate. Buildings need to be designed to be able to adapt to the likely effects of climate change on London's climate over the next decades.

5.2 Location and Urban Design

Essential Standards

- *All development to follow the principles of good design set out in London Plan*
- *Minimize need for and use of mechanical ventilation, heating and cooling systems*

5.2.1 The proposed development is of high quality design.

5.2.2 A high level of air tightness has been designed in. The overall air tightness of the finished building will meet best practice standards equating to a maximum permeability of 5m3/hour/m2@50Pa. Improving the air tightness of a building results in the need for excellent ventilation which has been provided via highly efficient Mechanical Ventilation with Heat Recovery (MVHR) system.

5.2.3 The double skin façade will contribute to natural ventilation of the building.

5.2.4 The use of The principles of London Plan Policy 4B.1 listed above have been clearly addressed in the Design and Access Statement, this SDCS, and by the target of achieving BREEAM Level 'Excellent' & Code level 4. This ensures that the Mayor's Essential Standards are satisfied.

5.3 Adapting to Climate Change

Essential Standards

- *Buildings provide for flexibility of uses during their projected operational lives*
- *Buildings adapted to and mitigate for the effects of the urban heat island and the expected increases in hot dry summers and wet mild winters.*
- *Design in facilities for bicycles and electric vehicles*

These standards are based on the principles of:

- Adapting to climate change
- Designing new buildings for flexible use
- Managing overheating
- Using high thermal mass materials
- Mitigating for possibilities of subsidence
- Encouraging non carbon based transport modes

5.3.1 The proposed development has been designed to maximise daylight and sunlight where possible and reduce the need for artificial lighting during the daytime hours.

5.3.2 The proposed building will be orientated to face north west towards Kings Cross and the proposed public square. The orientation has been determined by the site and its relationship with Euston Road, Kings Cross and the proposed public square and surrounding streets and properties.

5.3.3 The building's glazed construction will enable maximum natural light to penetrate all of the rooms throughout the day. The central atrium will allow light to filter down though the central core of the building further reducing the need for artificial lighting.

5.3.4 Wherever possible the internal layouts of the residential accommodation will be arranged to maximise sunlight where beneficial in winter, but with solar shading to prevent overheating in summer. Insulation, to a standard above the current Building Regulations standards, will be provided for walls, roofs, ground floor slab and windows.

5.3.5 A high level of air tightness has been designed into the scheme.

5.3.6 A double skin facade has been proposed to wrap around the whole building. This design contributes not only to the aesthetic of the building but, has a number of advantages in terms of occupant comfort, and sustainable design;

- Improved acoustic insulation
- Improved thermal insulation

  In winter when energy demand for heating is high, the air inside the cavity, which is preheated, can be introduced into the building and provide low energy thermal comfort for occupants. During the summer, the warm air inside the cavity can be extracted by natural, fan supported or mechanical ventilation.

- Natural Ventilation

  Double skin façade systems can be designed to provide natural (or fan supported) stack ventilation.

- Other advantages

  Double skin façades also have potential to:

  - Provide natural night ventilation that is both secure and offers weather protection
  - Save heating, cooling and lighting energy
  - Provide better protection of shading or lighting devices
  - Reduce the effects of wind pressure

5.3.7 More information of the properties of the heating and cooling properties of the façade is set out in section 6.2.11 Cooling, Heating and Ventilation.

5.3.8 These passive measures and best practice standards will assist in achieving an overall carbon reduction of approximately 51.14% (as discussed in more depth in the Energy section of this SDCS). This carbon reduction figure exceeds the London Plan requirement.

5.3.9 The proposed design keeps internal load bearing walls to a minimum. This provides future flexibility by allowing the building's use and layout to be easily converted in the future.

Traffic and Transport

5.3.10 The site is located extremely well in terms of public transport accessibility, in particular for its primary use as a hotel. The accessibility of the site is reflected by the Public Transport Accessibility Level 6b, (Excellent).

5.3.11 The central location and proximity to various amenities will enable most trips made by building occupiers to be made on foot, or on local public transport, rather than by private car.

5.3.12 The proposed development will be car-free because the building is highly accessible by public transport, as discussed previously. Staff working in the hotel will be provided with a free taxi service in the need of emergencies to encourage commuting to the hotel by sustainable transport modes.

5.3.13 The Transport Assessment prepared by BWB Consulting proposes providing 10 cycle parking spaces for staff and guests. These cycle spaces will be secure, located in covered and secure lock-ups provided in the proposed development.

5.3.14 The proposed cycle storage provision is in full accordance with the requirements for scoring credits within BREEAM and the Code.

5.3.15 The site layout has been designed in accordance with best practice to ensure safe and adequate pedestrian and cycle access to further support the use of bicycles and means of public transport.

5.3.16 Servicing access to the development will be via Crestfield Street.

5.3.17 With regards to the collection of refuse, it is proposed that waste from the hotel will be collected from Crestfield Street on Council waste collection days; waste from the retail/restaurant/bar units will be collected from Euston Road; and waste from the residential units will be collected from the front of these units on Birkenhead Street on collection days.

5.3.18 The Council's refuse teams will have convenient and unimpeded access to all of these locations.

6.0 CONSERVE ENERGY, WATER & OTHER RESOURCES

6.1 Introduction

6.1.1 London is promoting the development of resource efficient buildings, from inception to demolition. This includes the efficient use of energy, materials and water. These issues have been addressed in part by the Mayor's renewables policy and by BREEAM as detailed in the sections below.

6.2 Energy

Essential Standards

- *Carry out energy demand assessment*
- *Maximise energy efficiency*
- *Major commercial and residential developments to demonstrate that consideration has been given to the following ranking method for heating and where necessary, cooling systems:*
    - *passive design;*
    - *solar water heating; then*
    - *combined heat and power for heating and cooling (i.e.trigeneration), preferably fuelled by renewables; then*
    - *community heating and cooling then*
    - *heat pumps; and then*
    - *gas condensing boilers.*

- *Wherever on site outdoor lighting is proposed as part of a development, it should be energy efficient, minimising light lost to sky.*
- *Carbon emissions from the total energy needs (heat, cooling and power) of the development should be reduced by at least 20% by the on-site generation of renewable energy.*

Mayor's Preferred Standards

- *All developments to demonstrate that consideration has been given to the following ranking method for heating and where necessary for cooling, systems and should incorporate the highest feasible of the following options:*
    - *solar water heating; then*
    - *combined heat and power/ trigeneration, preferably fuelled by renewables; then*
    - *community heating.*
    - *New developments should always be connected to existing community heating networks preferably fuelled by renewables where feasible.*

- *Wherever outdoor lighting or other electrically powered street furniture is proposed on site, it should be solar powered and minimise light lost to the sky.*

- *Lighting, heating and cooling controls should enable services to operate efficiently under different loadings and allow for localised control.*

- *Major developments should be zero carbon emission developments (ZEDs).*

- *Major developments should make a contribution to London's hydrogen economy through the adoption of hydrogen and/or fuel cell technologies and infrastructure.*

Energy Strategy

6.2.1 Metropolis Green has produced an Energy Strategy (1962/ES/0811SK.00) which accompanies the application. The Energy Strategy has been prepared in line with regional and local policies on energy and carbon emissions.

6.2.2 The Strategy seeks to ensure that through improvements to the building fabric and services and through low and zero carbon technologies, the building will comply with 2010 Building Regulations, meeting the local and regional policies on energy and satisfy the percentage improvement for Dwelling Emission Rates required by London Plan Policy 5.2, BREEAM and the Code.

6.2.3 Following the energy hierarchy has enabled significant carbon reductions to be calculated for the proposed development at 1 – 11 Euston Road. The total overall carbon reduction is predicted to be approximately 51.14% with renewables contributing 2.57%. These

calculations demonstrate that the development will meet the mandatory BREEAM Ene 1 requirements and that the development is on track to achieve certification at the required level of 'Excellent'.

6.2.4 In accordance with the London Plan Policy 5.2, 'whole energy' figures SBEM calculations have been used in this energy strategy, including: heating, hot-water, lighting, pumps and fans and un-regulated energy. The proposed development at is calculated to have a 'whole energy' Notional Baseline of 870,839 $kgCO_2/yr$.

6.2.5 In the first stage of the energy hierarchy (Be Lean), calculations to determine the Efficient Baseline predict a 30.89% carbon reduction through the proposed energy efficiency measures. This results in a reduction of 268,992$kgCO_2/yr$ from the Notional baseline to the Efficient Baseline.

6.2.6 The second stage (Be Clean) calculations to determine the Low Carbon Baseline predict that specification of CHP can deliver a further carbon reduction of 165,100 kg/CO2, which equates to a 27.43% reduction from the Efficient to Low Carbon Baseline, and can be expressed as a total 49.85% carbon emission reduction from the Notional Baseline.

6.2.7 The second stage (Be Clean) calculations to determine the Low Carbon Baseline predict that specification of CHP can deliver a further carbon reduction of 165,100 kg/CO2, which equates to a 27.43% reduction from the Efficient to Low Carbon Baseline, and can be expressed as a total 49.85% carbon emission reduction from the Notional Baseline.

6.2.8 Finally, calculations to determine the Renewable Baseline have determined PV to be the most suitable renewable energy technology for to the site. The modelled PV panel array contributing a further carbon reduction of reduction of 11,244 kg/CO2/yr, which is a 2.57% reduction from the Low Carbon Baseline. These reductions are achieved utilizing 186.88m2 of 185Wp PV panels. The calculations show that the fabric efficiency measures, including specification of ASHP and specification of CHP and PV can achieve an overall total 51.14% CO2 reduction from the Notional Baseline.

6.2.9 The roof of the building is being used to maximum advantage and is an active space which is being utilised for a green roof space, plant space for the ASHP units and for PV panels. The scope for CO2 reduction using renewables is limited by the roof space and further limited by the level of activity on the roof. Nonetheless, the size and output of the PV array has been maximised. The current London Plan Policy 5.7 and Camden policy requirements are for a 20% reduction in CO_2 emissions. Due to the specification of renewables, this target has not been met with the 2.57% carbon reduction from on-site

renewables although it should be noted that it is possible to achieve a total 'whole energy'CO_2 reduction from the Notional Baseline of 51.14%

6.2.1 Modelling and calculations show the development at 1-11 Euston Road and has potential to achieve a total 29.50% BER over TER improvement, which exceeds the 25% required to meet the London Plan 2010 - 2013 targets.

Cooling, Heating and Ventilation

6.2.2 The development proposes a strategy for heating and ventilation within the entire development. Passive measures play a key role within this strategy alongside mechanical ventilation.

6.2.3 The proposed double skin façade will reduce overheating in the summer months and provide insulation during the winter.

6.2.4 The basic components of the system are: an external/outer layer glass wall; a ventilated cavity; and, an inner layer composed of glass.

6.2.5 During winter, or in cold weather, the system allows the cavity to be closed off and therefore essentially act as a triple glazed system with the air in the cavity acting as a transparent insulator. The temperature of the internal glazing is effectively raised thus reducing heating costs and increasing human comfort at vicinities close to the glazing.

6.2.6 During summer air inlets and outlets are opened as to promote the stack effect (hot air rises) thus renewing hot air within the cavity, released at the top of the cavity, with fresh air from the lower regions of the cavity. Within the air cavity, sun shades can be used to absorb and reflect solar heat energy which coincidently promotes an even higher temperature differential for the stack effect to take place within the cavity. As a result, cooling cost for inhabited areas are dramatically reduced with human comfort factors increased for areas within close vicinity of the façade.

6.2.7 With the subsequent use of passive circulation and insulating properties of air for summer and winter conditions, the heating / cooling energy saved is close to 50% when compared with a standard single layer curtain wall. In most cases, the system does not require mechanical equipment and as such no energy and very little maintenance cost is associated with a double skin façade system.

6.2.8 The screen also allows internal windows to be opened without environmental noise having becoming a nuisance to the occupants.

6.2.9 Highly Efficient Air Source Heat Pumps have been specified to provide space heating and cooling for the building. A VRF system has been specified, which alongside the fabric improvements contributes further to reducing the energy demand and associated carbon emissions.

6.3 Materials

Essential Standards

- *50% timber and timber products from Forest Stewardship Council (FSC) source and balance from a known temperate source*
- *Insulation materials containing substances known to contribute to stratospheric ozone depletion or with the potential to contribute to global warming must not be used*
- *Minimise use of new aggregates*

Mayor's Preferred Standards

- *No construction material nor specification with high embodied impact to be used (as defined by the summary ratings within the Green Guide to Specification) unless a compelling whole life energy or technical case for its use exists*

6.3.1 The SPG Sustainable Design and Construction refers to the Green Guide to Specification produced by BRE to determine the most sustainable and environmentally friendly specification of building materials.

6.3.2 The design team has committed to at least 80% FSC approved timber and 100% legally sourced timber for the development, thus going above and beyond the Mayor's Essential Standard.

6.3.3 Another Essential Standard will be met through the specification of insulation materials with a Global Warming Potential (GWP) of less than 5 and a low embodied impact relative to their thermal properties, determined by the Green Guide Specification Ratings. This specification will also satisfy BREEAM and Code Issue Pol 1.

6.3.4 The Materials Category in the BREEAM & Code promotes the sustainable procurement and use of materials, taking into account the environmental impacts of materials and the responsible sourcing of

basic building and finishing elements, by using the BRE Green Guide to Specification, which is also one of the Mayor's Preferred Standards.

6.3.5 The design team has also committed to minimising the use of new aggregates thus complying with the Mayor's Essential Standards. The demolition waste of the building currently occupying the site will be re-used where appropriate. In addition, the design team is aiming to reuse waste materials produced during construction work.

6.3.6 There will be a requirement that the main contractor will have an environmental materials policy, used for the sourcing of construction materials. This will be confirmed during the design stage assessments.

6.3.7 The source of the materials has not yet been specified, however local materials will be procured where it is economically feasible to do so, thus attempting to achieve the Mayor's Preferred Standard.

6.4 Water

Essential Standards

- *100% metering of all newly built property*

Mayor's Preferred Standards

- *Use of greywater for all non-potable uses.*

These standards are based on the principles of:

- Incorporating water saving devices
- Making use of alternative water sources
- Designing low water use landscaping and gardens

6.4.1 The reduction of water consumption in the development has been targeted by the design team. As water consumption is potentially one of the high impact areas of any building over its lifetime, the design team are targeting water consumption as a key area for improvement. This objective has been rewarded under BREEAM and Code Issue Wat 1.

6.4.2 Investigations into incorporating greywater recycling (GWR) and/or rainwater harvesting (RWH) has been undertaken. It has been

determined that a communal GWR system would be the most efficient solution for this type of mixed use building. The recycled water would be used for toilet flushing throughout the proposed building, therefore significantly reducing the mains water consumption.

6.4.3 It is assumed the hotel occupancy will be 215 persons, with a total non-potable water demand for WCs of 5.4 m^3 per day. The residential units' occupancy is assumed at 20 persons, with a total non-potable water demand for WCs of 0.6 m^3 per day. The system provides a treatment capacity of 6 m^3 per day, based on the demand noted above. The proposed GWR yield (9 m^3 per day) will most likely exceed the demand. Further details regarding system specification and design can be determined at the detailed design stage.

6.4.4 The system is proposed to serve the whole development and the required plant is likely to be located in the basement. Details of the system will be provided at the detailed design stage. If housed in the basement, the energy required to pump the recycled water is considered to be minimal following discussion with an installer.

6.4.5 The mandatory element of the BREEAM Assessment for 'Excellent' requires all WCs to have an effective flush volume of 4.5 litres or less. Dual flush toilets will have guidance or symbols instructing the user on the appropriate operation of the flushing device.

6.4.6 The residential units will comply with Building Regulations Part G and the Code's mandatory target for Code 3/4 dwellings of reducing water consumption to 105 litres per person per day.

6.4.7 At this stage, the running costs (energy consumption, maintenance, mains water top-up) for the system are anticipated to be shared across the different building users based on their usage.

6.4.8 The proposed combination of GWR alongside specification of low flow sanitary bathroom fitting and fixtures and appliances (where applicable) will help to achieve substantial savings in water consumption throughout the life cycle of the proposed development.

6.4.9 This water strategy ensures that the all of the proposed units comply with Building Regulations Part G and the targets for achieving BREEAM level 'Excellent' and Code 4.

7.0 NOISE, POLLUTION, FLOODING AND MICROCLIMATIC EFFECTS

7.1 Introduction

7.1.1 New development needs to take into account the adverse effects it may have on noise, pollution, flooding and micro-climatic effects. All new developments should minimise contributions to flooding and include appropriate mitigation for potential worst case situations.

7.2 Noise

Essential Standard

- *Demonstrate that adverse impacts of noise have been minimised, using measures at source or between source and receptor (including choice and location of plant or method, layout, screening and sound absorption) in preference to sound insulation at the receptor, wherever practicable*

7.1.2 Noise can have a significant effect on the environment and on the quality of life enjoyed by individuals and communities, and measures have been taken to mitigate noise pollution in the proposed development. Airborne sound insulation values will be at least 5db higher and impact sound insulation values will be 5db lower than the performance standards set out in the Building Regulations Approved Document Part E. Compliance is expected to be shown via sound testing.

7.1.3 These improvements will contribute to indoor comfort for guests by reducing the likeliness of nuisance due to noise transmission. This complies with the Mayor's Preferred Standard and is covered by Code Hea 2 and BREEAM Issue Hea 21, where 3 out of 4 credits have been awarded.

7.1.4 A Noise Assessment has been prepared by Bickerdike Allen Partners. For full details of the noise assessment methodology and findings please refer to this report.

7.1.5 The report provides an assessment of the potential noise and vibration effects associated with the proposed development. The report provides mitigation measures that should be adopted in the hotel accommodation of the proposed development to ensure that internal noise levels are within limits set out in London Borough of

Camden's Planning Guidance on noise and relevant national guidance documents.

7.1.6 Advice is also given on the control of noise emissions from plant, use of the service yard, the restaurant/bar and the retail unit, to ensure that local authority requirements are met.

7.1.7 The plant will be in operation throughout the day and night therefore it will be ensured that sound from the plant will have no noise impact internally or externally.

7.3 Air Pollution

Essential Standards

- *All new gas boilers should produce low levels of NO_X*
- *Take measures to reduce and mitigate exposure to air pollution*

Mayor's Preferred Standards

- *Low emission developments that are designed to minimize the air quality impact of plant, vehicles and other sources over the lifetime of the development.*

7.3.1 In compliance with BREEAM & Code the proposed scheme is anticipated to achieve NOx emissions of less than 70mg/kWh.

7.3.2 It is proposed that the development will offer 10 cycle parking spaces for staff and guests, based on the forecast model split provided in the Transport Assessment prepared by BWB Consulting. The cycle storage is an incentive for residents to use public transport and minimise car traffic and therefore associated carbon emissions and pollutants.

7.4 Water Consumption, Water Pollution and Flooding

Essential Standards

- *Use of Sustainable Drainage Systems (SUDS) measures, wherever practical*
- *Achieve 50% attenuation of the undeveloped site's surface water run-off at peak times*

Mayor's Preferred Standard

- *Achieve 100% attenuation of the undeveloped site's surface water run-off at peak times*

7.4.1 The Environment Agency has not indentified the site as being at risk from flooding.

7.4.2 In terms of surface water runoff, the proposed development will increase the amount of permeable land on the site through provision of a green roof.

7.4.3 The green roof substantially increases the site's permeable coverage which will positively contribute to the site's ability to attenuate surface water run-off compared with the existing situation. It will also contribute to achieving the mandatory Code Sur 1 credits. The precise amount of surface water run-off attenuation will be determined at the detailed design stage of the green roof, and the design team is committed to maximising the potential incorporation of SUDS on the green roof.

7.4.4 Internal water consumption, this has been discussed earlier in section 6.4 of this SDCS.

7.5 Microclimate

Essential Standard

- *Mitigate any negative impact on the microclimate of existing surrounding public realm and buildings to meet the Lawson criteria for wind comfort and safety.*

7.5.1 The development meets the Essential Standard by avoiding the creation of adverse local climatic conditions.

7.5.2 The scheme is not near a large expanse of water and occurrences such as wind tunnelling are not thought to be an issue for this site.

8.0 ENSURE DEVELOPMENTS ARE COMFORTABLE AND SECURE

8.1 Introduction

8.1.1 Sustainable communities will only be sustainable if they have been designed with people, as well as the environment, in mind. Developments must be comfortable and safe to use for all sections of society and all cultures and religions. This includes internal and external comfort with regards to health, accessibility, secure design and safe transport links.

8.2 Indoor Comfort

Essential Standards

- *Inert or low emission finishes, construction materials, carpets and furnishings should be used wherever practical.*
- *All plant and machinery should be accessible for easy maintenance*

Mayor's Preferred Standard

- *Design buildings for indoor comfort of users*

8.2.1 The comfort of prospective occupants of the building is an extremely important aspect of the proposed scheme. To this end, the internal finishing of the rooms will be carefully considered and quality items are to be installed.

8.2.2 The proposed scheme satisfies the internal daylight criteria required by BREEAM Issue Hea 1 and is anticipated to score highly in this area.

8.2.3 The project team expect to provide thermal modelling during the design stage and will ensure that the building design and services strategy can deliver thermal comfort in all occupied spaces.

8.2.4 Excellent ventilation is a key objective for the proposed scheme; therefore the team have sought to ensure that air intakes serving occupied areas will avoid major sources of external pollution and recirculation of exhaust air.

8.2.5 The design team has taken steps to reduce the potential risk of airborne pollutants released from buildings thus complying with this Essential Standard. Adverse health impacts can result from:

- Volatile Organic Compounds (VOCs) - Released from many synthetic materials, furnishing and chemical products. Many VOCs are respiratory irritants.
- Carbon Monoxide - Problems arise with poorly maintained equipment and when chimneys or flues are blocked, or if there is not sufficient ventilation to supply air to the appliance or where air intakes are located too close to roads or areas used for car parking.
- Fine Particles - less than 10µm in diameter can cause irritation and respiratory problems.

8.2.6 In order to combat these potential issues, the design team is aware that specified materials should not contain or emit toxic chemicals, for example: natural materials and low solvent finishing products and furnishings. These products are rated highly in the Green Guide and will be rewarded in the BREEAM Materials Category. In addition, excellent ventilation is vital during construction, to aid the removal of chemicals. Designing for and managing internal air quality will benefit the health of building occupiers.

8.2.7 Any plant associated with the development will be located so that it is easily accessible, thus meeting the Mayor's Essential standard of accessibility of plant and machinery for easy maintenance.

8.2.8 High quality sound insulation between the dwellings will also contribute to indoor comfort by reducing the likeliness of nuisance due to noise transmission. The installation will be in compliance with BREEAM Issue Hea 21.

8.2.9 Any refrigerants will be specified with a global warming potential (GWP) of less than 5.

8.2.10 All of these measures ensure compliance with the Mayor's Preferred Standard to design buildings for the indoor comfort of users, which is covered in the BREEAM Health and Wellbeing Category.

8.3 Designing Inclusive Environments

Essential Standards

- *All developments should meet the principles of inclusive design, adopting the principles of SPG Accessible London: Achieving an Inclusive Environment.*

Mayor's Preferred Standards

- *Developments should be fully e-enabled.*

8.3.1 The development is accessible for people walking, cycling and travelling by public transport. Safe and convenient pedestrian, cycle and wheelchair access will be provided around the site and the buildings will be accessible by wheelchair users and pedestrians.

8.3.2 During all stages of the design process the following documents and legislation will be used to ensure that this building continues to achieve the requirements for a barrier free environment.

8.3.3 Approved Document Part M 2004 Edition of the Building Regulations.

- BS. 8300: 2001 Design of Buildings and their approaches to meet the needs of disabled people – Code of Practice.
- BS. 5588: Part 8 1999 Fire precautions in the design, construction and use of buildings Part 8: Code of practice for means of escape for disabled people.
- BS9999 Code of practice for fire safety in the design, management and use of buildings

8.3.4 It is intended that the residential units within the proposed development will meet Lifetime Homes criteria and comply with the 10% wheelchair accessibility requirement.

8.3.5 All floors and common spaces will be accessible by wheelchairs and many of the hotel rooms will be wheelchair accessible

8.3.6 The development will be e-enabled by the provision of accessible duct routes to facilitate the installation of IT systems, in accordance with the Mayor's Preferred Standard.

8.4 Secure Design

Essential Standard

- *Developments should incorporate principles of "secured by design".*

8.4.1 Areas next to major transport nodes have reputations for attracting high levels of anti-social behaviour and crime. The design team understand the importance working closely with an Architectural Liaison Officer (ALO) or Crime Prevention Design Officer (CPDO) throughout the planning and design process.

8.4.2 As a result, the proposed development has been designed with site security as a major consideration. The site's physical relationship with its surroundings will be improved help ensure that the site does not harbour anti-social behaviour.

8.4.3 All doors within the development will meet PAS24-1 (all external pedestrian door-sets fall within scope of PAS24-1).

8.4.4 The proposed development will meet the requirements of Secured by Design and will be rewarded by BREEAM and the Code

9.0 CONSERVE & ENHANCE THE NATURAL ENVIRONMENT & BIODIVERSITY

9.1 Introduction

9.1.1 Open and green spaces can contribute to the image and vitality of areas. As London becomes more compact and intensive in its built form, the value of these open spaces will increase. Open spaces will need to fulfil a multitude of functions, from educational to social and cultural to sport and recreation, as well as visual respite from the hard urban areas. In addition, open and green spaces support a diverse wildlife in London.

9.2 Open space

Essential Standards

- *No net loss of publicly accessible open space*
- *Create appropriate new open, green publicly accessible spaces where these can address identified areas of deficiency of public open space*

Mayor's Preferred Standard

- *Net gain of publicly accessible open space*

9.2.1 The site is currently occupied by the entire footprint of the existing buildings. It is proposed that the new development will also occupy the entire site and therefore there is no net loss or gain of public open space.

9.2.2 The scheme has been designed to positively enhance the evolving Kings Cross Square, and is intended to provide a degree of definition and enclosure to the proposed space. This area is intended to act as an outdoor lobby area for visitors arriving and departing London.

9.3 Natural Environment and Biodiversity

Essential Standards

- *No net loss of biodiversity and access to nature on the development site*
- *Reduction in areas of deficiency of access to nature.*

Mayor's Preferred Standard

- *Net gain of biodiversity and access to nature on the development site*

9.3.1 The location of the site is not in an area of nature conservation and no protected species will be affected by the proposal. The site has low ecological value, and no habitats or animal species of conservation concern are considered likely to be present. The development of the site will therefore not have any significant ecological impact.

9.3.2 Due to the restricted size of the site and to the lack of open space, it will be very difficult to enhance the ecological value and the biodiversity of the site. However, a green roof has been proposed and this will have the potential to enhance the biodiversity of the site.

9.3.3 The design team has investigated the suitability of various forms of green roofs and it has been determined that the proposed concrete structure of the building can support the higher roof loads required for an intensive green roof. As discussed previously, at the detailed design stage it will be ensured that compatible PV panels and green roof systems are specified to ensure the efficient and effective use of the roof space. It is intended that the proposed green roof will make a significant contribution with respect to SUDS, energy use, urban heat island effect mitigation and biodiversity. As such, the design team will be further engaging with a green roof consultant and/or a suitably qualified ecologist to determine the most appropriate green roof system and design.

9.3.4 As a result of these measures, the proposed development of the site will have a direct positive impact on the biodiversity value of the site when compared with the existing situation.

10.0 PROMOTING SUSTAINABLE WASTE BEHAVIOUR

10.1 Introduction

10.1.1 London produces about 17 million tonnes of solid waste every year. Of this, the councils collect 4.4 million tonnes of municipal waste which includes waste from households, and some commercial and industrial sources. The balance is made up of 6.4 million tonnes of commercial and industrial waste and 6.1 million tonnes of construction and demolition waste.

10.2 Waste

Essential Standards

- *Minimise, reuse and recycle demolition waste*
- *Specify use of reused or recycled construction materials*
- *Recycling facilities should be as easy to access as waste facilities*

Mayor's Preferred Standards

- *Use prefabricated and standardised modulation components to minimise waste. If this is not feasible use low waste fabrication techniques.*
- *Provide facilities to recycle 70% of commercial and industrial waste by 2020.*
- *Incorporation of or access to new waste recovery facilities (anaerobic digestion, pyrolysis/gasification) especially to provide a renewable source of energy e.g. methane or hydrogen*

10.2.1 The BREEAM and Code Waste Category has stringent assessment criteria for domestic, commercial and construction waste.

10.2.2 The proposed development will incorporate internal recycling bins to accommodate the building's waste streams. This will include internal bins within hotels rooms and the residential units, and all of the commercial units at ground floor will also be provided with space for recycling facilities.

10.2.3 Composting facilities are being considered for kitchen waste produced by the hotel restaurant and potentially the hotel rooms.

10.2.4 A Site Waste Management Plan (SWMP) will be produced to ensure compliance with legislation, and will address any additional areas required by BREEAM.

10.2.5 The SWMP will be prepared by the appointed Contractor for the works to develop a system of disposal waste generated by the re-development works, to determine suitable construction methodologies and employ suitable materials to minimise the quantity of waste product on site.

10.2.6 The waste arising from construction will be managed in line with the waste hierarchy. A pre-construction audit will be completed to maximise the recovery of material. Wherever possible the waste will be used on site partly as recycled aggregates, which means that an Essential Standard will be met. This will also be awarded by the BREAAM Issue Wst 1.

10.2.7 The main contractor will be required to segregate materials prior to transportation to recycling centres. The main contractor will be contractually required to produce a strategy demonstrating segregation of the following waste categories:

- Concrete
- Timber
- Glass
- Plasterboard
- General waste

10.2.8 Special waste such as oils or paint will be managed separately using appropriate Control of Substances Hazardous to Health (COSHH) bins.

10.2.9 As set out by BREEAM, the team will ensure that during the construction phase, the amount of non-hazardous construction waste ($m^3/100m^2$ or tonnes per $100m^2$) generated on site by the development is the same as, or better than good or best practice levels.

10.2.10 The Code also promotes resource efficiency via the effective and appropriate management of construction site waste. Targets for resource efficiency must be set by a Site Waste Management Plan.

10.2.11 The target has been set to divert a significant amount of non-hazardous construction waste generated by the project from landfill,

which also results in a significant reduction of the amount of non-hazardous construction waste (m^3/100m^2 or tonnes per 100m^2) and thus meets best practice levels. This commitment is rewarded by BREEAM.

10.2.12 Renewable energy from a waste recovery facility such as pyrolysis is not a suitable technology for the development due to space constraints and also associated air quality issues; therefore this Preferred Standard will not be met.

11.0 SUSTAINABLE CONSTRUCTION

11.1 Introduction

11.1.1 Many aspects of the construction process can have a significant adverse impact on the quality of the site and its surroundings. Sustainable construction makes economic sense as it involves the prudent use of existing and new resources and the efficient management of the construction process. This section discusses the measures necessary to achieve the objectives of the sustainability principles set out Chapter 5 of the London Plan.

11.2 Construction Stage

Essential Standards

- *Reduce waste during construction and demolition phases and sort waste stream on site where practical*
- *Reduce the risk of statutory nuisance to neighbouring properties as much as possible through site management*
- *All developers should consider and comply with the Mayor and ALG's London Best Practice Guide on the control of dust and emissions from demolition and construction*
- *Comply with protected species legislation*
- *All developers should sign up to the relevant Considerate Constructors Scheme (CCS) or in the City of London to the Considerate Contractor scheme.*

Mayor's Preferred Standards

- *All contractors should be required by tender requirements to sign up to the Mayor and ALG's London Best Practice Guide on the control of dust and emissions from demolition and construction*
- *All contractors should be required by tender requirements to sign up to the relevant Considerate Constructors Scheme or in the City of London to the Considerate Contractor scheme*

11.2.1 The CCS is a national initiative, set up by the construction industry, to improve the image of construction. All of the Mayor's Essential and Preferred Standards will be met though the development's registration with CCS. This commitment is rewarded by BREEAM and Code Issue Man 2.

11.2.2 The CCS is concerned with any area of construction activity that may have a direct or indirect impact on the image of the industry as a whole. The main areas of concern fall into three main categories: the environment, the workforce and the general public. All sites registered with the scheme are monitored by an experienced industry professional to assess their performance against the eight points of the Code of Considerate Practice.

11.2.3 Good air quality is important for our environment. Most air pollution arising from construction is associated with dust particles. Other forms of air pollution come from energy use arising from site activities and transport to and from the site. Dust management for the development site will be implemented according to BRE guidance, meeting best practice standards. Measures include damping down the site along with dust sheets and covering waste receptacles. Provision will be made to ensure that areas occupied by contractors are kept in a clean and tidy condition.

11.2.4 As discussed previously, the proposed development will demonstrate that 80% of the timber used on the site is responsibly sourced and 100% is legally sourced.

11.2.5 These measures are targeted in BREEAM & Code Issue Man 3 and contribute to satisfying the Mayor's Preferred Standard.

11.2.6 The design team has also made the commitment to monitor, report, and set targets to reduce water consumption from site activities and adopt best practice policies in respect of water pollution on site (ground and surface).

11.2.7 Construction noise can have a significant effect on the environment and on the quality of life enjoyed by individuals and communities. Construction should not create unacceptable levels of disturbance.

11.2.8 The contractor will therefore ensure that neighbouring businesses are able to continue their day-to-day activities without significant disruption. They will liaise with neighbouring businesses and the local residents to ensure that noisy works are carried out at appropriate times agreed by all parties. A contact telephone number will be established so that residents can raise any concerns.

11.2.9 It is likely that the main contractor will provide an environmental materials policy, used for sourcing of construction materials and will

have to operate an Environmental Management System. All these items are rewarded by BREEAM issue MAN 3.

11.2.10 Construction waste has been discussed in the previous section; Waste. The proposed development is committed to the sustainable specification and procurement of materials and resources as discussed in the Materials section.

11.2.11 The issue of biodiversity is discussed in the section Natural Environment and Biodiversity.

12.0 CONCLUSION

12.1 This Sustainable Design and Construction Statement, shows that the proposed development has targeted very high standards of design and building quality to ensure that the best use of a strategic brownfield London site is achieved.

12.2 The sustainability strategy focuses on the implementation of sustainable systems for energy, water, waste management recycling and the use and choice of materials. Much attention has been drawn to reducing the environmental impact throughout the whole lifetime of the building, not during occupation.

12.3 In order to supply energy efficiently it is proposed that a combination of energy efficiency measures, a combined heat and power (CHP) system and PV panels is the most suitable combination for the site. Overall this combination provides a total of 51.14% carbon reduction which equates t to a reduction of 268,992 $kgCO_2/yr$ (30.89%) through energy efficiency measures, a reduction of 165,100 $kgCO_2/yr$ (27.43%) through low carbon measures, and a further reduction of 11,244 $kgCO_2/yr$ (2.57%) after incorporation of PVs.

12.4 In addition, these measures ensure that the development also achieves a total 58.12% improvement over the Notional Baseline Building Emission Rate (BER), contributing significantly to the overall achievement of a BREEAM and Code rating of 'Excellent'. Modelling and calculations also show that the development has potential to achieve a total 29.50% BER over TER improvement, which exceeds the 25% required to meet the London Plan 2010 - 2013 targets.

12.5 Water consumption will be substantially reduced through the incorporation of GWR and water saving devices, including shower flow limiters and tap aerators in all bathrooms and toilets. Environmentally friendly and responsibly sourced materials will be specified where possible.

12.6 The scheme has incorporated best practice design principles with regards to noise pollution and the recommendations of the appointed professionals have been adopted. In addition, the building has been designed to minimise air pollution over its lifetime. The site has a 0.1% chance of flooding per year. The proposed green roof will further positively contribute to the site's ability to attenuate surface water run-off.

12.7 Recycling facilities will be provided and the reuse and disposal of construction waste will be guided by a Site Waste Management Plan. In addition, the site will be registered with the Considerate Constructors Scheme which will ensure that the site's impacts on the environment, the workforce and the general public are minimised and that the Code of

Considerate Practice is implemented to best practice standards as far as possible.

12.8 The BREEAM Pre-Assessment attached as Appendix A further demonstrates that the proposed mixed use development is on track to meet BREEAM Level 'Excellent' with a score of 71.71%. It should be noted that this pre-assessment has been undertaken very early in the design process and is therefore subject to change. It is also important to note that the threshold for Level 'Excellent' could be achieved through attaining other credits within BREEAM, and not achieving some of those allocated in this pre-assessment.

12.9 This SDCS has also demonstrated that Code for Sustainable Homes Level 4 can also be achieved by residential element of the development.

12.10 In conclusion, the proposed development has successfully met the majority of the Mayor's Essential and Preferred Standards referred to in the SPG Sustainable Design and Construction. Where a standard has not been met a justification has been provided. The design team has considered the site's potential environmental impacts and this report details how those impacts will be managed and mitigated.

REFERENCES

1. Energy Strategy, prepared by Metropolis Green
2. BREEAM Multi Residential Pre-Assessment, prepared by Metropolis Green
3. Design and Access Statement, prepared Metropolis Planning and Design
4. Noise Assessment, prepared by Bickerdike Allen Partners
5. Transport Assessment, prepared by BWB Consulting

BREEAM Pre-Assessment Estimator

Indicative Overall BREEAM Score
71.71%

BREEAM Rating Benchmarks	
PASS	≥30
GOOD	≥45
VERY GOOD	≥55
EXCELLENT	≥70
OUTSTANDING*	≥85

				Minimum BREEAM Standards					
				Pass	Good	Very Good	Excellent	Outstanding	
			Achieved?	YES	YES	YES	YES	NO	
Ref	BREEAM Issue Title	Number of BREEAM credits available	Total predicted BREEAM credits achieved	Minimum required credits by BREEAM issue and rating					Notes
Management									
Man 1	Commissioning	2	2	1	1	1	1	2	
Man 2	Considerate Constructors	2	2	-	-	-	1	2	
Man 3	Construction Site Impacts	4	2	-	-	-	-	-	
Man 4	Building user guide	1	1	-	-	-	1	1	
Man 6	Consultation	2	1	-	-	-	-	-	
Man 8	Security	1	1	-	-	-	-	-	

Indicative Management (weighted) Section Score		9.00%							
Health & Wellbeing									
Hea 1	Daylighting	1		-	-	-	-	-	
Hea 2	View Out	1		-	-	-	-	-	
Hea 3	Glare Control	1	1	-	-	-	-	-	
Hea 4	High frequency lighting	1	1	1	1	1	1	1	
Hea 5	Internal and external lighting levels	1	1	-	-	-	-	-	
Hea 7	Potential for natural ventilation	1	0	-	-	-	-	-	
Hea 8	Indoor air quality	1	1	-	-	-	-	-	
Hea 9	Volatile Organic Compounds	1	1	-	-	-	-	-	
Hea 10	Thermal comfort	1	1	-	-	-	-	-	
Hea 11	Thermal zoning	1	1	-	-	-	-	-	
Hea 12	Microbial contamination	1	1	1	1	1	1	1	
Hea 15	Outdoor Space	1	0	-	-	-	-	-	
Hea20	Home Office	1	0	-	-	-	-	-	

Hea21	Sound Insulation	4	3	-	-	-	-	-	
	Indicative Health & Wellbeing (weighted) Section Score	**10.00%**							

Energy

Ene 1	Reduction of CO2 Emissions	**15**	**8**	-	-	-	6	10	
Ene 2	Sub-metering of Substantial Energy Uses	**1**	**1**	-	-	1	1	1	
Ene 4	External Lighting	**1**	**1**	-	-	-	-	-	
Ene 5	Low zero carbon technologies	**3**	**3**	-	-	-	1	1	
Ene 15	Provision of Energy Efficient Equipment	**2**	**2**	-	-	-	-	-	
Ene 18	Drying space	**1**	**1**	-	-	-	-	-	

Indicative Energy (weighted) Section Score **12.95%**

Transport

Tra 1	Provision of public transport	3	3	-	-	-	-	-	
Tra 2	Proximity to amenities	2	2	-	-	-	-	-	
Tra 3	Cyclist Facilities	1	0	-	-	-	-	-	
Tra 4	Pedestrian and cycle safety	1	1	-	-	-	-	-	
Tra 6	Maximum car parking capacity	2	2	-	-	-	-	-	

Indicative Transport (weighted) Section Score 7.11%

Water

Wat 1	Water Consumption	5	4	-	1	1	1	2	
Wat 2	Water meter	1	1	-	1	1	1	1	
Wat 3	Major leak detection	1	1	-	-	-	-	-	
Wat 6	Irrigation systems	1	1	-	-	-	-	-	

Indicative Water (weighted) Section Score 5.25%

Materials

Mat 1	Materials Specification (major building elements)	6	4	-	-	-	-	-	
Mat 2	Hard landscaping and boundary protection	1	1	-	-	-	-	-	
Mat 3	Re-use of building façade	1	0	-	-	-	-	-	
Mat 4	Re-use of building structure	1	0	-	-	-	-	-	
Mat 5	Responsible sourcing of materials	3	1	-	-	-	-	-	
Mat 6	Insulation	2	2	-	-	-	-	-	
Mat 7	Designing For Robustness	1	1	-	-	-	-	-	
Mat 8	Responsible sourcing of materials - finishing elements	2	1	-	-	-	-	-	

Indicative Materials (weighted) Section Score **7.50%**

Waste

Wst 1	Construction Site Waste Management	4	3	-	-	-	-	-	
Wst 2	Recycled aggregates	1	1	-	-	-	-	-	
Wst 3	Recyclable waste storage	2	2	-	-	-	1	1	
Wst 5	Composting	1	0	-	-	-	-	-	
	Indicative Waste (weighted) Section Score	**5.63%**							

Land Use & Ecology

LE1	Re-use of land	1	1	-	-	-	-	-	
LE2	Contaminated land	1	1	-	-	-	-	-	
LE3	Ecological value of site AND Protection of ecological features	1	1	-	-	-	-	-	
LE4	Mitigating Ecological impact	2	2	-	-	1	1	1	
LE5	Enhancing Site Ecology	3	2	-	-	-	-	-	
LE6	Long term impact on biodiversity	2		-	-	-	-	-	

Indicative Land Use & Ecology (weighted) Section Score	7.00%

Pollution

Pol 1	Refrigerant GWP - Building services	1	1	-	-	-	-	-	
Pol 2	Preventing refrigerant leaks	2	2	-	-	-	-	-	
Pol 4	NOx emissions from heating source	3		-	-	-	-	-	
Pol 5	Flood risk	3	3	-	-	-	-	-	
Pol 6	Minimising watercourse pollution	1	1	-	-	-	-	-	
Pol 7	Reduction of Night Time Light Pollution	1	1	-	-	-	-	-	

Indicative Pollution (weighted) Section Score	7.27%

Innovation

Man 2	Considerate Constructors	**1**		
Hea 1	Daylighting	**1**		
Hea 14	Office Space (BREEAM Retail & Industrial Schemes only)	**0**		
Ene 1	Reduction of CO2 emissions	**2**		
Ene 5	Low or Zero Carbon Technologies	**1**		
Wat 2	Water Meter	**1**		
Mat 1	Materials Specification	**1**		
Mat 5	Responsible Sourcing of Materials	**1**		

Wst 1	Construction Site Waste Management	1		

Indicative Innovation (weighted) Section Score **0.00%**