URS

Charlie Ratchford Extra-Care Scheme

Sustainability Statement

February 2015

47071124

Prepared for:

London Borough of Camden

UNITED KINGDOM & IRELAND

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EXECUTIVE SUMMARY

This Sustainability Statement has been prepared by URS on behalf of London Borough of Camden (LBC) in support of a full planning application for the Charlie Ratchford Extra-Care Scheme (herein referred to as the 'Proposed Development'), in LBC.

The Proposed Development is situated at Crogsland Road, in Camden, and will involve the construction of a six-story multi-residential building (five storeys plus ground and basement), with 38 extra-care residential units at the upper floors and approximately 914 m^2 of Day Centre floorspace at ground floor. The residential units are intended for sheltered occupancy by the elderly, providing secure and supported independent living.

This Sustainability Statement report has been prepared using information included in a number of documents that form part of the planning application submission for the proposed scheme. The sustainability measures described herein have been developed in consultation with members of the design team.

The purpose of this report is to assess the sustainability performance of the Proposed Development against relevant local, regional and national policy requirements and demonstrate how these are addressed through the implementation of appropriate design and construction practices.

Under the current design intent, the Proposed Development is targeting a percentage of 70.21%, whilst meeting all minimum standards, towards pursuing a BREEAM 'Excellent' rating, in line with the Employer's Requirements for this project.

Embedded within the preliminary assessment is the commitment to meet the percentage targets for un-weighted BREEAM credits for Energy, Water and Materials categories, in line with section 9.11 of London Borough of Camden's Planning Guidance CPG 3. Approximately 62.96% of the un-weighted BREEAM Energy credits available, 66.67% of Water credits available and 53.85% of Materials credits available have been targeted for the Proposed Development. This exceeds the minimum percentages required by LBC's Sustainability Planning Guidance CPG 3 where at least 60% of the un-weighted BREEAM Energy credits available, at least 60% of the un-weighted BREEAM Water credits and at least 40% of the un-weighted Materials credits available should be achieved.

The BREEAM pre-assessment carried out during the design development, aimed at establishing a strategy for achieving the required targets. The BREEAM pre-assessment' summary is presented in Appendix A of this report.

The sustainability strategy described in this report sets out the proposed measures and commitments that have been and will continue to be incorporated into the design development process, the construction and operation of the buildings in order to optimise its environmental performance and result to a scheme that can be designed, constructed and operated in a sustainable way.

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1 INTRODUCTION

The London Borough of Camden (hereafter referred to as the 'Applicant') is seeking to obtain a detailed planning permission, for the development of the Charlie Ratchford Extra-Care scheme in the London Borough of Camden.

The project (herein referred to as the 'Proposed Development') is situated at Crogsland Road, in Camden, and will involve the construction of a six-story multi-residential building (five storeys plus ground and basement), with 38 extra-care residential units at the upper floors and approximately 914m^2 of Day Centre floorspace at ground floor. The residential units are intended for sheltered occupancy by the elderly and suitable to accommodate residents with Dementia and able to provide a full range of care, providing secure and supported independent living.

The purpose of this report is to assess the sustainability performance of the Proposed Development against relevant local, regional and national policy requirements and demonstrate how these are addressed through the implementation of appropriate design and construction practices. This Sustainability Statement has been prepared by URS in support of the detailed planning application for the Proposed Development. The document focuses on the sustainability features incorporated in the scheme and provides an account of how the Proposed Development addresses national, regional and local sustainability policies.

The following planning policy and construction guidance documentation have been considered in detail in the preparation of this Sustainability Statement:

- The National Planning Policy Framework, Department of Communities and Local Government, 2012;
- The London Plan, Spatial Development Strategy for Greater London, Greater London Authority (GLA); Draft Further Alterations to the London Plan 2014 (FALP).
- Sustainable Design and Construction, The London Plan Supplementary Planning Guidance, GLA, 2014;
- Integrating Renewables into New Developments: Toolkit for Planners, Developers and Consultants, London Energy Partnership, 2004;
- Guidance on Preparing Energy Assessment, GLA Energy Team, 2011;
- Delivering London's Energy Future: The Mayor's Climate Change Mitigation Energy Strategy, GLA, 2011;
- The Mayor's Biodiversity Strategy, GLA, 2002;
- Securing London's water future: The Mayor's Water Strategy, GLA, 2011;
- The Mayor's Waste Management Strategies - London's Wasted Resource: The Mayor's Municipal Waste Management Strategy and Making Business Sense of Waste: The Mayor's Business Waste Management Strategy, GLA, 2011;
- Managing risks and increasing resilience: the Mayor's climate change adaptation strategy, GLA 2011;
- The Mayor's Ambient Noise Strategy, GLA, 2004;
- The Mayor's Air Quality Strategy, GLA, 2010;

- London Borough of Camden, Camden Core Strategy 2010-2025 Local Development Framework
- London Borough of Camden, Camden Development Policies, Local Development Framework;
- London Borough of Camden, Camden Planning Guidance (CPD) Supplementary planning Document.

This Sustainability Statement has been prepared using information included in a number of documents that form part of the planning application submission for the Proposed Development. The sustainability measures described herein have been developed in consultation with members of the design team.

The following documents have been reviewed:

- Final Design and Access Statement, PRP Architects, December 2014;
- Final Energy Strategy, URS, February 2015;
- Final Flood Risk Assessment Report, Peter Brett Associates, February 2015;
- Final Transport Statement, Peter Brett Associates, January 2015;
- Final Extended Ecological Phase 1 Habitat Survey Report, Greengage, November 2014;
- Final Tree Survey, Implications Assessment & Constraints Plan, Greengage, August 2014;
- Detailed Daylight & Sunlight Report, GVA, January 2015;
- Final Noise Impact Assessment, Ramboll, January 2015;
- MEP Stage D Report, URS, January 2015;
- Final Local Air Quality Assessment, Ramboll, January 2015;
- Archaeology Assessment Report, by LP Archaeology, May 2014;
- Final Site Investigation, Ground Technology Services, October 2014.

This report takes into account the special character of the Proposed Development and defines the broad approach that could be implemented in order for the development to be in line with the required policy criteria. The specific details and assumptions set out within this report have been derived from reports and studies as listed above or through discussions with the project team. It is envisaged that these details and assumptions will be refined, tested and finalised at the detailed design stage.

The remainder of this document is structured as follows:

- Section 2 provides an overview of the Proposed Development;
- Section 3 outlines the policy context;
- Section 4 sets out the assessment methodology provides an outline of the BREEAM commitments;
- Section 5 details the sustainability features of the Proposed Development;
- Section 6 presents the conclusions;

- Appendix A contains the BREEAM 2011 New Construction pre-assessment report produced for the scheme; and
- Appendix B presents relevant regional policies in detail; and

2 OVERVIEW OF THE PROPOSED DEVELOPMENT

The proposed development lies within the London Borough of Camden approximately 250m North of Chalk Farm Underground station. The site is approximately 0.39 acres, lies on Crogsland road and is surrounded by range of building types including residential, light industrial, educational developments and existing Charlie Ratchford Centre.

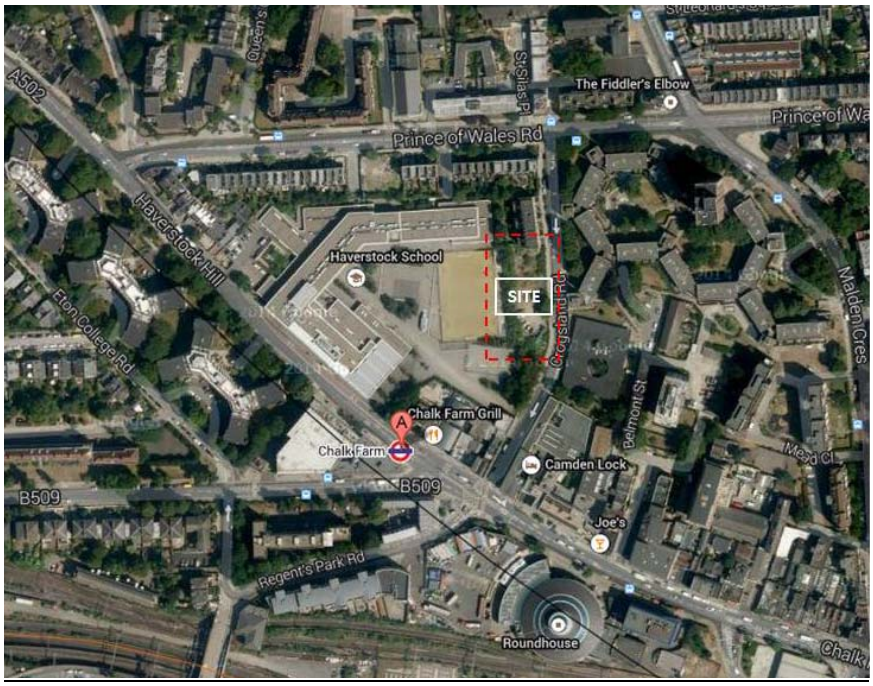

Figure 1: Location of the site and its surroundings

Crogsland road is fairly busy street as it forms a link between Prince of Wales Road and Haverstock Hill where several amenities are located such as Chalk Farm Station, the Round House theatre, several shops, bars and restaurants.

The proposed development will involve the construction of a six-story multi-residential building (five storeys plus ground and basement), with 38 extra-care residential units at the upper floors and approximately 914m^2 of Day Centre floorspace at ground floor. The residential units are intended for sheltered occupancy by the elderly and suitable to accommodate residents with Dementia and able to provide a full range of care, providing secure and supported independent living. The Day Centre will provide flexible spaces which will allow a wide range of activities, events and meetings to take place.

Figure 2: Visual Representation of the Proposed Development

3 PLANNING POLICY CONTEXT

Rising international and national aspirations on sustainability have led to the strengthening of national, regional and local planning policies and building control processes that contribute to the Government's long-term commitment to support sustainable development. In this context, the development proposals address a number of policy documents which are detailed below.

3.1 National Planning Policy

The Government has launched a raft of measures to combat global warming and climate change. The following publications demonstrate the timeline of measures that have been implemented within the development of the UK national policy framework:

- The Department of Transport and Industry White Paper entitled *Our Energy Future – Creating a Low Carbon Economy*, 2003, sets a target for 10% of electricity to be produced from renewable sources nationally by 2010 and twice this by 2020, with a goal for 60% reduction in CO_2 emissions by 2050;
- *Sustainable and Secure Buildings Act,* 2004, sets out the purposes for which Building Regulations may be made to further the conservation of fuel and power, ensure water use efficiency, protect and enhance the environment, and prevent/detect non-compliance;
- *Climate Change and Sustainable Energy Act,* 2006, enhances the contribution of the UK to combating climate change, alleviating fuel poverty and securing a diverse and viable long-term energy supply;
- The Department for Communities and Local Government (CLG)'s *Building A Greener Future: Towards Zero Carbon Development,* 2006, demonstrates the step change required in the Building Regulations to achieve zero carbon housing in order to ensure energy security, which is a risk of climate change;
- The Department of Transport and Industry White Paper entitled *Meeting the Energy Challenge*, 2007, sets out the UK strategy, which recognises the need to tackle climate change and energy security;
- The *Climate Change Act, 2008,* sets up a framework for the UK to achieve its long-term goals of reducing greenhouse gas emissions by 34% over the 1990 baseline by 2020 and by 80% by 2050 and to ensure steps are taken towards adapting to the impact of climate change. The Act introduces a system of carbon budgeting which constrains the total amount of emissions in a given time period, and sets out a procedure for assessing the risks of the impact of climate change for the UK, and a requirement on the Government to develop an adaptation programme;
- *The Planning and Energy Act, 2008,* enables local planning authorities to set requirements for energy use and energy efficiency in local plans;
- The *Energy Act, 2013* makes a provision for the setting of a decarbonisation target range and duties in relation to it and for the reforming of the electricity market for purposes of encouraging low carbon electricity generation and ensuring security of supply;
- The *Carbon Plan*, 2013, sets out the Government's plans for achieving the emissions reductions committed to in the first four carbon budgets, on a pathway consistent with meeting the 2050 target. This publication brings together the Government's strategy to curb

greenhouse gas emissions and deliver climate change targets, as well as the updated version of actions and milestones for the next five years, replacing the draft Carbon Plan published in March 2011; and

- The *National Planning Policy Framework*, 2012, sets out the Government's planning policies for England and how these are expected to be applied. It must be taken into account in the preparation of local and neighbourhood plans, and is a material consideration in planning decisions. The document presents a series of policies that constitute the Government's view of what sustainable development in England means in practice for the planning system. At the heart of the National Planning Policy Framework is a presumption in favour of sustainable development. Policies in Local Plans should follow the approach of the presumption in favour of sustainable development so that it is clear that development which is sustainable can be approved without delay.

3.2 Regional Planning Policy

3.2.1 The London Plan, 2011 (Draft Further Alterations consolidated with Revised Early Minor Alterations, January 2014)

The *London Plan* establishes policy over the next 20 – 25 years, and retains the fundamental objective of accommodating London's population and economic growth through sustainable development. The Mayor's vision is for London to excel among global cities, expanding opportunities for all its people and enterprises, achieving the highest environmental standards and quality of life and leading the world in its approach to tackling the urban challenges of the 21st century, particularly that of climate change.

The 'Revised Early Minor Alterations to the London Plan' was published on 11 October 2013 and has been operative as formal alterations to the London Plan (the Mayor's spatial development strategy) and forms part of the development plan for Greater London. On 15 January 2014, the Mayor published *Draft Further Alterations to the London Plan* (FALP) for a twelve week period of public consultation. The FALP has been prepared primarily to address key housing and employment issues emerging from an analysis of census data released since the publication of the London Plan in July 2011, and which indicate a substantial increase in the capital's population. An examination in public was held for this further alteration documents by the planning inspector appointed by the Secretary of State in September 2014.

The *London Plan* sets out policy and guidance in the London context and identifies six main objectives related to improving the living and working conditions in London, giving more detail about how the vision should be implemented and ensuring London is:

- A city that meets the challenges of economic and population growth;
- An internationally competitive and successful city;
- A city of diverse, strong, secure and accessible neighbourhoods;
- A city that delights the senses;
- A city that becomes a world leader in improving the environment; and
- A city where it is easy, safe and convenient for everyone to access jobs, opportunities and facilities.

In terms of Climate Change Mitigation, the London Plan includes a strategic target to achieve an overall reduction in London's CO_2 emissions of 60% by 2025 (Policy 5.1). In the planning context, the Mayor expects that all new development will fully contribute towards the reduction of CO_2 emissions and this will be achieved through the application of *Policy 5.2: Minimising CO_2 emissions*.

Specifically, *Policy 5.2 (A)* requires developments to make the fullest contribution to minimising emissions of CO_2 in accordance with the energy hierarchy:

- Be lean: using less energy (Policy 5.3);
- Be clean: Supplying energy efficiently, in particular by prioritising decentralised energy generation (Policy 5.5 and 5.6); and
- Be green: Using renewable energy (Policy 5.7).

Policy 5.2 (B) includes targets for CO_2 emissions reduction which all major developments are expected to meet. The previous target was a 40% reduction compared to 2010 Building Regulations requirements. The current target (2013-2016) is a 35% reduction compared to 2013 Building Regulations requirements. Note that this is an updated target in relation to the new 2013 Building Regulations. Further information can be found in the *Sustainable Design and Construction Supplementary Planning Guidance (2014)* and the *Energy Planning – Greater London Authority Guidance on Preparing Energy Assessment* (2014) documents detailed in the following sections.

Policy 5.2(C) states that all major development proposals are expected to include a detailed energy assessment to demonstrate how these targets are to be met within the framework of the Mayor's Energy Hierarchy (guidance is also given in *Policy 5.2(D)* on the content of Energy Assessments).

All major development proposals are expected to include a detailed Energy Assessment to demonstrate how these targets are to be met within the framework of the energy hierarchy (*Policy 5.2 (C)*). Guidance is also given on the content of Energy Assessments (*Policy 5.2 (D)*).

CO_2 emissions targets should be met on-site and where this is not fully feasible, any shortfall may be provided off-site or through a cash-in-lieu contribution to the relevant borough (*Policy 5.2 (E)*).

Policy 5.3: Sustainable Design and Construction, seeks to ensure future developments meet the highest standards of sustainable design and construction including construction and operation, and ensure that they are considered at the beginning of the design process. Major development proposals should meet the minimum standards outlined in the current Mayor's SPG and this should be clearly demonstrated within a Design and Access statement. Sustainable design principles to be achieved include:

- Minimise CO_2 emissions across the site, including the building and services (such as heating and cooling systems);
- Avoid 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;

- Minimise pollution (including noise, air and urban run-off);
- Minimise the generation of waste and maximise reuse or recycling;
- Avoid impacts from natural hazards (including flooding);
- Ensure developments are comfortable and secure for users, including avoiding the creation of adverse local climatic conditions;
- Secure sustainable procurement of materials, use local supplies where feasible; and
- Promote and protect biodiversity and green infrastructure.

Policy 5.4 Retrofitting applies the principles in Policy 5.3 to existing building stock where retrofit opportunities arise. 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.

Policy 5.5 Decentralised Energy Networks, prioritises the development of decentralised heating and cooling networks at the development and area wide levels, while *Policy 5.6: Decentralised Energy in Development Proposals (A)* requires development proposals to evaluate the feasibility of CHP systems, and where a new CHP system is appropriate, also examine opportunities to extend the system beyond the site boundary to adjacent sites.

Policy 5.5A Electricity and Gas Supply, mandates developers to engage with relevant boroughs and energy companies at an early stage to identify gas and electricity requirements arising from their developments.

Developments should select the energy systems in accordance with the following hierarchy (*Policy 5.6 (B)*):

- Connection to existing heating or cooling networks;
- Site wide CHP network; and
- Communal heating and cooling.

Where future network opportunities are identified, proposals should be designed to connect to these networks (*Policy 5.6 (C)*).

Policy 5.7: Renewable Energy expects that within the framework of the Energy Hierarchy, major development proposals will provide a reduction in CO_2 emissions through the use of on-site renewable energy generation. The London Plan also includes a presumption that all major development proposals will seek to reduce CO_2 emissions by at least 20% through the use of on-site renewable energy generation.

Policy 5.8 Innovative Energy Technologies supports the use of alternative energy technologies (e.g. the uptake of electric and hydrogen fuel cell vehicles, hydrogen supply and distribution infrastructure and the uptake of advanced conversion technologies such as anaerobic digestion, gasification and pyrolysis).

Policy 5.9: Overheating and Cooling expects major development proposals to reduce potential overheating and reliance on air conditioning systems and demonstrate this in accordance with the recommended cooling hierarchy.

Urban Greening is promoted through *Policy 5.10*, as a means to contribute to the adaptation to, and reduction of, the effects of climate change. Development proposals are expected to integrate green infrastructure such as tree planting, green roofs and walls, and soft landscaping. Major development proposals should be designed to include roof, wall and site planting, especially green roofs and walls where feasible (*Policy 5.11*).

Relevant to *Flood Risk Management Policy 5.12*, the London Plan states that development proposals must comply with the flood risk assessment and management requirements set out in the *National Planning Policy Framework* (NPPF) and the associated Technical Guidance[1] on flood risk over the lifetime of the development and have regard to measures proposed in Thames Estuary 2100[2] (TE2100) and Catchment Flood Management Plans[3].

Policy 5.13 Sustainable Drainage states that the development should utilise sustainable urban drainage systems (SUDS) unless there are practical reasons for not doing so. The aim should be 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 recommended drainage hierarchy.

Adequate wastewater infrastructure capacity should be available in tandem with development (*Policy 5.14*) that should minimise the use of mains water (*Policy 5.15*).

3.2.2 Sustainable Design and Construction, Supplementary Planning Guidance, 2014

In April 2014 the Mayor published the Sustainable Design and Construction Supplementary Planning Guidance (SPG) to provide guidance to developers. This SPG details the Mayor's standards, covering a wide range of sustainability measures that major developments are expected and encouraged to meet.

The SPG applies to all 'major' developments, which may be referred to the Mayor. It is a material consideration in drawing up local and neighbourhood plans and in taking planning decisions.

The SPG provides guidance on to how to achieve the London Plan objectives effectively, supporting the Mayor's aims for growth, including the delivery of housing and infrastructure. It relates to the implementation of London Plan *Policy 5.3*, but also a range of policies on sustainability as well as those that aim to create a pleasant environment to live in (see Chapter 7 of the London Plan). It also builds on the policies set out in the National Planning Policy Framework, providing specific advice for London. Implementing the guidance in this SPG will facilitate the contribution made by development to the Mayor's strategic targets:

- of an overall reduction in London's carbon dioxide emissions of 60 per cent (below 1990 levels) by 2025;

[1] Technical Guidance to the National Planning Policy Framework, Department for Communities and Local Government, March 2012

[2] Thames Estuary 2100[2] (TE2100) plan, Environment Agency, August 2011

[3] Catchment Flood Management Plans, Environment Agency, December 2009

- that 25 per cent of the heat and power used in London is generated through the use of localised decentralised energy systems by 2025;
- to increase the amount of surface area greened in the Central Activities Zone by at least five per cent by 2030, and a further five per cent by 2050;
- increase London's tree cover by 5% by 2025;
- to contribute to the achievement of EU limit values for air pollution; and
- that 95% of construction, demolition and excavation waste is recycled/re-used by 2020, and that 80% recycling of that waste as aggregates.

Notably, the SPG responds to the introduction of the new Building Regulations Approved Document L (ADL) 2013, which requires an overall 6% reduction in CO_2 emissions from new residential buildings and an overall 9% reduction in CO_2 emissions from new non-residential buildings compared to ADL of the Building Regulations 2010. To avoid complexity and extra costs for developers, the Mayor adopted a flat CO_2 improvement target beyond ADL 2013 of 35% for both residential and non-residential developments. This target replaces the previous targets set out under the London Plan *Policy 5.2 (B)* against ADL 2010.

The SPG sets out a series of Mayor's Priorities, which the Mayor seeks developers to address in all development proposals, and a series Mayor's Best Practice ambitions, which the Mayor strongly encourages be delivered in the appropriate developments.

The Priorities and Best Practice ambitions are organised in the following sections:

- Resource management – land (including basements and lightwells and local food growing), site layout and building design, energy and carbon dioxide emissions, water efficiency, materials (including reuse of waste), nature conservation and biodiversity;
- Climate change adaptation – overheating, heat and drought resistant planting, resilient foundations, urban greening, trees, surface water flooding, flooding and risk management; and
- Pollution management – contaminated land, air pollution, noise pollution, light pollution, water pollution (surface and waste water treatment).

Whilst the guidance in the SPG should be followed to ensure the design enables the fullest contribution to sustainable design and construction objectives, it needs to be tailored to cater for the specific characteristics of each development.

3.2.3 Other Regional Policy Documents

The London Plan and Sustainability SPG are supplemented by a series of regional policy documents that provide further and more detailed guidance relevant to the various aspects of sustainable development, including detailed guidance on preparing energy assessments, strategic guidance on climate change mitigation, as well as policies relevant to environmental impacts associated with the built environment. An outline summary of such policy documents is provided in Appendix B of this report.

3.3 Local Planning Policy – Local plans

Local Development Framework (LDF): LDF is a collection of documents which in conjunction with National Planning Policy and Mayor's London Plan sets out strategy for managing growth and development in the borough of Camden. LDF has replaced the Unitary Development Plan (UDP) in November 2010.

Core Strategy: The Core Strategy is the central document for the LDF and sets out key elements of the council's planning vision and strategy for the borough.

The relevant policies for sustainable development are:

Policy CS1 – Distribution of growth

Policy CS11 – Promoting sustainable and efficient travel

Policy CS13 – Tackling climate change through promoting higher environmental standards

Policy CS14 – Promoting high quality places and conserving our heritage

Policy CS15 – Protecting and improving our parks and open spaces and encouraging biodiversity

Policy CS16 – Improving Camden's health and well-being

Policy CS17 – Making Camden a safer place

Policy CS18 – Dealing with our waste and encouraging recycling

Policy CS19 – Delivering and monitoring the Core Strategy

Development Policies: These are group of documents setting out the planning strategy and policies and forms part of LDF. This document is consistent with the Core Strategy.

The relevant Policies for Sustainable development are:

Policy DP16 – The transport implications of development

Policy DP17 – Walking, cycling and public transport

Policy DP18 – Parking standards and limiting the availability of car parking

Policy DP19 – Managing the impact of parking

Policy DP22 – Promoting sustainable design and construction

Policy DP23 – Water

Policy DP24 –Securing high quality design

Policy DP26 – Managing the impact of development on occupiers and neighbours

Policy DP28 – Noise and Vibration

Policy DP29 – Improving access

Policy DP32 – Air quality and Camden's Clear Zone

Camden Planning Guidance (CPG): CPG is a Supplementary Planning Document. These documents support the policies in the Local Development Framework and provide guidance on how the council's planning strategy and policies will be implemented for specific topics, areas or site. This document is consistent with the Core Strategy and Development Policies.

The relevant policies for sustainable development are contained within *CPG 3 Sustainability*:

Energy efficiency: New buildings

Decentralised energy networks and combined heat and power

Renewable energy

Water efficiency

Sustainable use of materials

Sustainability assessment tools

Brown roof, green roofs and green walls

Flooding

Adapting to Climate change

Biodiversity

Local food growing

A more detailed overview of the above policies is given in **Appendix B**.

4 ASSESSMENT METHODOLOGY

This Sustainability Statement has been structured around the London Plan and the LBC sustainable development aims and objectives, and demonstrates the sustainability features included within the Proposed Development.

Specifically, the Proposed Development has been assessed against the following topics, as these are listed in the London Plan and the Mayor of London Sustainable Design and Construction SPG 2014:

- Resource Management: Land use, site layout and building design, energy and carbon dioxide emissions, renewable energy, water efficiency, materials, waste, nature conservation and biodiversity;
- Adapting to climate change and greening the city: tackling increased temperature, drought, flooding and increasing green cover and trees;
- Pollution Management: Land contamination, air, water, noise and light pollution;
- Inclusive and Secure Design – Incorporation of 'Secured by Design' principles, compliance with Lifetime Homes;
- Internal Comfort, Health and Well-being – Daylight and sunlight, specification of inert finishes and;
- Sustainable Transport – Provision for cycle and pedestrian movement, and transport information to ensure building users are aware of the sustainable travel choices available to them.

Sustainable transport and socio-economic factors, although not covered in the Sustainable Design and Construction SPG, are also addressed within this Sustainability Statement. The following sections detail the sustainability credentials of the Proposed Development, against the above topics.

Furthermore, a preliminary BREEAM New Construction 2011 multi-residential assessment for the daycentre on the ground floor and the sheltered occupancy units for the elderly, providing secure and supported independent living on the first to fifth floor of the Proposed Development has been undertaken.

The BREEAM methodology assesses developments on the basis of credits for a set of performance criteria covering issues such as energy, water, materials, waste, pollution, health and well-being, management, and ecology.

Under the current design intent, the Proposed Development is targeting a percentage of 70.21%, whilst meeting all minimum standards, towards pursuing a BREEAM 'Excellent' rating, in line with the Employer's Requirements for this project.

The BREEAM pre-assessment carried out during the design development aims at establishing a strategy for achieving the required targets. The pre-assessment summary is presented in Appendix A of this report. The overall BREEAM strategy for achieving the development targets is

outlined in the following sections of this report, indicating the contribution of each design measure to the overall sustainability performance of the scheme.

The sustainability measures described in this Sustainability Statement and preliminary BREEAM were developed in consultation with members of the project team.

4.1 BREEAM New Construction 2011 – Multi-residential - Summary of Results

An independent sustainability appraisal scheme has been used to assess the performance of the Proposed Development. A single BREEAM Multi-Residential preliminary assessment has been carried out for this scheme, as the Proposed Development contains a mixture of self-contained extra-care residential dwellings and communal/non-domestic space consisting of the Charlie Ratchford Resource Centre on the ground floor, where both elements of the scheme share the same entrance.

The Proposed Development under the current design intent is targeting a percentage of 70.21%, meeting all minimum standards, towards pursuing a BREEAM 'Excellent' rating in line with the Employer's Requirements for this project. Embedded within the preliminary assessment is the commitment to meet the percentage targets for un-weighted BREEAM credits for Energy, Water and Materials categories, in line with section 9.11 of London Borough of Camden's Planning Guidance CPG 3. Approximately 62.96% of the un-weighted BREEAM Energy credits available, 66.67% of Water credits available and 53.85% of Materials credits available have been targeted for the Proposed Development. This exceeds the minimum percentages required by LBC's Sustainability Planning Guidance CPG 3 where at least 60% of the un-weighted BREEAM Energy credits available, at least 60% of the un-weighted BREEAM Water credits and at least 40% of the un-weighted Materials credits available should be achieved.

At this stage additional uplift credits have also been identified for the Proposed Development, which would need to be revisited during the detailed design stages. An indicative potential score of 73.35% has been estimated as possible and as a margin to achieve the minimum required BREEAM score of 70% for an 'Excellent' rating. Table 1 and Table 2 below, indicate the BREEAM rating level with the 'Targeted' and the potential 'Additional Uplift credits' score for the Proposed Development.

A breakdown of the performance of the scheme in each BREEAM Category is illustrated in Figure 3 below.

Table 1: Targeted and Uplift Scores

BREEAM Rating	Score
PASS	30.00%
GOOD	45.00%
VERY GOOD	55.00%
EXCELLENT	70.00%
Targeted	**70.21%**

BREEAM Rating	Score
Additional Uplift credits	**73.35%**
OUTSTANDING	85.00%

Table 2: BREEAM Weightings and Scores

Section	Un-weighted Targeted % for each category	BREEAM Weighting	Weighted Targeted Score	Weighted potential Uplift score
Management	81.82%	12.00%	9.82%	9.82%
Health & Well-being	68.75%	15.00%	10.31%	11.25%
Energy	62.96%	19.00%	11.96%	11.96%
Transport	100.00%	8.00%	8.00%	8.00%
Water	66.67%	6.00%	4.00%	4.00%
Materials	53.85%	12.50%	6.73%	7.69%
Waste	66.67%	7.50%	5.00%	6.25%
Land Use & Ecology	60.00%	10.00%	8.00%	8.00%
Pollution	53.85%	10.00%	5.38%	5.38%
Innovation (additional)	10.00%	10.00%	1.00%	1.00%
Total Score			**70.21%**	**73.35%**

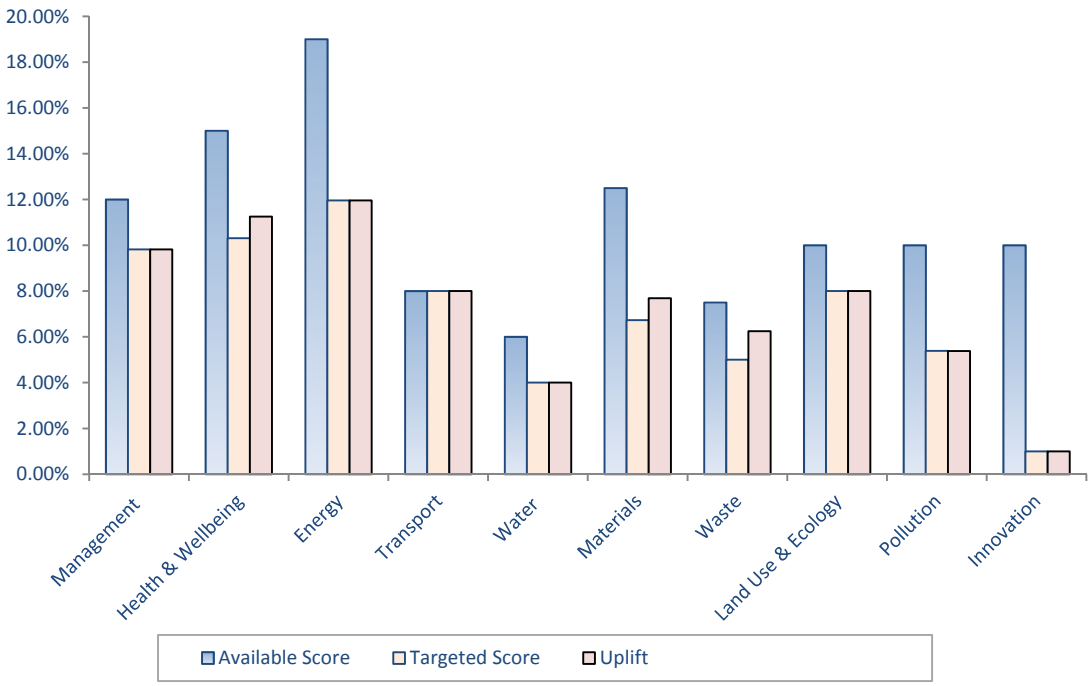

Figure 3: Targeted and Uplift scores in relation to percentage scores available in each BREEAM category– Graphical representation

5 SUSTAINABILITY ASSESSMENT

5.1 Optimising Use of Land

In line with the Mayor's Priorities as these are set out in the Sustainable Design and Construction SPG and the London Plan, The Proposed Development will utilise land that has been previously developed. The scheme will make the best possible use of the existing plot by maximising density, whilst having regard for the local context and will be designed to a high standard reflective of its location.

The scope of the scheme consists of a Day Centre and sheltered residential housing intended for occupancy by the elderly, to provide secure and supported independent living and offer a wide range of support to help people to go about their daily lives and live safe and independent lives for as long as possible. Landscaped gardens are proposed for both extra care residents and Day Centre service users.

The Site of the Proposed Development is 0.39 acres in area and is located on Crogsland Road approximately 250m north of Chalk Farm Underground Station. The site is surrounded by Crogsland Road, the Haverstock School, residential properties, businesses and community facilities. The proposed site is currently used for storage and parking cars by the Haverstock School as illustrated in the figure below.

Figure 4 Figure indicating location of the Proposed Development (Source: Design and Access Statement)

The Proposed Development will make efficient use of London's limited land as it is being constructed on previously developed land which has most recently been used as car parking. The Proposed Development comprises of a six-story multi-residential building (five storeys plus ground and basement), with 38 extra-care residential units at the upper floors and approximately 914m^2 of Day Centre floorspace at ground floor level.

The Proposed Development site has a Public Transport Accessibility Level (PTAL) of 5, with underground, bus and vehicular transport networks located in proximity, serving destinations across the whole of London.

The proposed site has a number of existing semi mature trees within and on its boundaries. It is recognised that efforts will be made to retain all the trees on the site and improve the quality of the 'green' space and street scene. In turn the local habitats will be considered and improved where possible.

Furthermore, green space will be created within the site and landscaping is proposed throughout the development through the provision of both communal and private gardens on the ground floor for both extra care residents and day centre service users. The spaces will be designed to a high quality with each space retaining its own distinctive character which contributes to the setting of the development and provide high quality accessible amenity space for residents and day centre visitors. The spaces will provide a secure and defensible curtilage and be designed to minimise future maintenance and management.

The front facade of the residential element of the Proposed Development will include winter gardens which will provide excellent sheltered external space for the residents. A roof terrace is proposed to provide an important social amenity for residents, incorporating a seating within richly planted timber planters for individuals or small groups to access a quiet part of the scheme or to benefit from the sunshine at the top floor level.

A desk based archaeological assessment '*Crogsland Road Chalk Farm', LP Archaeology, May 2014*, has been undertaken for the site where the Proposed Development is to be based. This assessment shows that the site does not lie within an Archaeological Priority Area, as designated by the Local Planning Authority, nor does it contain any scheduled monuments or listed buildings. The results of the assessment conclude that the site has a low potential for archaeological remains from any period. Furthermore, the site seems to have been subjected to extremely high levels of truncation and disturbance connected to previous developments and therefore there is a low likelihood for the survival of any potential extant archaeological remains.

5.2 Site Layout and Building Design

The Proposed Development consist on a day care centre on the ground floor with 38 extra-care residential units spread between first floor to fifth floor. The Proposed Development has a minimal footprint of 914 m^2.

Ground floor consist of day-care centre with a café and integrated gardens, ancillary spaces such as plant and utility rooms along with circulation cores and areas as shown in the figure below.

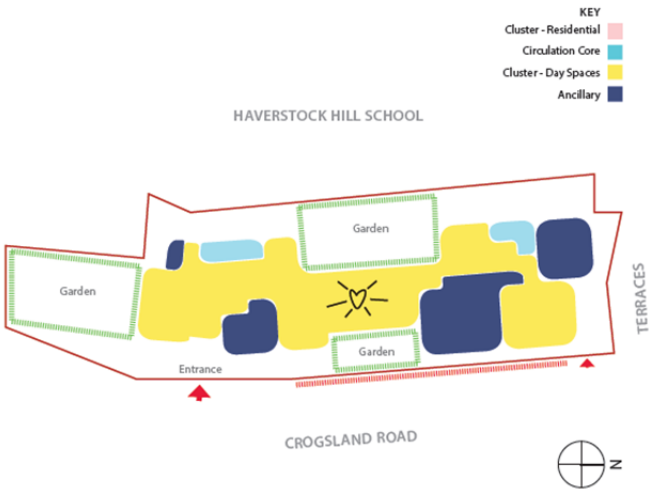

Figure 5 Schematic diagram showing zoning of various areas (Source: Design and Access statement)

Individual aftercare dwellings have their own winter gardens, with dual aspect habitable rooms facing Crogsland road, away from the school away from potential noise disturbances. These residential units have been designed in line with 'Inclusive design' principles for wheelchair users, buggy users, and people with mobility impairment, dementia and other disabilities.

The building design will aim to ensure the comfort and security of future uses through the promotion of indoor comfort measures and designing inclusive environments, as detailed in the following sections. In line with the Design and Access Statement, the principles of design are concentrating on the following:

- **Provision of high quality dwellings in a variety of types and sizes** - The design enables the site to realise its full potential and allows for the inclusion of an element of open space, whilst providing high-quality buildings, landscaped spaces and enhanced connectivity. The principles of inclusive design have been integrated into the proposals and amenity, retail and ancillary spaces will be provided.

- **Provision of high quality architecture and materials** - The Proposed Development has been designed to a high standard reflective of its location and position and its relationship with the adjoining buildings.

- **Provision of a fully accessible and safe environment -** The Proposed Development will promote public health by providing safe and healthy environment. The Proposed Development has been designed to achieve a good balance between heating, cooling and daylighting whilst providing thermal and visual comfort and good views out so ensuring both reduced overall energy consumption and occupant well-being. The scheme is design to be accessible, usable and permeable for all users.

- **Encourage wildlife and diversity and provide a carefully considered public realm** - The Proposed Development respects the natural environment through its commitment to sustainability. A suitably qualified ecologist has been appointed to advise on the enhancement of the site's ecology and to ensure that the construction phases of the development will have no negative impact on the local fauna and flora. Refer to section 5.6 Natural Environment and Biodiversity' of this report for further details.

5.2.1 Indoor Comfort

The Proposed Development will aim to provide a healthy environment that reduces environmental stresses, facilitates physical activity and promotes mental well-being.

There will be a provision of acceptable sound insulation standards to minimise the likelihood of noise complaints in the residences. Specifically, the residential elements will meet and are expected to exceed the requirements of Part E of Building Regulations through the provision of suitable envelope construction and as per the BREEAM New Construction requirements.

Visual comfort has actively informed design development process. Artificial lighting and occupant controls have been considered to ensure best practice visual performance for building users. Energy efficient luminaires with high efficacy and high light will be specified for the extra-care residential apartments.

A *'Detailed Daylight and Sunlight Report, Proposed Development at Crogsland Road London NW1, GVA, January 2015'* has been prepared by GVA which has determined that the design of the Proposed Development incorporates measures to ensure adequate internal natural light amenity for future occupants and indicates that all bedrooms of the residential extra-care element of the Proposed Development achieve the minimum recommended target for Average Daylight Factor (ADF) of greater than 1%. The combined Living/Kitchen/Dining rooms have been identified to achieve greater that the minimum recommended target of at least 1.5% ADF for kitchen spaces,

A thermal comfort and overheating analysis is proposed to be carried out to ensure that the design and controls selected at detailed design are able to maintain thermally comfortable environments. It is proposed that each apartment shall be heated via low surface temperature LTHW radiator heating system. Each radiator shall be provided with thermostatic radiator valves (TRVs) and wall mounted time and temperature programmable thermostat for occupant control. The bathroom shall be provided with a towel rail complete with thermostatic control and again be of low surface temperature type.

A healthy internal environment will be promoted in all areas of the Proposed Development through the specification of internal finishes and fittings with low emissions of volatile organic compounds (VOCs), where feasible. Specifically, VOCs are emitted from products such as paints and lacquers, paint strippers, cleaning supplies, pesticides, building materials and furnishings, glues and adhesives, Urea-formaldehyde foam insulation (UFFI), pressed wood products (hardwood plywood wall panelling, particleboard, fibreboard) and furniture made with these pressed wood products. Where these products are specified, efforts would be made to ensure that these have been tested against and meet the relevant standards for VOC emissions.

Building services will be designed to reduce the risk of legionella in operation. Plant rooms will be easily accessible for maintenance and a programme of regular inspection and maintenance of the machinery and operation to manufacturers' instructions will be implemented to ensure unsafe plant emissions that affect internal air quality (i.e. harmful carbon monoxide emissions) are avoided.

Appropriate ventilation levels to provide fresh air and avoid problems associated with the build-up of pollutants and humidity levels without excessive heat loss will be ensured.

Finally, training will be provided for relevant building occupiers, staff, residents and the premises manager, based appropriately around handover and proposed occupation plans, which will

include information on installed systems and key features and requirements for maintenance, operation, replacement, and repair to ensure that the building operation will make the best use of sustainable features through the provision a building user guide tailored for all appropriate users.

5.2.2 Designing Inclusive Environments

The design team has adopted an inclusive design approach to optimise the accessibility of the dwellings and their future adaptability to cope with changing needs of a household, such as old age, frailty, a short or long-term disability or a debilitating illness. As such, inclusive design has been an integral part of the design and all Lifetime Homes criteria will be met for the residential element of the Proposed Development.

Design measures have been taken to ensure the building and grounds are barrier free and all public spaces are designed to meet Part M of Building Regulations. All external entrances and exits have level access including access to gardens with suitable finishes. Main circulation routes have continuous handrails and corridors wide enough for two wheelchairs to pass at regular intervals. Thirteen person capacity stretcher lifts are proposed to access upper floors while the apartments are designed to be wheelchair accessible and dementia friendly with level access to internal utilities such as showers. Each dwelling is able to accommodate for storage of a mobility scooter.

Furthermore, the Proposed Development has been designed with consideration for residents with dementia and other sensory impairments. In detail, communal rooms have glazed doors to provide visual accessibility. Gardens have been strategically zoned and placed to provide change in space and corridors are provided with seating to create interest. The overall design has been designed to allow for maximum natural light penetration and view outs to aid orientation.

5.2.3 Secured By Design

The Proposed Development will incorporate the 'Secured by Design' principles. A local Police Liaison Officer/Designing Out Crime adviser will be consulted and the design team is committed to integrate appropriate recommendations within the design of the scheme.

5.3 Energy, Carbon Dioxide Emissions and Renewable Energy

The Final Energy Strategy for the Proposed Development *('Final Energy Strategy', February 2015, URS*) is structured in accordance with Policy 5.2 of the London Plan; Be Lean, Be Clean, Be Green and is submitted under a separate cover alongside the planning application. Emphasis has been placed on maximising energy demand reduction for the building and reducing carbon emissions.

The energy consumption and associated CO_2 emissions of the residential and commercial spaces of the Proposed Development have been estimated using approved software compliant with the Building Regulations Approved Document L (ADL) A 2013.

The baseline scheme is defined as that meeting the requirements of the Building Regulations ADL A 2013. The Proposed Development's baseline CO_2 emissions for regulated and non-regulated energy uses are presented in Table 4.

To reduce the energy demand of the Proposed Development, passive design and energy efficiency measures where possible (i.e. 'Be Lean' scheme) are proposed to be incorporated into the development's design. The achievable savings from the incorporation of these measures in regulated CO_2 emissions are estimated to be 3% over the baseline.

On-site Combined Heat and Power (CHP) systems were considered but the low heat demand precludes viability on this site. The potential for connection to nearby existing low carbon heat distribution networks and CHP installations was investigated and is not considered viable at this time.

An analysis of the feasibility of on-site renewable energy technologies has been undertaken and Air Source Heat Pump (ASHP) systems as well as Photovoltaic (PV) panels have been identified as feasible for on-site heat and electricity generation respectively. The proposed ASHP and PV panels of circa 223 m2 area (42.4 kWp) could provide circa 30% reduction in regulated CO2 emissions over the 'Be Lean' scheme.

In total, a 32% reduction in regulated CO_2 emissions over the baseline is estimated to be achievable.

Figure 6 presents the estimated regulated CO_2 emissions after each stage of the Mayor's Energy Hierarchy and Table 3 shows the total regulated and unregulated CO_2 emissions. Table 4 demonstrates the regulated CO_2 emissions savings and the percentage of reduction over the baseline. Table 5 shows the annual and cumulative shortfall of CO_2 emissions over the London Plan target savings.

The individual percentage savings shown in Table 4 and Figure 6 are a reduction from each stage of the Mayor's Energy Hierarchy. The total cumulative savings for the Proposed Development represent the total reduction over the baseline (21 tonnes of CO_2 savings against the baseline of 65 tonnes CO_2 per year equating to 32%).

Table 3: CO_2 Emissions after Each Stage of the Mayor's Energy Hierarchy.

CO_2 EMISSIONS (TONNES CO_2 ANNUALLY)		
Assessment	**Regulated**	**Unregulated**
Building Regulations ADL 2013 Compliant Baseline	65	37
After energy demand reduction	63	37
After low carbon technology	63	37
After renewables	44	37

Table 4: Regulated CO_2 Savings from Each Stage of the Mayor's Energy Hierarchy.

REGULATED CO_2 SAVINGS		
Assessment	**(Tonnes CO_2 Annually)**	**(%)**
Savings from energy demand reduction (over Baseline)	2	3%
Savings from low carbon technology (DH) (Over 'Be Lean')	0	0%
Savings from renewable technology (Over 'Be Clean')	19	30%
Total cumulative savings for the site (Over Baseline)	**21**	**32%**
Total Target Savings	23	35%
Annual Shortfall	2	3%

Table 5: Shortfall in Regulated CO_2 Savings

CO_2 EMISSIONS (TONNES CO_2 ANNUALLY)		
	Annual Shortfall (Tonnes CO2)	**Cumulative Shortfall (over a 30-year period) (Tonnes CO2)**
Shortfall	2	60

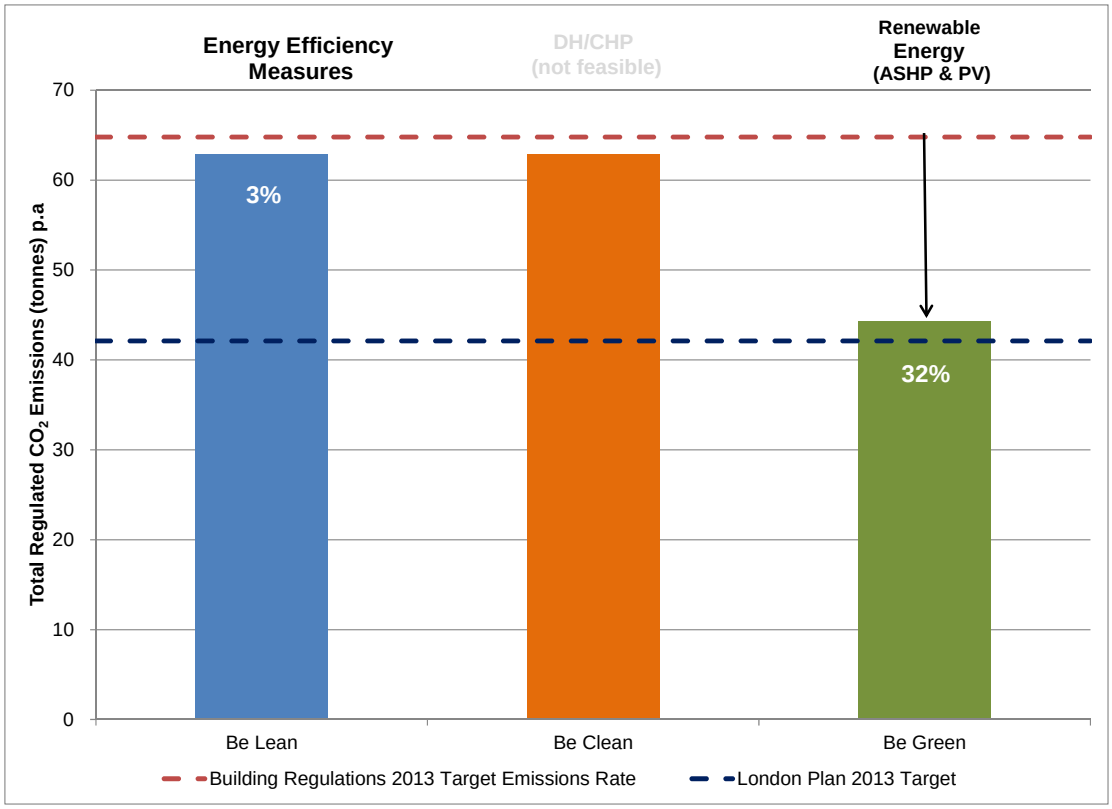

Figure 6: Estimated Proposed Development Regulated CO_2 Reduction.

5.4 Water Efficiency

The Proposed Development will aim to achieve a reduction in potable water use of approximately 25% over the BRE-established baseline performance. This will be achieved through the specification of low-flow sanitary fittings such as WC flushes, taps, showers and water efficient white goods, where specified.

A metered supply of wholesome water shall be provided to the incoming supply to the building, with all water-consuming plant or building areas, consuming 10% or more of the building's total water demand, to be fitted with sub meters or have water monitoring equipment integral to the plant or area. Each meter installed within the Proposed Development will have a pulsed output to enable connection to a Building Management System (BMS) for the monitoring of water consumption. A leak detection system will also be specified, capable of detecting a major water leak on the mains water supply within the building and between the building and the utilities water meter. Furthermore, a flow control device will be fitted to each communal or guest WC area/facility within the Proposed Development to ensure water is supplied only when needed. This will be either via a time controller i.e. an automatic time switch device to switch off the water supply after a predetermined interval, or a presence detector and controller i.e. an automatic device detecting occupancy or movement in an area, to switch water on and turn it off when the presence is removed. Implementation of these measures could provide significant reductions in the water use from the Proposed Development and will reduce the short-term impact on water supply resources in the area.

It is currently proposed that all landscaping specified on site will rely solely on precipitation, during all seasons of the year.

5.5 Materials and Waste

5.5.1 Materials

The design and choice of materials for a development influence the construction process and the embodied carbon of the development. The materials have been chosen to mimic and compliment the historic character of the surroundings and local context.

The structure of the proposed development is primarily made of concrete frame with a brick work. Light Buff brick specified reflects the stucco detailing of Victorian dwellings in the local area. Likewise the dark buff brick chosen reflects the darker materials used for the roof within the local context. The windows and doors in the proposed development will be of PPC aluminium in a bronze colour which compliments the colour palate of the brick. Furthermore, the winter gardens with have openable glazing with bronze coloured railings unifying the character of the building and setting it within the context.

Where possible, the development will aim for at least 10% of the total value of materials used to be derived from recycled and reused sources, before seeking fresh material, in line with the guidance provided within the *'Sustainable use of materials'* section of LBC's Sustainability CPG. Where new materials are required, preference will be given to materials with lower environmental impacts over their lifecycle, while the thermal performance of key building elements will be optimised. As such, any new materials employed in key building elements (roof, external walls, internal walls, upper and ground floors and windows) will be selected in line with the BRE Green Guide to Specification, with a low environmental impact (including embodied carbon) over the full life cycle of the building.

Furthermore, materials chosen will be robust, low maintenance and long lasting to suit the location and intended use. Materials will be chosen, where possible, which do not release toxins into the internal and external environment.

The proposal will aim at sourcing materials from responsible sources, for example through suppliers who participate in responsible sourcing schemes such as the BRE BES 6001:2008 Responsible Sourcing Standard. Where timber products are used, they will be obtained from sustainable sources, either Forest Stewardship Council or Programme for the Enforcement of Forestry Certification approved sources.

All thermal insulation products used in the building (i.e. external walls, ground floor, roof and building services insulation which includes any insulation required for any water pipes and storage systems) will have a low embodied impact relative to their thermal properties, as determined by the Green Guide to Specification ratings. Insulation materials for the residential element of the Proposed Development will be selected to have a Global Warming Potential of less than five, to ensure products are not selected which will cause depletion of the ozone.

Furthermore, where feasible, thermal insulation products used in the building will be responsibly sourced. The Proposed Development will minimise the use of virgin aggregates. Wherever possible, materials will be recycled and re-used (refer to the 'Waste' section of this report for further details).

5.5.2 Waste

The Proposed Development will provide easily accessible waste and recycling facilities during the construction and operational phases.

In line with BREEAM, a dedicated store will be provided to cater for the segregation and storage of operational recyclable waste volumes generated by the building, its occupants and activities. The Proposed Development includes design of 12, 1100 litre capacity bins which will be used by the staff. All non-recyclable and recyclable waste will be stored in the refuse and recycling store which will be collected form the main road (Crogsland road). The refuse and recycling store is internal to the building, located on the ground floor, to minimise any impact on neighbouring properties. The store shall be equipped with water and relevant drainage to be washed down at regular basis. A separate clinical refuse container will be collected by a private collection service.

In line with BREEAM requirements, it is anticipated that each dwelling will have provision of three internal storage containers, as follows:

a. A minimum total capacity of 30 litres

b. No individual container smaller than 7 litres

c. All containers in a dedicated non obstructive position

d. The storage containers for recycling are provided in addition to non-recyclable waste storage.

With respect to waste management during construction, in line with BREEAM requirements, a Site Waste Management Plan (SWMP) will be developed for the proposed scheme to identify the types and quantities of waste produced during every stage of demolition and construction. The SWMP will be produced as part of the EMP before on-site works begin and will look into the opportunities to minimise and reduce waste generation, such as:

- Attention to material quantity requirements to avoid over ordering and generation of wasted materials;
- Agreements with material suppliers to reduce the amount of packaging or to participate in a packaging return scheme;
- Implementation of a ‘just in time‘ material delivery system to avoid materials being stockpiled on-site for long periods of time, increasing the risk of their damage and disposal as waste;
- Reuse of materials on-site wherever feasible;
- Considering the re-use of construction materials when planning out works i.e. shuttering associated with concrete works will be used more than once prior to being disposed of;
- Segregation of waste at source where practical; and
- Reuse and recycling of materials off-site where reuse on-site is not practical (e.g. through use of an off-site waste segregation facility and re-sale for direct reuse or reprocessing).

LBC is committed to ensuring the appointed contractor will be registered with the Considerate Contractor’s Scheme to encourage implementation of best practices beyond statutory

requirements. Furthermore the contract for construction shall include best practices with regards to management such as access to the site, working hours, tree protection, visitor procedures, street cleaning, control of dust etc.

It is understood that London Borough of Camden does have its own kitchen waste recycling service, and it is proposed that home composting facilities and a home composting information leaflet is to be provided within the kitchen area or communal space for each dwelling or communal kitchen, where appropriate.

5.6 Nature Conservation, Biodiversity, Increasing Green Cover and Trees

The *'Charlie Ratchford Resource centre - Extended Ecological Phase 1 Habitat Survey Report', Greengage, January 2015,* has been produced by an appointed Suitably Qualified Ecologist (SQE), in line with BREEAM requirements, to review the existing ecological status of the Site, advising on measures required to ensure the minimisation of impacts on any existing features of ecological value and on enhancing the ecology of the Site.

This section explains how the Proposed Development addresses the London Policies 5.3 and 7.19, LBC's Core strategy 15 (CS15) Policy, Development Policies 22 and 24 and CPG 3-Sustainability. In line with BREEAM, London Plan and Local Policy requirements, the Proposed Development will aspire to enhance open space and ensure that, as a minimum, a neutral change in the Site's existing ecological value will occur, as per the BREEAM definition, stated within the Phase 1 Ecology Report produced by Greengage. Opportunities to achieve an enhancement in the ecological value of the Site have been considered that will aim to enhance biodiversity as far as practically possible taking into account the space constraints.

5.6.1 Nature Conservation

A Suitably Qualified Ecologist (SQE) for BREEAM purposes has been appointed to report on the ecological value of the site and to provide recommendations for protection and enhancement. An ecological assessment has been carried out to assess the potential effects of the Proposed Development on ecology and nature conservation resulting from the demolition, construction and operational stages.

Based on the site review the SQE found that the site of the Proposed Development on Crogsland Road is derelict land currently being used as a car park. Dense buddleia runs along the western border with some more scattered patches at the northern and southern end along with a small block of woodland. In general, the existing site where the Proposed Development is to be located is predominately covered by buildings, hardstanding, amenity grassland, introduced shrub and bare ground.

A desk top review was undertaken for the Proposed Development site to understand the extent and distribution of different flora and protected fauna species habitats on site. This review demonstrated that the assessment site and its surroundings have a low potential to support foraging bats, a low to moderate potential for the presence of invertebrates and a moderate potential nesting bird habitat. The potential exception to this is the small block of woodland at the southern end of the western half of site. Due to moderate bird nesting potential, it is recommended that any clearance of those areas are undertaken outside the bird nesting season or if clearance is required within this period, an ecologist will be required to be appointed to

confirm absence of nesting birds. However, overall this area is not considered to be an ecologically diverse habitat and is considered to be of low ecological value.

During the construction phase, to avoid any potential impacts on ecological receptors, best practice working methods on site will be followed, where relevant.

The impact of the Proposed Development on the Site and surrounding area's biodiversity will be minimised during the construction phase, by following best practice principles, such as:

- Nomination of a 'Biodiversity Champion';
- Training of site workforce on how to protect site ecology;
- Recording of actions taken to protect biodiversity during construction; and
- Programming of site works to minimise disturbance to wildlife, where flora and/or fauna habitats exist on site.

To ensure ongoing nature conservation, the long term impact of the Proposed Development will be managed through a landscape and habitat management plan, appropriate to the Site. The plan will cover, as a minimum, the first five years after project completion, to be in line with the requirements of BREEAM Issue LE5 – Long Term Impact on Biodiversity. It will be handed over to the building occupants and will include:

- Management of any protected features on the Site;
- Management of any new, existing or enhanced habitats; and
- A reference to the current or future site level or local Biodiversity Action Plan.

5.6.2 Enhancement to Biodiversity and increasing Green Cover

Under the current proposals the patches of ephemeral/short perennial plants associated with the northern end of the Proposed Development site will be lost and replaced by a small area of wildlife planting.

The SQE recommends that any areas of soft landscaping incorporate planting of wildlife value as detailed within Section 9 of the Phase 1 Ecology Report. These plants will attract bees and butterflies that complement the Camden Local Biodiversity Action Plan (BAP) targets.

Other additional recommendations from the SQE, for enhancing the habitat for fauna, are expected to be implemented in the Proposed Development. They include the installation of:

- Bat boxes;
- Bird boxes;
- Individual bee house;
- Individual hedgehog house;
- Invertebrate habitat wall; and
- Bird feeders.

Furthermore, a green roof is proposed as a SUDs measure which will also benefit in enhancing ecology on site.

Based on the BREEAM methodology, a minimal overall change in species per hectare as a result of the Proposed Development is calculated as -0.85 which is categorised as a neutral enhancement, defined as a change in species value greater than -3 and less than or equal to 3, as a result of the Proposed Development, allowing for one credit to be targeted for BREEAM Issue LE04 – Enhancing Site Ecology.

5.6.3 Trees

A '*Charlie Ratchford Resource Centre - Tree Survey, Implications Assessment & Constraints Plan', Greengage, January 2015,* has been carried out on the site of the Proposed Development to provide an assessment of the arboricultural value of the trees based on their current quality and to provide recommendations, to help inform any initial design and site layout considerations for a proposed re-development of the assessment site.

The site is predominantly populated with buddleia which needs eradication since it is damaging the present site. Only two mature trees with noteworthy landscape values exist on the proposed site adjacent to the site entrance.

To the south of Crogsland Road site contains the majority of the tree population as part of a woodland block, which comprises of early mature to semi mature silver birch and alder. This area has potential for informal recreation and amenity interest to Crogsland Road.

An Arboricultural Method Statement will be prepared to protect retained trees during redevelopment. A management plan has been commissioned for trees on the woodland block which would benefit from thinning to the best stems.

The arboriculturalist identified that a majority of the existing tree population on site is of good quality, exhibiting both pleasing form and good structure and recommended that the higher quality trees should be considered a constraint and retained and protected. It is indicated as unlikely, given Local Authority policy that any of the street trees or woodland group would be approved for removal without proper mitigation.

Furthermore, scope exists for additional tree planting on Crogsland Road, particularly to the north where there is currently no tree cover. It is recommended that this should be planned into the proposals as mitigation for loss of few trees at the site.

5.7 Adapting to climate change and Greening the City

The Proposed Development has been designed to adapt to the effects of climate change through passive design measures within the Proposed Development to prevent overheating by minimising solar gains in the summer, in line with *Policy 5.9* of the London Plan. This includes the following design objectives:

- minimise internal heat generation through energy efficient design;
- reduce the amount of heat entering the buildings in summer
- manage the heat within the building

- use passive ventilation (purge ventilation);
- use mechanical ventilation; and
- provide energy efficient cooling system.

The residential dwellings which are part of the Proposed Development have been modelled under the SAP methodology and tested against criteria set in SAP Appendix P: Assessment of internal temperature in summer. The tested dwellings have shown to comply with the criteria as described in Appendix P, achieving a low propensity for high internal temperatures.

The following measures were introduced in order to limit the effects of solar gains in summer:

- specifying low energy lighting and encouraging the use of low energy equipment to reduce internal heat generation;
- specifying dual aspect dwellings to allow for cross ventilation where possible and allowing fully opened windows at upper floor flats;
- incorporation of high performance glass throughout the scheme to minimise solar gains in summer whilst providing adequate daylighting levels for occupants;
- designing balconies that work as overhangs to provide shading to the units below during the summer months without altering the daylight penetration in the mid-season and heating period; and
- using efficiently thermal mass to manage the risk of overheating.

Due to high levels of traffic resulting in high ambient noise and air quality issues, the use of natural ventilation via openable windows is constrained. Therefore, mechanical ventilation with heat recovery (MVHR) will be introduced in the extra-care residential areas and the majority of the ground floor areas. Variable speed drives and best practice values of Specific Fan Power (SFP) will be specified.

Active cooling will be specified for the café and restaurant areas as well as the staff rooms, lounges, activity room and meeting rooms located in the ground floor of the Proposed Development. The high efficiency cooling system will allow for enhanced thermal comfort in the form of Variable Refrigerant Flow (VRF) units.

Table 6 below also lists the passive design and energy efficiency measures included in the scheme. Please refer to the '*Energy, Carbon Dioxide Emissions and Renewable Energy'* section above for more details.

Table 6: Proposed passive design measures.

PROPOSED PASSIVE DESIGN AND ENERGY EFFICIENCY MEASURES	
Technology	**Method of CO_2 Reduction**
Fabric Design	Improved U-values of the thermal elements (wall, floor and roof) where feasible and controlled fittings (windows and doors) over the

	minimum *Building Regulations ADL A 2013* requirements.
Building Envelope	Improved building air-tightness beyond the *Building Regulations ADL A 2013* minimum requirements.
Promoting Natural Daylight	Natural lighting will be promoted through the design to reduce the energy use and CO2 emissions of the building by minimising the use of artificial lighting.
Building User Guide	Provide separate Building User Guides to the staff and residents advising on how to use the building efficiently (in line with the BREEAM requirements).
Efficient Lighting	The following measures will be introduced to reduce energy consumption associated with lighting: • use of energy efficient lights; • Passive Infrared Sensor (PIR) activated lighting for selected appropriate areas (e.g. corridors and WC areas) to minimise energy use in unoccupied areas; and • dimmable and zoned lighting, where feasible.
Efficient Heating, Ventilation and Air Conditioning (HVAC) Systems	Fan speed control will be specified to match air supply rates, where feasible alongside improved SFP for mechanically ventilated areas. Thermal comfort in the flats will be maintained via high efficiency MVHR units. Efficient gas fired boilers will provide domestic hot water to the whole of the building. Space heating from gas boilers will be supplied only to the dwellings. The space heating demand of the communal ground floor areas will be supplied by efficient VRF units. Thermal comfort in the non-residential elements during summer months will be maintained via high efficiency cooling system, more specifically through VRF heat pump systems.
Monitoring and efficient management of energy usage	A central Building Management System (BMS) will be provided. The BMS will allow optimised management of the landlord services and mechanical plant.
Metering	Energy metering of all major plant equipment and primary landlord services will be provided. This data would be collated via the BMS.
Vertical Transportation	Energy efficient lifts will be specified for the Proposed Development.
Energy Efficient Equipment	Energy efficient white goods and equipment will be provided to reduce CO_2 emissions associated with non-regulated energy uses where provided.

The building will be constructed to a high standard to ensure its durability and will be designed to provide for flexibility of uses during their projected operational life.

To encourage non-carbon based transport, secure, safe and weather-proof cycle parking spaces will be provided for staff use, while the provision of car parking will be minimised (refer to the 'Transport' section of this report).

5.7.1 Tackling Increased Temperature and Drought

The effects of solar gains in the summer and thus overheating will be minimized by specifying low energy lighting and encouraging the use of low energy equipment to reduce internal heat generation. Thermal mass will be used efficiently to manage the risk of overheating. Dual aspect dwellings will be designed to allow for cross ventilation where possible and allowing fully opened windows at upper floor flats. High performance glass will be incorporated throughout the Proposed Development.

Additionally, balconies will be designed that work as overhangs to provide shading to the units below during the summer months without altering the daylight penetration in the mid-season and heating period. Thermal mass will be used efficiently to manage the risk of overheating.

A green roof has been proposed as part of the development's design to keep the heat out and to keep the building and its surroundings cool.

5.7.2 Flooding

A Final Flood Risk Assessment (FRA), '*Charlie Ratchford Extra-Care Scheme, Flood Risk Assessment'*, February 2015, Peter Brett Associates' has been undertaken for the Proposed Development.

The FRA examines the practical flood risk issues at the site including the identification of all the potential sources of flooding at the site from all sources (i.e. fluvial, tidal, pluvial, groundwater, surface water) and assesses the existing flood risk at the site and the potential impact of the proposals. Consideration of the flood risk implications, taking into account the potential allowance for climate change over the lifetime of the development, and the identification of the measures to mitigate flood risk have additionally been reviewed within the FRA.

An overview of the flood risks of all potential sources of flooding and any mitigation measures proposed, where relevant, are provided below.

- **Tidal / Fluvial, Residual – Low Risk:** The Proposed Development site lies within Flood Zone 1, which indicates that the site is within the area of 'Low probability' (less than 1 in 1000 (0.1%) annual probability of fluvial and tidal flooding.

- **Surface Water, Low to Medium Risk:** The Environmental Agency's (EA) "Risk of Flooding from Surface Water" map, broadly demonstrates a 'Very Low' risk of surface water flooding (i.e. less than 1 in 1000 chance in any given year), with potential flow likely to be directed towards the Chalk Farm Road via Crogsland Road. This signifies that a 'Low' to 'Medium' risk of surface water flooding is identified on Chalk Farm Road. Furthermore, there is a flow route along Prince of Wales Road entering the residential area and Crogsland Road adjacent to the site, which might cause a 'Low' risk of surface water flooding adjacent to the site, defined as between a 1 in 1000 (0.1%) and 1 in 100 (1%) annual probability of flooding.

- **Ground Water and Sewer Flooding, Low Risk:** A ground investigation has been undertaken as part of the FRA which indicates that the ground conditions typically comprise Made Ground to about 1 and 2 m depth underlain by the London Clay Formation to an investigated depth of 30 m below ground level, with the ground water was found to be between 2 and 4 m below ground level. Additionally, the Strategic Flood Risk Assessment

(SFRA) states that no groundwater flooding incidences have occurred near or at the site and reflect that there is no specific indication that the site has suffered any exterior or interior sewer flooding issues.

- **Reservoirs, Negligible Risk:** The Flood Risk from Reservoirs map from the EA website demonstrates that there are no reservoirs close to the site and the site is at a negligible residual risk of flooding from reservoirs.

The development will incorporate a surface water drainage strategy designed to cope with to cope with the heaviest of rainfall expected over the buildings lifetime (i.e. around 100 years for residential development), including an allowance for the impact of climate change, and providing on-site attenuation measures with controlled discharge to the adjacent Thames Water sewer.

A combination of SuDs measures have been specified in line with the London Plan drainage hierarchy to collect surface water and discharge at a controlled rate.

A green roof has been proposed as part of the design which is effective for gradual release of water through controlled outlets on the roof. All paving including footways and mobile parking areas will be constructed in a porous paved constriction and deep porous sub-base, except for the short section of service road to the north. These SUDs measures will collect surface water and discharge at a controlled rate providing a significant reduction in runoff rates from the site.

This results in a maximum discharge rate from the proposed site that is less than 5 l/s, which is a notional Greenfield runoff rate and it is the lowest discharge rate practicably achievable from any site.

The FRA further recommends that ground floor levels will include a suitable freeboard above surrounding ground levels to prevent the egress of surface water during an extreme rainfall event.

It is further anticipated that the possibility to use water butts and rainwater harvesting tanks will be investigated at detailed design stage in order to reduce potable water consumption. Any additional sustainable devices introduced to the scheme will provide an overall betterment to the storm water management strategy.

5.8 Pollution Management – Land, Air, Noise, Light and Water

5.8.1 Land Contamination

Ground Technology Services (GTS) has been appointed by LBC to carry out a ground investigation in order to obtain information on the geotechnical and chemical condition of the underlying soils for the Proposed Development. They have produced a '*Final Site Investigation Factual Report, Charlie Ratchford Extra-Care Scheme, Crogsland Road, Camden, Ground Technology Services, October 2014*'.

The results of the ground investigation of the land associated with the Proposed Development show that two engineering horizons have been identified of Made Ground and the London Clay Formation. No asbestos was found on site during the ground investigations.

It is understood that the site is not deemed significantly contaminated and no remediation works are necessary to facilitate the development.

5.8.2 Air Pollution

A detailed '*Charlie Ratchford Extra Care Facility-Air Quality Assessment',* Ramboll, January 2015, has been undertaken to provide an assessment of the potential impacts on local air quality resulting from the Proposed Development as well upon it.

The potential risk from demolition/construction operations was also considered and where necessary, control and mitigation measures were proposed to minimise, or remove identified significant air quality impacts.

In line with IAQM Guidance, the sensitivity of the area surrounding the development was determined to be 'high' for dust soiling and health effects. A 'medium' risk is anticipated for earthworks before mitigation and a 'low' risk for demolition and construction. However the overall significance of the effects, with mitigation, was concluded not significant. Moreover this impact is anticipated to be short term and temporary for the duration of the construction phase.

The NO_2 level at the application site are all below the 60µg/m^3 hence there will be no breach of one-hour objective of 200µg/m^3. Likewise, the PM10 levels at the application site would be within the mean objective of 40µg/m^3.

The report concluded that the air quality at the site is considered suitable for the intended use of the Proposed Development.

5.8.3 Noise

A '*Final Noise Impact Assessment, Ramboll, January 2015'* has been carried out based on the results of a site survey.

The predominant external noise sources considered within this assessment are road traffic on the eastern façade and activity noise from a sports pitch on the western façade.

In order to mitigate the impacts of noise from the sports pitch and protect the residential amenity, glazing should be specified to achieve at least R_w 33dB and the external façade excluding the glazing R_w 50 dB. This is to ensure that the background noise levels, which range from 49-57dB L_{Aeq} in the day and 45-49dB L_{Aeq} in the night, are not disturbing to the residents. Furthermore, it is recommended that all residential spaces will incorporate either mechanical ventilation, or natural ventilation via acoustic inlets and outlets to mitigate the predicted external noise levels experienced by the Proposed Development buildings.

The noise assessment also determines the existing background noise levels at locations deemed to be representative of the noise levels experienced at the nearest sensitive receptors. The rating noise levels of plant will be designed to be 3 dB(A) below the background noise level, in accordance with BS 4142. It is anticipated that the plant will not have a significant impact and suitable noise control measures will be implemented during detailed design, where necessary.

There will be no significant effect of the operation of the Proposed Development on the road traffic noise in the surrounding area due to the lack or staff or resident parking apart from a single drop-off bay.

5.8.4 Water Pollution

The London plan and SPG suggests incorporation of Sustainable urban drainage systems (SuDS) to encourage good environmental practice to reduce risk of water pollution. The aim is to achieve greenfield run-off rates and ensure and ensure that surface water run-off is managed as close to its source as possible in line with drainage hierarchy.

Furthermore the SPG recommends connection to public foul sewer or combined sewer network where reasonable for residential developments discharging domestic sewage. Care will be taken to ensure connection to correct drain to avoid 'mis-connected' pipes which is a common cause of pollution to rivers and streams.

Connection to the public sewer network is considered a viable option for the Proposed Development as there is a combined sewer immediately outside the development site. The drainage in this area is considered critical and therefore the minimum discharge of 5 l/s will be proposed. Storm water will be required to be attenuated on site prior to discharge into the public sewer. This is thought to minimise the impact of flooding offsite.

The development will incorporate a surface water drainage strategy designed to cope with the heaviest of rainfall expected over the buildings lifetime (i.e. around 100 years for residential development) and providing on-site attenuation measures with controlled discharge to the adjacent Thames Water sewer.

A combination of SuDs measures have been specified in line with the London Plan drainage hierarchy to collect surface water and discharge at a controlled rate.

A green roof has been proposed as part of the design which is effective for gradual release of water through controlled outlets on the roof. The green roof will slow runoff and help filter out pollutants to benefit the overall water quality.

All paving including footways and mobile parking areas will be constructed in a porous paved constriction and deep porous sub-base, except for the short section of service road to the north. These SUDs measures will collect surface water and discharge at a controlled rate providing a significant reduction in runoff rates from the site. The use of porous surfaces will trap pollutants and will allow for natural biological breakdown.

Mitigation measures to minimise water (ground and surface) pollution occurring on the Site during construction activities will be implemented by the Principal Contractor in compliance with the requirements of the Considerate Contractor Scheme, Code of Practice for Deconstruction and Construction Sites and in line with the applicable procedures of the 'Preventing Pollution' section of the Environment Agency's 'Building a Better Environment' checklist.

5.8.5 Light Pollution

The Proposed Development will aim to ensure that external lighting (including security lighting, where necessary) is concentrated in the appropriate areas and that upward lighting and sky glow is minimised, reducing unnecessary light pollution, energy consumption and nuisance to neighbouring properties.

External lighting is proposed to serve main entrance area, communal and courtyard gardens, terrace, maintenance access and any other external areas that may require to be accessed, as

necessary and shall be designed to comply with the Secure by Design requirements and appropriate illumination levels as defined in BSEN12464-2:2007. The perimeter of the building and any vehicle areas within the boundary of the site shall be externally illuminated to provide a safe and secure environment.

Furthermore the external lighting strategy will be designed in compliance with the 'British Standards (BS) 5489-1: 2013+A2:2008 Lighting of roads and Amenity Areas' and the 'Institute of Lighting Practitioners (ILP) Guidance Notes for the reduction of obstrusive light, 2011' or other relevant applicable standards and will not compromise the safety of any persons using the building.

Finally, all external lighting shall be controlled by dusk to dawn photocell switching with contactors as appropriate. There is to be a manual override switches within the concierge area.

5.9 Microclimate

A *'Detailed Daylight and Sunlight Report, Proposed Development at Crogsland Road London NW1, GVA, January 2015'* has been prepared by GVA as part of the planning application for this development. A review of the potential effects to daylight and sunlight amenity of residential neighbours adjacent to the Proposed Development was undertaken by GVA through the assessment of the Vertical Sky component (VSC), the Annual Probable Sunlight Hours (APSH) and the No Sky Line contour parameter.

The Average Daylight Factor (ADF) was also assessed within this report to demonstrate the consideration of the quality of internal daylight and sunlight amenity within the newly proposed habitable rooms.

The study identified that nearly all facades assessed of the existing neighbouring dwellings considered achieve in excess of the minimum recommended VSC value of 27%. Where the minimum VSC could not be met, the resultant VSC values are considered acceptable and adequate for an urban environment.

The APSH analyses indicated that all windows assessed would retain in excess of 25% total APSH, of which 5% are in winter months or experience slight unnoticeable differences throughout the year. In terms of the internally assessed No Sky Line contour analysis no difference post-development is identified.

Internal daylighting calculations show that all bedrooms achieve the minimum recommended target for ADF of greater than 1%. With respect to the Living/Kitchen/Dining rooms, in common with the majority of contemporary dwellings the kitchen area is located at the rear of a large open plan area and is not designed to receive natural light directly. They achieve greater than the minimum recommended target of at least 1.5% ADF. As recommended in the BRE guidance, the majority of living areas are served by southerly oriented windows, ensuring access to available sunlight. The technical assessments indicated adequate APSH levels for an urban environment.

In overall conclusion, the effects of daylight and sunlight amenity both to existing neighbours and future occupants are considered fully compliant with London Borough of Camden Planning Policy and therefore acceptable.

5.10 Sustainable Construction

It is expected that a Construction Environmental Management Plan (CEMP) will be developed and will define the broad policies, procedures and management framework for the implementation of

specific environmental and management controls during the construction works. The CEMP will set out measures to avoid or minimise environmental impacts and will be discussed and agreed with LBC prior to commencement of construction. It is intended that the EMP will be periodically reviewed and regular environmental audits of its implementation will be undertaken during the construction phase of the Proposed Development.

In line with BREEAM requirements, the Principal Contractor will comply with the 'Considerate Contractors Scheme' ensuring that the Site is managed significantly beyond best practice. Requirements for environmental control, based on good working practice, such as careful programming, resource conservation, adhering to health and safety regulations and quality procedures would be incorporated.

The principal contractor will be required to monitor and/or adopt at least two/all of the Construction Site Impacts listed below:

- Monitor, report and set targets for CO_2 production or energy use arising from site activities;
- Monitor and report CO_2 emissions or energy use arising from commercial transport of construction materials and waste to and from site;
- Monitor, report and set targets for water consumption from site activities;
- The trade contractors will be required to demonstrate how they will meet the set targets and how the potential impacts will be offset, reduced or minimised.

The Principal Contractor should ensure that all site timber used on the project is sourced in accordance with the UK Government's Timber Procurement Policy. Additionally, the Contractor for the project should operate an Environmental Management System covering their main operations. The EMS must be either third party certified, to ISO14001/EMAS standards or the structure of the EMS is in compliance with BS8555:2003 and has completed phases one to four of the implementation stage.

Mitigation measures to minimise water (ground and surface) pollution occurring on the Site during construction activities will be implemented by the Principal Contractor in compliance with the requirements of the Considerate Contractor Scheme, Code of Practice for Deconstruction and Construction Sites and in line with the applicable procedures of the 'Preventing Pollution' section of the Environment Agency's 'Building a Better Environment' checklist.

5.10.1 Sustainable Transport

The relevant London Plan polices to this section include 6.1, 6.3, 6.9, 6.10 and 6.13, Policy CS11 of LDF's Core Strategy as well as the relevant polices within the Development Policies Document.

The '*Charlie Ratchford Extra-Care Scheme Transport Statement, Peter Brett Associates, January 2015'* has been prepared in support of the planning application for the Proposed Development. This report has assessed the effect of the Proposed Development on the capacity, safety and environmental impact of the transport network at and in the vicinity of the Site.

The existing transport network has been assessed for the Proposed Development site. The site is located in Central London and benefits from very good accessibility to public transport, having a

Public Transport Accessibility Level (PTAL) of 5 (Very Good). It is within walking distance of number of bus routes, underground and railway stations.

Figure 7 below illustrates local transport nodes close (within walking distance) to the site.

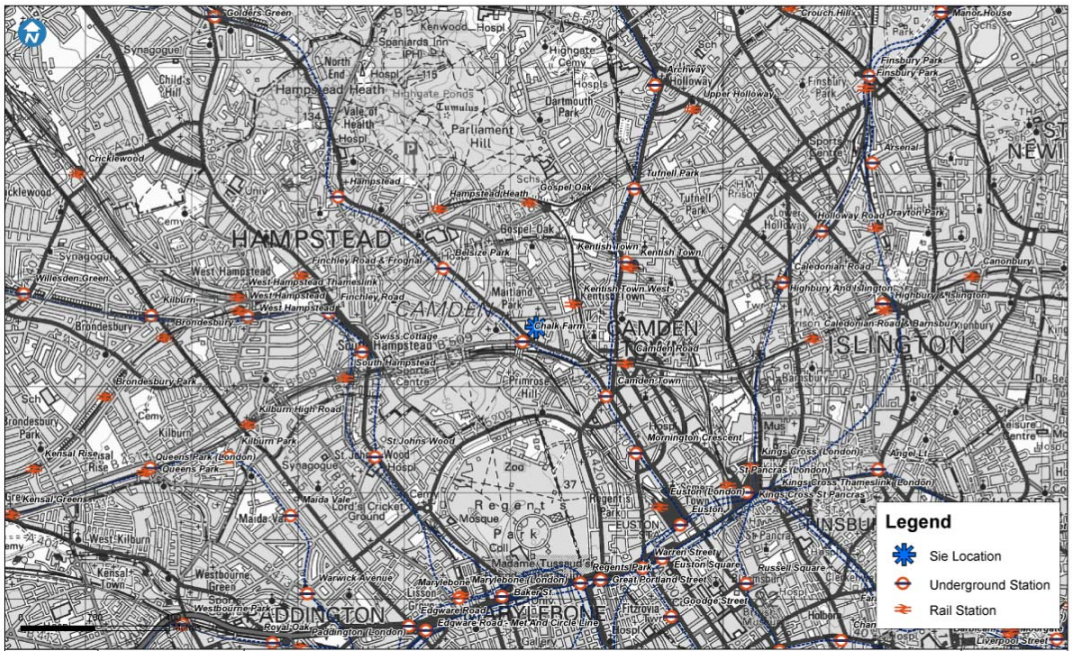

Figure 7: Map showing Proximity of Local Transport Nodes to Proposed Development (Source: Transport Statement, Jan 2015)

The Proposed Development comprises of a relocation of the existing services provided at the Charlie Ratchford Resource Centre (CRRC) to the proposed car-free Charlie Ratchford Extra-Care (CREC) Scheme on Crogsland Road opposite to the existing CRRC site.

The site has been designed to have no car parking in line with the relevant London Plan and LBC transport policies, with the exception of eight mobility scooter parking spaces located on the ground floor adjacent to the buggy/ cyclist entrance.

A new pedestrian and cycle access is proposed to the site. Pedestrians are proposed to access the site via the main entrance to the development on Crogsland Road. Cyclists or buggy users can access the site via the other entrance of approximately 2m wide further north of the main entrance to access the cycle/ buggy store adjacent to the same entrance.

It is further proposed, that delivery and servicing vehicles will access the site via northern entrance of Crogsland Road with the implementation of the Proposed Development. Deliveries will also be provided, on-site, via the same northern entrance of Crogsland Road. The refuse store is located to the north of the Proposed Development; while collection is made via the maintenance entrance adjacent to the refuse store. An Emergency and fire strategy 'Outline Fire Strategy' prepared by URS (October 2014) concludes that fire access will be via Crogsland Road.

There is an existing minibus service for the Charlie Ratchford Resource Centre with currently three minibuses servicing the present site, with an average of approximately 30 trips per day. It is understood that the existing minibus services arrangements and time will mostly remain the same as per the current situation. Access to the site will be on Crogsland Road, dropping off/ picking up residents in front of the main entrance. Swept path analysis of the proposed minibus route from the main entrance has been conducted within the Transport Statement to show the minibus' ability to manoeuvre adequately without affecting the operation of the highway network and demonstrate that the Proposed Development is capable to accommodate the minibuses on-site.

It is proposed that cycle parking will be provided at the same location as the buggy parking adjacent to the deliveries entrance. There are also changing and shower facilities on the ground floor for cyclists which are assumed to be the staff at the new development. The level of provision is in accordance with the Camden Planning Guidance 7 (CP7) Transport; Camden's Development policies; and the London Plan Standards, Early Minor Alterations from 2012.

The development impact has been assessed within the Transport Statement and it has been estimated that the Proposed Development will generate a daily total of 138 trips by all modes; including nine trips during the morning peak hour and 10 trips during the evening peak hour. The development impacts on the road and public transport network in the vicinity are considered negligible.

5.11 Socio-economic Factors

The development aims to reduce inequality while preserving the social mix, by building resilience in individuals, communities, businesses and the Council itself. The scope of the scheme consists of a Day Centre and sheltered residential housing intended for occupancy by the elderly, and is suitable to accommodate residents with Dementia to provide secure and supported independent living and offer a full range of care to help people to go about their daily lives and live safe and independent lives for as long as possible.

The Proposed Development is located centrally within Camden and is in close to local amenities, providing a sustainable development for the people needing housing care and Day Centre Services within Camden and the surrounding areas. The development of the extra care housing will provide further employment opportunities for people within Camden whilst its proximity to local services and excellent accessibility to public transport will add to the sustainability of the development as a whole.

6 CONCLUSIONS

This Sustainability Statement has assessed the Proposed Development against the standards set out in the London Plan and the local LBC sustainability objectives. The key beneficial impacts of the scheme in relation to sustainability can be summarised as follows:

- Design based on high quality principles in an area with excellent access to public transport;
- Provision of buildings visually integrated in the surroundings;
- Good practice environmental design, including good ventilation and acoustics;
- A predicted reduction in CO_2 emissions of circa 30% in comparison with the baseline. This will be achieved through the incorporation of energy efficiency measures and proposed Air Source Heat Pump (ASHP) systems as well as Photovoltaic (PV) panels of circa 223 m^2 area (42.4 kWp);
- Provision of water efficient sanitary ware and specification of water leak detection systems;
- Provision of a green roof as a measure and to minimise water run-off and overheating within the development;
- Provision of a site that is accessible to all, including the disabled and promotes pedestrian and bicycle access and safety;
- Extra-care residential accommodation designed to Lifetime Homes standards;
- Maximisation of recycling and implementation of the best practicable environmental options for non-recyclable residual waste;
- Incorporation of 'Secured by Design' principles in the design process;
- Provision of safe, secure and waterproof electric buggy spaces for residents and users of the Day Centre as well as bicycle storage spaces, changing and shower facilities for cyclists, which are assumed to be the staff at the new development;
- Adherence to sustainable construction site management practices including:
    - Sourcing timber from reclaimed, reused or responsible sources;
    - Developing and implementing a Site Waste Management Plan (SWMP);
    - Signing up to the Considerate Constructors Scheme and meeting best practice; and
    - Reducing environmental impacts of the construction site.

Under the current design intent, the Proposed Development is targeting a percentage of 70.21%, meeting all minimum standards, towards pursuing a BREEAM 'Excellent' rating in line with the Employer's Requirements for this project.

The BREEAM pre-assessment carried out during the design development, aimed at establishing a strategy for achieving the required targets. The pre-assessment' summary is presented in Appendix A of this report.

The sustainability strategy described in this report sets out the proposed measures and commitments that have been and will continue to be incorporated into the design development process, the construction and operation of the buildings in order to optimise its environmental

performance and result to a scheme that can be designed, constructed and operated in a sustainable way.

APPENDIX A: BREEAM NEW CONSTRUCTION 2011 MULTI-RESIDENTIAL PRE-ASSESSMENT REPORT

URS

Charlie Ratchford Extra Care Scheme

BREEAM New Construction 2011- Multi-residential Preliminary Assessment Report

47071124

Prepared for:

London Borough of Camden

UNITED KINGDOM & IRELAND

REVISION SCHEDULE					
Rev	**Date**	**Details**	**Prepared by**	**Reviewed by**	**Approved by**
1	03/02/2015	Draft- For Planning	**Richa Kumar** Sustainability Consultant	**Sofia Kesidou** Associate Sustainability Consultant	**Ivan Rodriguez** Technical Director
2	06/02/2015	Final- For Planning	**Richa Kumar** Sustainability Consultant	**Sofia Kesidou** Associate Sustainability Consultant	**Ivan Rodriguez** Technical Director

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The methodology adopted and the sources of information used by URS Infrastructure & Environment UK Limited in providing its services are outlined in this Report. The work described in this Report was undertaken between **August 2014** and **February 2015** and is based on the conditions encountered and the information available during the said period of time. The scope of this Report and the services are accordingly factually limited by these circumstances.

Where assessments of works or costs identified in this Report are made, such assessments are based upon the information available at the time and where appropriate are subject to further investigations or information which may become available.

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1 EXECUTIVE SUMMARY

URS has been commissioned on behalf of London Borough of Camden (LBC) to undertake a BREEAM preliminary assessment of the proposed Charlie Ratchford Extra Care scheme, located in the London Borough of Camden (herein referred to as the 'Proposed Development').

BREEAM (Building Research Establishment's Environmental Assessment Method) is the world's leading and most widely used environmental assessment method for buildings, since it was first launched in 1990.

The BREEAM methodology covers the following environmental performance categories:

- **Management**
- **Health and Wellbeing**
- **Transport**
- **Energy**
- **Water**
- **Materials**
- **Waste**
- **Pollution**
- **Ecology**
- **Innovation**

Information and assessment assumptions contained in this report have been based on a meeting with the project team on 22/10/14, specialist reports provided for planning purposes and subsequent communication with the design team.

The Proposed Development under the current design intent is targeting a percentage of 70.21%, meeting all minimum standards, towards pursuing a BREEAM 'Excellent' rating in line with the Employer's Requirements for this project. Embedded within the preliminary assessment is the commitment to meet the percentage targets for un-weighted BREEAM credits for Energy, Water and Materials categories, in line with section 9.11 of London Borough of Camden's Planning Guidance CPG 3. Approximately 62.96% of the un-weighted BREEAM Energy credits available, 66.67% of Water credits available and 53.85% of Materials credits available have been targeted for the Proposed Development. This exceeds the minimum percentages required by LBC's Sustainability Planning Guidance CPG 3 where at least 60% of the un-weighted BREEAM Energy credits available, at least 60% of the un-weighted BREEAM Water credits and at least 40% of the un-weighted Materials credits available should be achieved.

It is recommended that the initial pre-assessment is revisited during the design development stages, in order to assess performance in more detail and identify and review potential further uplift credits that could be pursued in order for a greater margin to be established. We suggest a margin of 3-4% over the minimum percentage threshold of the BREEAM rating required.

At this stage additional uplift credits have also been identified for the Proposed Development, which would need to be revisited during the detailed design stages. An indicative potential score of 73.35% has been estimated as possible and as a margin to achieve the minimum required BREEAM score of 70% for an 'Excellent' rating. Table 1 and Table 2 below, indicate the BREEAM rating level with the 'Targeted' and the potential 'Additional Uplift credits' score for the Proposed Development.

This BREEAM pre-assessment report refers to actions and requirements that mainly address the delivery of the Design Stage (Interim) element of the BREEAM assessment. At the time of the formal assessment, the contractor will need to deliver all credits identified as targeted upon completion of the scheme and ultimately provide all evidence to complete the assessment at post construction stage.

The BREEAM preliminary assessment is pending a few credits which may affect the BREEAM score currently targeted and uplift the subsequent pursued rating to 'Excellent'.

2 INTRODUCTION

URS has been commissioned by the Client (LBC) to undertake a BREEAM preliminary assessment for the proposed Charlie Ratchford Extra Care scheme located in the London Borough of Camden (herein referred to as the 'Proposed Development'), in support of the planning application, prepared by the Client.

The Proposed Development contains a mixture of self-contained extra care high dependency units (for example for people with Dementia) for older people on the first to fifth floor and communal/non-domestic spaces consisting of the Charlie Ratchford Resource Centre on the ground floor. The Resource Centre will be a day centre incorporating a café/restaurant with associated kitchen, activity and meeting rooms, and a lounge and management suite, which can also be used by the residents of the dwellings. 38no. extra-care residential units consisting of one or two bedroom flats are currently proposed. The two elements of the scheme share the same entrance.

The Proposed Development will aim to satisfy Section 9 of London Borough of Camden's (LBC) Camden Planning Guidance document CPG 3- Sustainability (September 2013). This section requires that:

- 500sq m or more of non-residential floor space will need to be designed in line with BREEAM- specifically a BREEAM Multi-residential assessment should be undertaken for buildings which contain a mix of residential accommodation (including student halls of residence, key worker accommodation, care homes and sheltered housing).

The Proposed Development will also aim to satisfy DP22 – *Promoting sustainable design and construction* as stated within the Camden Development Policies 2010-2025 Local Development Framework which states:

- The Council will promote and measure sustainable design and construction by expecting non-domestic developments of 500sqm of floor space or above to achieve "Very Good" in BREEAM assessments and "Excellent" from 2016 and encouraging zero carbon from 2019.

In addition to DP22, Camden's Sustainability Planning Guidance CPG 3, section 9.11 states that a BREEAM 'Excellent' rating is *strongly encouraged* from 2013 onwards in accordance with Development Policy DP22 - *Promoting sustainable design and construction*. This policy also states minimum percentages required by LBC, where at least 60% of the un-weighted BREEAM Energy credits available, at least 60% of the un-weighted BREEAM Water credits and at least 40% of the un-weighted Materials credits available should be achieved.

A preliminary BREEAM 2011 assessment review meeting was undertaken with the design team on 22nd October 2014 for the Proposed Development under the BREEAM Multi-Residential scheme, as recommended within the LBC Planning Policy guidance. The meeting was held at the URS offices on 6-8 Greencoat Place, in Victoria, London. The following were in attendance:

- Ian Penfold (EC Harris – Project Manager)
- Raymond Parr PRP Architects - Architect)

- Nerissa Shepherd - (London Borough of Camden – Developer's representative)
- Ruth Geeson- (Greengage- BREEAM AP and Representative for Ecologist)
- Sofia Kesidou – URS Sustainability
- Richa Kumar– URS Sustainability

Credit issues were discussed with the project team throughout this stage and two scenarios have been subsequently established. Under the 'Targeted' scenario, credits that are considered achievable under the current design intent and have been determined in order to ensure that a minimum BREEAM 'Excellent' rating, in line with the Employer's Requirements for this Proposed Development, and the specific un-weighted BREEAM category percentages specified by LBC could be met. Additional uplift credits have further been identified for the Proposed Development, which could be pursued during the detailed design stages, to attain an indicative potential score of 73.35% in order for a margin to be established to the minimum required BREEAM score of 70% for an 'Excellent' rating.

It is recommended that the initial pre-assessment is revisited during the design development stages, in order to assess performance in more detail and identify and review potential further uplift credits that could be pursued in order for a greater margin to be established. We suggest a margin of 3-4% over the minimum percentage threshold of the BREEAM rating required.

3 BREEAM ASSESSMENT METHODOLOGY

BREEAM (Building Research Establishment's Environmental Assessment Method) is the world's leading and most widely used environmental assessment method for buildings, since it was first launched in 1990.

3.1 Assessment Criteria

The BREEAM methodology covers the following environmental performance categories:

- **Management:** Sustainable procurement, Responsible construction practices, Construction site impacts, Stakeholder participation, Service life planning and costing;
- **Health and Wellbeing**: Visual comfort, Indoor air quality, Thermal comfort, Water quality, Acoustic performance, Safety and security;
- **Transport:** Public transport accessibility, Proximity to amenities, Cyclist amenities, Maximum car parking capacity, Travel Plan
- **Energy**: Energy, Reduction of CO2 emissions, Energy monitoring, Energy efficient external lighting, Low or zero carbon technologies, Energy efficient cold storage, Energy efficient transportation systems, Energy efficient laboratory systems, Energy efficient equipment (process);
- **Water:** Water consumption, Water monitoring, Water leak detection and prevention, Water efficient equipment (process);
- **Materials:** Life cycle impacts, Hard landscaping and boundary protection, Responsible sourcing of materials, Insulation, Designing for robustness;
- **Waste:** Construction waste management, Recycled aggregates, Operational waste, Speculative floor and ceiling finishes;
- **Pollution:** Impact of refrigerants, NOx emissions, Surface water run-off, Reduction of night time light pollution, Noise attenuation;
- **Ecology:** Site selection, Ecological value of site/protection of ecological features, Mitigating ecological impact, Enhancing site ecology, Long term impact on biodiversity;
- **Innovation:** Additional exemplary performance credits for the following issues- Sustainable procurement, Responsible construction practices, Visual comfort, Reduction of CO2 emissions, Ene 04 Low or zero carbon technologies, Cold storage, Water consumption, Life cycle impacts, Responsible sourcing of materials, Construction site waste management, Recycled Aggregates

Within the BREEAM framework, the categories contain a number of specific issues against which the development is assessed. The total number of credits awarded per category is then multiplied by an environmental weighting factor, which differs depending on the impact the issue categories have on different local and global environments. The weightings of each category are shown in Table 1 and are derived from a combination of consensus based weightings and ranking by a panel of experts.

Table 1: BREEAM Weightings for various categories

Environmental Section	Weighting
Management	12%
Health & Wellbeing	15%
Energy	19%
Transport	8%
Water	6%
Materials	12.5%
Waste	7.5%
Land Use & Ecology	10%
Pollution	10%
Total	100%
Innovation (additional)	10%

BREEAM sets minimum standards of performance in key areas e.g. energy, water, waste etc. to ensure that performance against fundamental environmental issues is not over-looked in pursuit of a particular rating.

3.2 Minimum Standards

The BREEAM methodology sets minimum standards of performance in key areas, to ensure that performance against fundamental environmental issues is not over-looked in pursuit of a particular rating, Table 1, below, shows these and identifies the different minimum requirements to achieve the BREEAM ratings available:

Table 2: BREEAM 2011 Minimum Standards by rating level.

CREDIT	PASS	GOOD	VERY GOOD	EXCELLENT	OUTSTANDING
Man 01: Sustainable procurement	One credit	One credit	One credit	One credit	Two credits
Man 02: Responsible construction practices	None	None	None	One credit	Two credits

CREDIT	PASS	GOOD	VERY GOOD	EXCELLENT	OUTSTANDING
Man 04: Stakeholder participation	None	None	None	One credit (Building user information)	One credit (Building user information)
Hea 01: Visual comfort	Criterion 1 only	Criterion 1 only	Criterion 1 only	Criterion 1 only	Criterion 1 only
Hea 04: Water quality	Criterion 1 only	Criterion 1 only	Criterion 1 only	Criterion 1 only	Criterion 1 only
Ene 01: Reduction of CO2 emissions	None	None	None	Six credits	Ten credits
Ene 02: Energy monitoring	None	None	One credit (First sub-metering credit)	One credit (First sub-metering credit)	One credit (First sub-metering credit)
Ene 04: Low or zero carbon technologies	None	None	None	One credit	One credit
Wat 01: Water consumption	None	One credit	One credit	One credit	Two credits
Wat 02: Water monitoring	None	Criterion 1 only	Criterion 1 only	Criterion 1 only	Criterion 1 only
Mat 03: Responsible Sourcing	Criterion 3 only	Criterion 3 only	Criterion 3 only	Criterion 3 only	Criterion 3 only
Wst 01: Construction waste management	None	None	None	None	One credit
Wst 03: Operational waste	None	None	None	One credit	One credit
LE 03: Mitigating ecological impact	None	None	One credit	One credit	One credit

3.3 BREEAM Rating

The BREEAM methodology uses a sustainability rating system – indicated by percentage benchmarks – to communicate the overall sustainability performance of new construction projects. A construction project can achieve a sustainability rating from 'PASS' to 'OUTSTANDING' depending on the extent to which it has achieved BREEAM standards as shown in Table 3 below.

Table 3: BREEAM ratings and their respective scores

BREEAM Rating	Percentage score (%)
OUTSTANDING	≥ 85
EXCELLENT	≥ 70
VERY GOOD	≥55
GOOD	≥ 45
PASS	≥ 30
UNCLASSIFIED	< 30

4 BREEAM PRE-ASSESSMENT RESULTS

This section presents the findings of the Preliminary BREEAM Assessment of the Proposed Development.

All information and assessment assumptions contained in this report have been based on information provided by the design team at the pre-assessment meeting, through correspondence with the design team and final reports produced for planning purposes.

The below diagram and table indicate the BREEAM level of the Proposed Development in relation to the scoring threshold levels as prescribed within the assessment methodology. The % shown for the development is derived from the Pre-assessment Estimator, which is attached in Section 5 of this report.

Based on this information, the Proposed Development is targeting a percentage of 70.21% meeting the minimum standards and pursuing a BREEAM 'Excellent' rating.

At this stage additional uplift credits have also been identified for the Proposed Development, which would need to be revisited during the detailed design stages. An indicative potential score of 73.35% has been estimated as possible and as a margin to achieve the minimum required BREEAM score of 70% for an 'Excellent' rating.

Figure 1 and Table 5 below, indicate the BREEAM rating level with the 'Targeted' and the potential 'Additional Uplift credits' score for the Proposed Development in relation to the scoring threshold levels as prescribed within the assessment methodology. The % score shown for the development is derived from the detailed pre-assessment assumptions, which is provided within Section 5 of this report.

Table 6 indicates the predicted 'Targeted' and the potential 'Additional Uplift credits' scores of the Proposed Development in relation to the BREEAM scores available.

Table 6 also provides the percentage of un-weighted credits targeted for each BREEAM category and demonstrates that the minimum values as mentioned within Table 1 of this report, in line with LBC's Sustainability Planning Guidance CPG 3, are predicted to be met.

Table 6 shows that for the 'Energy' category, currently 62.96% of the un-weighted available credits are being targeted, exceeding the minimum 60% un-weighted value recommended.

Table 6 also demonstrates that for the 'Water' category, currently 66.67% of the un-weighted available credits are being targeted, exceeding the minimum 60% un-weighted value recommended. Currently, 53.85% of the available 'Materials' credits are being targeted, which surpasses the 40% un-weighted value suggested.

Table 4: Targeted and Uplift Scores

BREEAM Rating	Score
PASS	30.00%
GOOD	45.00%
VERY GOOD	55.00%
EXCELLENT	70.00%
Targeted	**70.21%**
Additional Uplift credits	**73.35%**
OUTSTANDING	85.00%

Table 5: BREEAM Weightings and Scores

Section	Un-weighted Targeted % for each category	BREEAM Weighting	Weighted Targeted Score	Weighted potential Uplift score
Management	81.82%	12.00%	9.82%	9.82%
Health & Well-being	68.75%	15.00%	10.31%	11.25%
Energy	62.96%	19.00%	11.96%	11.96%
Transport	100.00%	8.00%	8.00%	8.00%
Water	66.67%	6.00%	4.00%	4.00%
Materials	53.85%	12.50%	6.73%	7.69%
Waste	66.67%	7.50%	5.00%	6.25%
Land Use & Ecology	60.00%	10.00%	8.00%	8.00%
Pollution	53.85%	10.00%	5.38%	5.38%
Innovation (additional)	10.00%	10.00%	1.00%	1.00%
Total Score			**70.21%**	**73.35%**

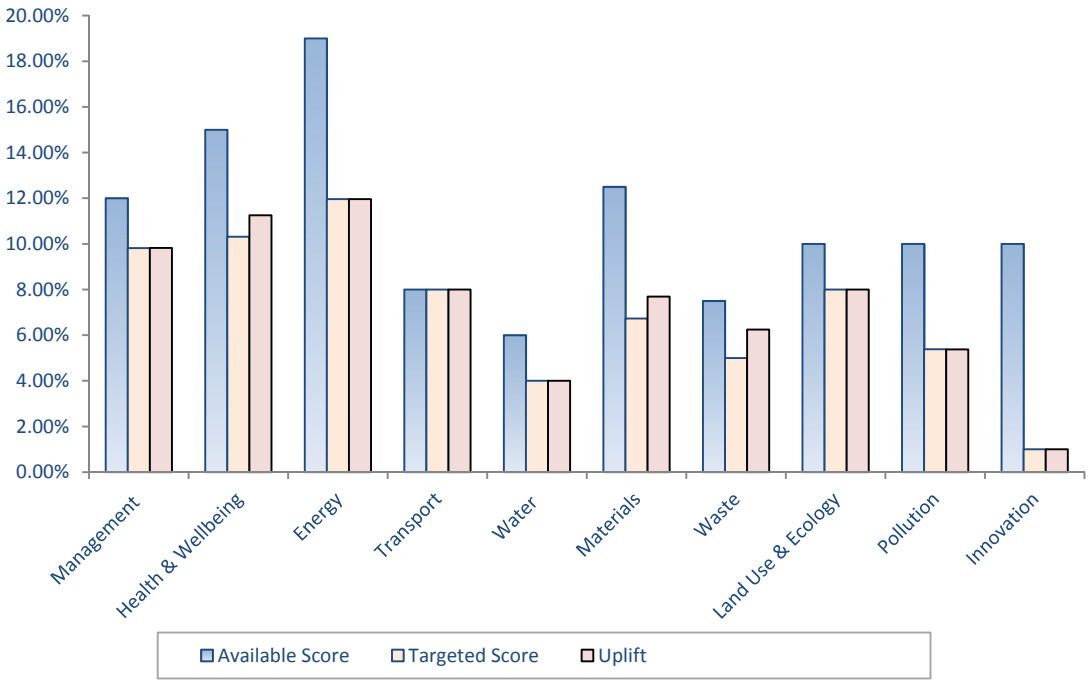

Figure 1: Targeted and Uplift scores in relation to percentage scores available in each BREEAM category– Graphical representation

A description of the development performance and the associated assumptions made at this stage under the BREEAM assessment on a point-by-point basis is provided in section 5 of this report, so that the implications of targeting a BREEAM 'Excellent' are understood. For further details on compliance refer to the BREEAM 2011 New Construction Technical Guidance version 3.4 (published in November 2013).

It should be noted that the rating obtained with the Pre-Assessment scores is for guidance only at this stage, as provisional assumptions have been made based on the initial meeting with the design team on 22nd October 2014, supporting documentation produced for planning purposes and subsequent correspondence with the project team.

It is envisaged that discussions should be undertaken with the design team at appropriate times during the design process to ensure that as design progressed the assumptions and recommendations made within this report can be met or where appropriate changed to different ones, while retaining the feasibility targeted ratings.

5 BREEAM 2011 NEW CONSTRUCTION PRELIMINARY ASSESSMENT RESULTS

URS

BREEAM New Construction 2011 - Multi-Residential Pre-Assessment Report

FINAL- FOR PLANNING ISSUE

Project: Charlie Ratchford Extra Care Home, Camden

Produced: February 2015

The following schedule refers to actions and requirements that address the delivery of BREEAM New Construction 2011 at Design Stage. The Contractor for the Scheme will need to deliver all confirmed credits at Post Construction Stage, where an assessment will be completed and a certificate issued by BRE.

Credit Reference	Brief Description *(Refer to the BREEAM Manual for a full description)*	Max Credits	Targeted Credits	Additional uplift credits identified	Comments
	Pre-assessment Provisional Scores:		70.21%	73.35%	
	Ratings		BREEAM 'Excellent'	BREEAM 'Excellent'	
MANAGEMENT- One credit is worth 0.54% for this category (apart from Exemplary Performance credits which are worth 1.00% each)					
	At least 1 credit under MAN 01 Pre-requisite for Very Good				
Man 01 Sustainable Procurement	**Project Brief & Design** 1. From RIBA stage B the client, building occupier, design team and contractor are involved in contributing to the decision making process for the project. As a minimum this includes meeting to identify and define their roles, responsibilities and contributions during the following phases: Design, Construction, Commissioning and Handover & Occupation. 2. Consideration is given to: end user requirements, aims of the design and design strategy, particular installation and construction requirements, occupiers budget and technical expertise in maintaining any proposed systems, usability and manageability of any proposals, production of documentation & commissioning, training and aftercare support. 3. There is a schedule of training identified for relevant building occupiers/premises manager, which includes: Contents of the Building User Guide(s), design strategy, installed systems and key features (maintenance, operation, replacement, repair), documentation to be provided (e.g. user guide, log book etc.) & training responsibilities	**1**	**1**		Please note that at least one credit under MAN 1 should be achieved for achievement of a BREEAM 'Very Good' rating. The design team stated at the pre-assessment workshop for the Charlie Ratchford Extra Care Scheme, hereafter referred to as the 'Proposed Development' on 22/10/14 at URS' London offices that adequate design team collaboration is considered to have been undertaken from RIBA Stage B- Design Brief stage. It was noted that evidence would be available at formal assessment stage.
Man 01 Sustainable Procurement	**BREEAM Accredited Professional** 4. A BREEAM Accredited Professional (AP) is appointed to facilitate the setting of BREEAM related performance targets for the project, The AP is appointed no later than end of RIBA Stage B. 5. The defined BREEAM performance targets have been contractually agreed between the client and design/project team no later than RIBA Stage C. 6. To achieve this credit at the interim design stage of certification, the defined BREEAM targets (rating and credits) must be demonstrably achieved by the project. This is demonstrated via the BREEAM assessor's design stage certification report. 7. The appointed AP is engaged to monitor and report progress against the BREEAM targets by attending key design team meetings during RIBA Stage B to E. 8. The AP prepares regular written reports for the client and project team detailing progress against the defined BREEAM performance targets (as a minimum for each full design team meeting). 9. The appointed AP is engaged to monitor and report progress against the established BREEAM targets by attending key project team meetings during the pre-construction and construction stages up to and including RIBA Stage L Post-Practical Completion or equivalent). 10. The defined BREEAM performance targets, agreed at or before RIBA Stage C (or equivalent) form a requirement of the principal contractors contract. 11. The AP prepares regular written reports for the client and project team detailing progress against the defined BREEAM performance targets 12. To achieve all three credits at the final 'post-construction' stage of assessment, the BREEAM related performance targets for the project (as agreed at RIBA Stage C, or early) must be demonstrably achieved by the project. This is demonstrated via the BREEAM assessor's final post-construction stage certification report.	**3**	**3**		It was stated at the workshop that Ruth Geeson (Greengage) will be BREEAM AP for this project and has been appointed at the preparation and brief stage to facilitate the setting of BREEAM related performance targets for the project. Please note that the defined BREEAM performance targets should be contractually agreed between the client and design/project team no later than RIBA Stage C. The appointed AP should also be engaged to monitor and report progress against the BREEAM targets by attending key design team meetings during RIBA Stage B to E. To achieve all three credits at the final 'post-construction' stage of assessment, the BREEAM related performance targets for the project (as agreed at RIBA Stage C, or early) must be demonstrably achieved by the project. This is demonstrated via the BREEAM assessor's final post-construction stage certification report. Three credits are targeted.

Credit Reference	Brief Description *(Refer to the BREEAM Manual for a full description)*	Max Credits	Targeted Credits	Additional uplift credits identified	Comments
	Pre-assessment Provisional Scores:		**70.21%**	**73.35%**	
	Ratings		**BREEAM 'Excellent'**	**BREEAM 'Excellent'**	
Man 01 **Sustainable Procurement**	**Construction & Handover** 13. The main contractor accounts for a thermographic survey within the project budget and programme of works. 14. Once construction is complete a thermographic survey of the building fabric is undertaken in accordance with the appropriate standard and by a professional holding a valid Level 2 certificate in thermography. The survey confirms: continuity of insulation in accordance with the construction drawings, avoidance of excessive thermal bridging & avoidance of air leakage paths through the fabric. 15. Any defects identified via the post construction inspections are rectified. 16. An appropriate project team member(s) is appointed to monitor and programme pre-commissioning, commissioning and, where necessary, re-commissioning on behalf of the client. 17. All building services are included in the commissioning schedule and commissioning is carried out in line with Building Regulations, BSRIA and CIBSE guidelines and/or other appropriate standard, where applicable 18. The main contractor accounts for the commissioning programme, responsibilities and criteria within the main programme of works. 19. A specialist commissioning manager is appointed during the design stage (by either client or contractor) for complex systems and the scope of their responsibility includes: design input: commissionability design reviews, commissioning management input to construction programming, commissioning management input during installation stages & management of commissioning, performance testing and handover/post handover stages.	**2**	**2**		The design team noted that the Contractor should undertake commissioning in line with the applicable BREEAM criteria, which will be included within the Contractor's preliminaries. It was understood that URS M&E will oversee simple commissioning as the commissioning agent for this project and a specialist commissioning manager will be appointed by the contractor during the design stage . The requirement for the Contractor to undertake a thermographic survey in line with BREEAM requirements should be confirmed later on with the Contractor once they have been appointed and included within their Employer's Requirements. Two credits are targeted.
Man 01 **Sustainable Procurement**	**One credit - Seasonal commissioning** 20. Seasonal commissioning will be completed over a minimum 12 month period, once the building becomes occupied For Complex Systems undertake the following: testing of building services under full load conditions, testing during periods of extreme (high or low) occupancy, interviews with building occupants & re-commissioning of systems, and incorporating any revisions to operating procedures into O&M manuals. For Simple Systems undertake the following: review thermal comfort, ventilation, and lighting, at 3, 6 & 9 month intervals after occupation & take all reasonable steps to re-commission systems if deficiencies are identified and incorporate any relevant revisions to operating procedures into the O&M manuals. **One credit- One year aftercare** 21. Collect the energy and water consumption data for at least 12 months after occupation and compare with predicted consumption. 22. There is a contract or commitment to provide aftercare support to all the building occupiers which includes: a) A meeting to introduce the aftercare team (or individual) and Building User Guide (where existing), present key information about how the building operates and answer questions. b) Initial aftercare e.g. on site attendance on a weekly basis for at least 4 weeks after handover c) On site FM training d) Longer term after care e.g. a helpline, nominated individual or other appropriate system to support building users for at least the first 12 months of occupation.	**2**	**2**		**One credit - Seasonal commissioning** The design team stated that the Contractor will undertake seasonal commissioning in line with the applicable BREEAM criteria, which will be included within the Contractor's preliminaries. **One credit- One year aftercare** The Client should undertake aftercare in line with BREEAM requirements. Two credits are targeted.
Man 01 **Innovation**	**Exemplary performance requirements** The following outlines the exemplary level criteria to achieve an innovation credit for this BREEAM issue: 23. There is commitment or contract for the facilities manager or equivalent to undertake the following at quarterly intervals for the first 3 years after occupation: a. Collect the occupant satisfaction, energy consumption and water consumption data b. Utilise the data to check the building is performing as expected and make any necessary adjustments c. Set targets for reducing water and energy consumption and monitor progress towards these d. Feedback any 'lessons learned' to the design team and developer for use in future projects e. Provision of the actual annual building energy, water consumption and occur-pant satisfaction data to BRE Global.	**1**	**1**		The Client should undertake aftercare in line with BREEAM requirements for this Exemplary Performance issue. One credit is targeted.

Credit Reference	Brief Description *(Refer to the BREEAM Manual for a full description)*	Max Credits	Targeted Credits	Additional uplift credits identified	Comments
	Pre-assessment Provisional Scores:		**70.21%**	**73.35%**	
	Ratings		**BREEAM 'Excellent'**	**BREEAM 'Excellent'**	
Man 02 **Responsible Construction Practices**	1. Where the principal contractor's performance against the compliant scheme has been confirmed by independent assessment and verification, the BREEAM credits can be awarded as follows: a. One credit where the contractor achieves 'compliance' with the criteria of a compliant scheme. (CCS score between 25 and 34) b. Two credits where the contractor significantly exceeds 'compliance' with the criteria of the scheme. (CCS score between 35 and 39)	**2**	**2**		Two credits are targeted for the Principal Contractor to follow best practice construction practices on site during construction works in line with the Considerate Constructors Scheme (CCS). Please note that at least one credit should be achieved if an 'Excellent' rating is pursued.
Man 02 **Innovation**	Where the principal contractor's performance against the compliant scheme has been confirmed by independent assessment and verification and the contractor achieves compliance with the criteria of the compliant scheme to an exemplary level of practice. (CCS score of 40 or more)	**1**	**0**	**0**	
Man 03 **Construction site impact**	1. Responsibility has been assigned to an individual(s) for monitoring, recording and reporting energy, water and transport consumption data resulting from all construction processes. To ensure the robust collection of information, this individual(s) has the appropriate authority, responsibility and access to the data required. **Energy consumption** 2. Monitor and record data on energy consumption (kWh) from the use of construction plant, equipment (mobile and fixed) and site accommodation necessary for completion of all construction processes. 3. Using the collated data report the energy consumption (total kWh and kWh/£100k of project value) and carbon dioxide emissions (total kgCO2eq and kgCO2eq/£100k of project value) from the construction process via the BREEAM scoring and reporting tool.	**1**	**1**		It was noted at the workshop that the contractor will be required to achieve best practice standards in terms of minimising air and water pollution during construction. There will also be a requirement to monitor and report energy, water and transport emissions from site activities. It was further noted that the contractor appointed should employ sound environmental practices and have internal EMS in place and appropriate procedures for procuring timber products. Based on the above, five credits are targeted for construction site impact management in line with BREEAM requirements, where the appropriate requirements should be included within the Contractor's preliminaries. Five credits are targeted at present.
	Water Consumption 4. Monitor and record data on water consumption (m3) from the use of construction plant, equipment (mobile and fixed) and site accommodation necessary for completion of all construction processes. 5. Using the collated data report the total net water consumption (m3), i.e. consumption minus any recycled water use, from the construction process via the BREEAM scoring and reporting tool.	**1**	**1**		
	Transport of construction materials and waste 6. Monitor and record data on transport resulting from delivery of the majority of construction materials to site and construction waste from site: 1) Transport of materials from the factory gate to the building site, including any transport, intermediate storage and distribution. Monitoring must cover: Materials used in major building elements (i.e. those defined in Mat 01), Inc. insulation materials, ground works and landscaping materials.) 2) Transport of construction waste from the construction gate to waste disposal processing / recovery centre gate. Monitoring must cover the construction waste groups outlined in the project's SWMP. 7. Using the collated data, report separately for materials and waste, the total fuel consumption (litres) and total carbon dioxide emissions (kgCO2 eq), plus total distance travelled (km) via the BREEAM scoring and reporting tool.	**1**	**1**		
	Timber procurement 8. Confirmation that all site timber used on the project is sourced in accordance with the UK Government's Timber Procurement Policy.	**1**	**1**		
	Construction site management 9. The principal contractor for the project operates an Environmental Management System covering their main operations. The EMS must be either: a) Third party certified, to ISO14001/EMAS or equivalent standard. OR b) The structure of the EMS is in compliance with BS8555 2003 and has reached phase four of the implementation stage, and completed phase audits one to four, as defined in BS8555. 10. Implement best practice pollution prevention policies and procedures on site, demonstrated through compliance with the items in the Environmental Checklist section 2.2.5 Preventing Pollution in the England and Wales Environment Agency's 'Building a Better Environment, a guide for developers'	**1**	**1**		

Credit Reference	Brief Description *(Refer to the BREEAM Manual for a full description)*	Max Credits	Targeted Credits	Additional uplift credits identified	Comments
	Pre-assessment Provisional Scores:		**70.21%**	**73.35%**	
	Ratings		**BREEAM 'Excellent'**	**BREEAM 'Excellent'**	
Man 04 Stakeholder Participation	**Consultation** 1. During the preparation of the brief, relevant parties and bodies are identified and consulted with by the design team. The findings of the consultation influences the design and therefore must have been held before key and final design decisions were made. 2. A consultation plan has been prepared and includes a timescale and methods of consultation for all relevant parties/bodies and how the relevant parties will be kept informed about progress on the project. 3. The minimum consultation content has been covered (c.f. BREEAM manual) 4. During the design stage, consultation feedback has been given to and received by all relevant parties regarding suggestions made, including how the results of the consultation process have influenced, or resulted in modifications to, the proposed design and building operation/use. 5. The project team ensures that through consultation and the resulting measures taken any areas or features of historic/heritage value are protected.	**1**	**0**	**0**	After discussion with the Architect, it is considered that compliance would not easily be able to be demonstrated with all relevant criteria for this issue. Therefore, no credits are targeted.
	Inclusive and accessible design 6. The building is designed to be fit for purpose, appropriate and accessible by all potential users. 7. An access statement is developed in line with the CABE publication Design & Access Statements, How to write, read and use them, based on the principles of inclusive design. The access statement results in a strategy that must address access to and throughout the development for all users, with particular emphasis on: a) Disabled users; addressing and proposing design solutions that remove obstacles to the disabled. b) People of different age groups, genders, ethnicity and stamina/fitness levels c) Parents with children (where appropriate to building use/type) 8. Provision of facilities is made for future building occupants and users including, where relevant, facilities that can be shared and are accessible to members of the public/community without gaining uncontrolled access to other parts of the building.	**1**	**1**		One credit is targeted where the Proposed Development is designed to be fit for purpose, appropriate and accessible by all potential users. Based on discussions at the meeting, this credit should be marked as anticipated. An access statement should be developed which should be in line with the CABE publication 'Design & Access Statements, How to write, read and use them', based on the principles of inclusive design and address access to and throughout the development for all users, including disabled users, people of different age groups, genders, ethnicity and stamina/fitness levels and parents with children. If relevant, provision of facilities should be made for future building occupants and users including facilities that can be shared and are accessible to members of the public/community without gaining uncontrolled access to other parts of the building. One credit is targeted.
Man 04 Stakeholder Participation	**(Required for Excellent rating)** **Building user information** 9. Building User Guides are provided and are appropriate to all users of the building. 10. The Guides cover all functions and uses of the building, ensuring building users are able to use the building effectively. 11. Building and site related information is made readily available to all future building users, enabling them to access and use the building, site and local transport infrastructure/amenities effectively.	**1**	**1**		One credit is targeted for providing BREEAM compliant Building User Guides to all appropriate users of the building. It is anticipated that the Contractor will provide the compliant Building User Guide. One credit is targeted.
	Post Occupancy Evaluation (POE) and information dissemination 12. The client makes a commitment to carry out a Post Occupancy Evaluation (POE) one year after building occupation, to gain building performance feedback. The POE should be carried out by an independent third party and should cover: a review of the design and construction process, feedback from a wide range of building users including FM on the following: 1) Internal environmental conditions (light, noise, temperature, air quality), Control, operation and maintenance, Facilities and amenities, Access and layout, 2) Sustainability performance (energy/water consumption, performance of any sustainable features or technologies e.g. materials, renewable energy, rainwater harvesting etc.,) 13.The client makes a commitment to carry out the appropriate dissemination of information on the building's post occupancy performance in order to share good practice.	**1**	**1**		It has been indicated that Post Occupancy Evaluation (POE) and information dissemination will be undertaken in line with the detailed BREEAM criteria. This credit is targeted.

Credit Reference	Brief Description *(Refer to the BREEAM Manual for a full description)*	Max Credits	Targeted Credits	Additional uplift credits identified	Comments
	Pre-assessment Provisional Scores:		**70.21%**	**73.35%**	
	Ratings		**BREEAM 'Excellent'**	**BREEAM 'Excellent'**	
Man 05 **Life cycle cost and service life planning**	1. A Life Cycle Cost (LCC) analysis has been carried out based on the proposals developed during RIBA Work Stages C/D. 2. The Life Cycle Cost analysis is conducted in accordance with the process outlined in PD156865:2008, based on the concept design/design development proposals and completed for the following stages for a study period of 60 years, shown in real and discounted cash flow terms: Construction, operation (utilities, cleaning & management costs) & maintenance (planned maintenance, replacements and repair costs) 3. A critical appraisal has been completed at the feasibility stage of building procurement, covering the service life estimations and maintenance implications for different design options. This appraisal must comply with Service life planning in accordance with ISO 15686 Buildings and constructed assets - Service life planning Part 1	**1**	**0**	**0**	
Man 05 **Life cycle cost and service life planning**	4. The analysis demonstrates that elements in at least TWO of the following building components have been analysed at a strategic and system level, comparing alternative options: 1) Envelope: e.g. cladding, windows, and/or roofing 2) Services: e.g. heat source cooling source, and/or controls 3) Finishes: e.g. walls, floors and/or ceilings 4) External spaces 5. The option(s) meet the performance criteria for the building (i.e. realistic options are used for the comparison) and the lowest discounted LCC over the period is preferred, assuming that their selection results in at least one of the following: 1) Lower building energy consumption over the operational life span of the building (compared to other options/alternatives analysed), 2) A reduction in maintenance requirement/frequency, 3) Extended service lives of services infrastructure/systems and/or building fabric 4) Dismantling and recycling or reuse of building components, 6. The selected option is of critical value within the project.	**1**	**0**	**0**	This credit issue has been marked as non-achievable at present.
	7. The model outlined in the first LCC credit is updated during RIBA Work Stages D/E. 8. The results of the study have been implemented in the specification, design and final construction of the assessed building. 9. A maintenance strategy has been developed, informed by the LCC analysis and includes:1) The extent to which maintenance has been designed out and how systems have been included in the specification to facilitate safe, efficient and cost-effective operation and maintenance, 2) How the removal and replacement of major plant and equipment, within the design life of the building, has been facilitated by the building design and specification (lay-out/access etc.), 4) A management plan for the landscaping if appropriate.	**1**	**0**	**0**	

Credit Reference	Brief Description *(Refer to the BREEAM Manual for a full description)*	Max Credits	Targeted Credits	Additional uplift credits identified	Comments
	Pre-assessment Provisional Scores:		**70.21%**	**73.35%**	
	Ratings		**BREEAM 'Excellent'**	**BREEAM 'Excellent'**	
HEALTH AND WELLBEING- One credit is worth 0.94% for this category (apart from Exemplary Performance credits which are worth 1.00% each)					
	Pre-requisite 1. All fluorescent and compact fluorescent lamps are fitted with high frequency ballasts.	-	Y		It is considered at this stage that all specifications will cover these requirements.
Hea 01 **Visual Comfort**	**Daylighting** 2. Relevant building areas meet good practice daylighting criteria as set out in table 5-1 of the BREEAM 2011 Technical guide. For multi-residential projects, daylighting requirements are as follows: - Kitchens - 2% Daylight factor for 80% of area; - Living rooms, dining rooms, studies (inc. home office) - 1.5% daylight factor for 80% of area; - 80% of the working plane in each kitchen, living room, dining room and study must have a view of the sky; - Non residential/communal occupied spaces - 2% Daylight factor for 80% of area **plus** (i) a uniformity ratio of at least 0.4 or a minimum point daylight factor of at least 0.8% (spaces with glazed roofs, such as atria, must achieve a uniformity ratio of at least 0.7 or a minimum point daylight factor of at least 1.4%) **OR** (ii) A view of sky from desk height (0.7m) is achieved **AND** (iii) the room depth criterion d/w +d/HW < 2/(1-RB) is satisfied, as defined within the BREEAM criteria.	1	0	0	GVA have undertaken preliminary daylighting calculations for the residential element of the proposed development which indicate that the daylighting levels required by BREEAM might not be achievable for all assessable areas. This credit is not targeted.
	Glare control and view out 3. The potential for disabling glare has been designed out of all relevant building areas either through building layout (e.g. low eaves) and/or building design (e.g. blinds). 4. All positions within relevant building areas are within 7m of a wall which has a window or permanent opening that provides an adequate view out. The window/opening must be ≥20% of the surrounding wall area. 5. Living rooms – (self contained flats), communal lounges, individual bedrooms and bedsits – (sheltered housing)- All positions within relevant areas are to be within 5m of a wall which has a window or permanent opening providing an adequate view out. The window/opening must be ≥ 20% of the surrounding wall area. Where the room depth is greater than the 7m requirement, compliance is only possible where the percentage of window/opening is the same as or greater than the values in table 1.0 of BS 82062.	1		1	**ADDITIONAL UPLIFT CREDIT** This credit is marked as an uplift credit currently where a BREEAM 'Excellent' rating is to be pursued, subject to confirmation from the project team that all applicable criteria can be met. One credit is marked as an 'additional uplift' credit.
	Internal and external lighting **Internal lighting** 5. Illuminance (lux) levels in all internal relevant building areas of the building are specified in accordance with the CIBSE Code for Lighting 2009 and any other relevant industry standard. For areas where computer screens are regularly used, the lighting design complies with CIBSE Lighting Guide 7 sections 3.3, 4.6, 4.7, 4.8 and 4.9. **External Lighting** **6**. Illuminance levels for lighting in all external areas within the construction zone are specified in accordance with BS5489-1:2003+A2:2008 Lighting of roads and public amenity areas. **Lighting zones** **7**. In office areas, zones of no more than four workplaces, Workstations adjacent to windows/atria and other building areas separately zoned and controlled, Dining, restaurant, café areas: separate zoning of servery and seating/dining areas, Treatment areas, dayrooms, waiting areas (if applicable): zoning of seating and activity areas and circulation space with controls accessible to staff. etc. (c.f. BREEAM Manual)	1	1		The design team stated that internal and external lighting will be specified in line with the applicable credit criteria and lighting zoning will be undertaken within the relevant building areas, in line with the detailed BREEAM criteria. One credit is targeted.
Hea 01 **Innovation**	**Exemplary level criteria** The criteria outlined on Page 73 of the BREEAM Technical Guide is the exemplary level criteria to achieve an innovation credit for daylighting.	1	0	0	This credit has been marked as non-achievable at present.

Credit Reference	Brief Description *(Refer to the BREEAM Manual for a full description)*	Max Credits	Targeted Credits	Additional uplift credits identified	Comments
	Pre-assessment Provisional Scores:		**70.21%**	**73.35%**	
	Ratings		**BREEAM 'Excellent'**	**BREEAM 'Excellent'**	
Hea 02 **Indoor Air Quality**	**Minimising sources of air pollution** 1. An indoor air quality plan has been produced which considers; 1) Removal of contaminant sources, 2) Dilution and control of contaminant sources, 3) Procedures for pre-occupancy flush out, 4) 3rd party testing and analysis. 2. For air-conditioned and mixed-mode buildings: the building's air intakes and exhausts are over 10m apart to minimise recirculation and intakes are over 20m from sources of external pollution. 3. For naturally-ventilated buildings: openable windows/ventilators are over 10m from sources of external pollution. 4. The building has been designed to provide fresh air and minimise internal pollutants (and ingress of external polluted air into the building) in accordance with the criteria of the relevant standard for ventilation. 5. Areas of the building subject to large and unpredictable or variable occupancy patterns have CO2 or air quality sensors specified and: a. In mechanically ventilated spaces, the sensor(s) are linked to the mechanical ventilation system and provide demand-controlled ventilation to the space. b. In naturally ventilated spaces, the sensors either have the ability to alert the building owner/manager when CO2 levels exceed the recommended set point, or are linked to controls with the ability to adjust the quantity of fresh air, i.e. automatic opening windows/roof vents.	**1**	**0**	**0**	A BREEAM compliant indoor quality plan will be produced for the Proposed Development so that the other credits within the 'Hea 02' issue can be pursued. **Minimising sources of air pollution credit** The project team have indicated that the distances of the building's air intakes and exhausts from sources of external pollution cannot be met for the proposed development. Therefore this credit is not targeted at present.
	6. All decorative paints and varnishes have met the requirements listed in Table-7 " VOC criteria by product type" table within the BREEAM New Construction 2011 (v 3.4) manual. At least five of the eight remaining product categories listed in Table 7, have met the testing requirements and emission levels for Volatile Organic Compound (VOC) emissions against the relevant standards identified within this table. Where five or less products are specified within the building, all must meet the requirements in order to achieve this credit.	**1**	**1**		A BREEAM compliant indoor quality plan will be produced for the Proposed Development. BREEAM compliant products and finishes should be procured in line with the applicable VOC emissions criteria as detailed within Table-7 " VOC criteria by product type" table within the BREEAM New Construction 2011 (v 3.4) manual. One credit is targeted.

Credit Reference	Brief Description *(Refer to the BREEAM Manual for a full description)*	Max Credits	Targeted Credits	Additional uplift credits identified	Comments
	Pre-assessment Provisional Scores:		**70.21%**	**73.35%**	
	Ratings		**BREEAM 'Excellent'**	**BREEAM 'Excellent'**	
Hea 02 **Indoor Air Quality**	7. Formaldehyde concentration level is measured post construction (but pre-occupancy) and is found to be less than or equal to 100µg/m3 averaged over 30 minutes (WHO guidelines, source BRE Digest 464 part 232). 8. The total volatile organic compound (TVOC) concentration is measured post construction (but pre-occupancy) and found to be less than 300µg/m3 over 8 hours, in line with the Building Regulation requirements. 9. Where levels are found to exceed these limits, the project team confirms the measures that have, or will be undertaken in accordance with the IAQ plan, to reduce the TVOC and formaldehyde levels to within the above limits. 10. The testing and measurement of the above pollutants are in accordance with the following standards where relevant: 1) BS EN ISO 16000-4: 2004 Diffusive sampling of formaldehyde in air 2) EN ISO 16000-6 VOCs in air by active sampling, 3) BS EN 16017-2: 2003 VOCs - Indoor, ambient and workplace air by passive sampling, 4) BS EN ISO 16000-3: 200136 formaldehyde and other carbonyls in air by pumped sampling 11. The measured concentration levels of formaldehyde (µg/m3) and TVOC (µg/m3) are reported, via the BREEAM scoring and reporting tool.	**1**	**1**		A BREEAM compliant indoor quality plan will be produced for the Proposed Development. Testing and measurement of the relevant pollutants at post construction stage in line with the relevant BREEAM requirements should be undertaken. If pollutant levels are found to exceed the required limits, measures should be undertaken in accordance with the indoor air quality plan, to reduce the pollutant levels to within the stated BREEAM limits. One credit is targeted.
Hea 02 **Indoor Air Quality**	**Potential for natural ventilation** 12. Occupied spaces of the building are designed to be capable of providing fresh air entirely via a natural ventilation strategy, demonstrated via either of the following: 1) The openable window area in each occupied space is equivalent to 5% of the GIA of that room/floor plate. For room/floor plates between 7m-15m depth, the openable window area must be on opposite sides and evenly distributed across the area to promote adequate cross-ventilation OR 2) The design demonstrates that the natural ventilation strategy provides adequate cross flow of air to maintain required thermal comfort conditions and ventilation rates. This is demonstrated using ventilation design tool types recommended by CIBSE AM10. For a strategy which does not rely on openable windows, or which has occupied spaces with a plan depth greater than 15m, the design must demonstrate that the ventilation strategy can provide adequate cross flow of air to maintain the required thermal comfort conditions and ventilation rates. 13. The natural ventilation strategy is capable of providing at least two levels of user-control on the supply of fresh air to the occupied space, as follows; 1) Higher level: higher rates of ventilation achievable to remove short-term odours and/or prevent summertime overheating. 2) Lower level: adequate levels of draught-free fresh air to meet the need for good indoor air quality throughout the year, sufficient for the occupancy load and the internal pollution loads of the space. Any opening mechanisms must be easily accessible and provide adequate user-control over airflow rates to avoid draughts.	**1**	**0**	**0**	After discussions with the project team it is indicated that the credit criteria for this issue is unlikely to be met at present. No credits targeted at present.

Credit Reference	Brief Description *(Refer to the BREEAM Manual for a full description)*	Max Credits	Targeted Credits	Additional uplift credits identified	Comments
	Pre-assessment Provisional Scores:		**70.21%**	**73.35%**	
	Ratings		**BREEAM 'Excellent'**	**BREEAM 'Excellent'**	
Hea 03 **Thermal comfort**	1. Thermal modelling has been carried out using software in accordance with CIBSE AM11 Building Energy and Environmental Modelling. 2. The modelling demonstrates that the building design and services strategy can deliver thermal comfort levels in occupied spaces in accordance with the criteria set out in CIBSE Guide A Environmental Design; or other appropriate industry standard (where this sets a higher or more appropriate requirement/level for the building type). 3. The software used to carry out the simulation at the detailed design stage provides full dynamic thermal analysis. For smaller and more basic building designs with less complex heating / cooling systems, an alternative less complex means of analysis may be appropriate (such methodologies must still be in accordance with CIBSE AM11). 4. The building complies with any requirement, in terms of "time out of range" (TOR) metric, from the appropriate industry standard (as above) OR where there is no appropriate industry standard available or TOR recommendation made, the building services engineer confirms that the TOR is acceptable for the purpose and function of the building. 5. The TOR metric (%) is reported, via the BREEAM scoring and reporting tool	**1**	**1**		BREEAM compliant thermal modelling will be undertaken for the proposed development. One credit is targeted.
	6. The thermal modelling analysis has informed the temperature control strategy for the building and it's users. 7. The strategy for proposed heating / cooling system(s) demonstrates that it has addressed the following: a) Zones within the building and how the building services could efficiently and appropriately heat or cool these areas b) The amount of occupant control required for these zones, based on discussions with the end user and taking into account: Occupancy type, patterns and room functions; How the user is likely to operate/interact with the system; The user expectations and degree of individual control. c) How the proposed systems will interact with each other (where there is more than one system) and how this may affect the building occupants thermal comfort. d) The need or otherwise for an accessible building user actuated manual override for any automatic systems.	**1**	**1**		BREEAM compliant thermal modelling will be undertaken and the results of the thermal modelling analysis should inform the temperature control strategy for the building and it's users. Furthermore, adequate thermal zoning and local control should be accommodated within the building's design. One credit is targeted.
Hea 04 **Water quality**	**Pre-requisite** 1. All water systems in the building are designed in compliance with the measures outlined in the Health and Safety Executive's "Legionnaires' disease - The control of legionella bacteria in water systems". Approved Code of Practice and Guidance, 2000 and, where relevant, other industry/sector best practice guidance.	**-**	**Y**		The design team indicated that all water systems in the building will be designed in compliance with the measures outlined in the Health and Safety Executive's "Legionnaires' disease - The control of legionella bacteria in water systems". Approved Code of Practice and Guidance, 2000 and, where relevant, other industry/sector best practice guidance.
	Building services water systems: minimising risk of contamination 2. Where humidification is required, a failsafe humidification system is provided. **Building occupants: Provision of fresh drinking water** 3. A wholesome supply of accessible, clean and fresh drinking water is supplied, as follows: b. Permanently staffed buildings/office areas: i. Chilled, mains-fed point-of-use water supply or point-of-use water coolers. ii. Provision in each staff kitchenette, or in a suitable location on each floor level, and in a staff canteen (if provided).	**1**	**1**		It is understood that no humidification will be specified within the Proposed Development. This credit is targeted for the specification of BREEAM compliant chilled fresh drinking water point-of-use water coolers located within permanently staffed/ office areas in each staff kitchenette, or in a suitable location on each floor level, and in a staff canteen (if provided).

Credit Reference	Brief Description *(Refer to the BREEAM Manual for a full description)*	Max Credits	Targeted Credits	Additional uplift credits identified	Comments
	Pre-assessment Provisional Scores:		**70.21%**	**73.35%**	
	Ratings		**BREEAM 'Excellent'**	**BREEAM 'Excellent'**	
	Pre-requisite 1. A suitably qualified acoustician (see Relevant definitions in the technical guide) is appointed by the client at the appropriate stage of the project to provide early advice on influencing outline design solutions to : a. External sources of noise impacting the chosen site b. Site layout and zoning of the building for good acoustics c. Acoustic requirements for users with special hearing and communication needs, d. Acoustic treatment of different zones and facades.	-	Y		The design team confirmed at the meeting that an Acoustician has been appointed to provide early advice on influencing outline design solutions .
Hea 05 **Acoustic performance**	**Acoustic performance standards** **1 credit-** Airborne sound insulation values are at least 3dB higher and impact sound insulation values are at least 3dB lower than the than the performance standards in the Building Regulations or Standards. **3 credits-** Airborne sound insulation values are at least 5dB higher and impact sound insulation values are at least 5dB lower than the than the performance standards in the Building Regulations or Standards. **4 credits-**Airborne sound insulation values are at least 8dB higher and impact sound insulation values are at least 8dB lower than the than the performance standards in the Building Regulations or Standards Testing requirements. A programme of pre-completion testing is carried out by a compliant test body based on the normal programme of testing described in the Building Regulations or Standards for every group or sub-group of dwelling-houses, flats or rooms for residential purposes; this must demonstrate that the performance standards detailed within this table are achieved. OR Use of constructions for all relevant building elements have been registered with and assessed and approved by Robust Details Limited (RDL) and found to achieve the performance standards required for the number of credits sought (see detailed BREEAM criteria within manual for further information on Robust Details). NOTE: Testing should be between habitable rooms on the Ground Floor and at higher storey levels if applicable. Where there are insufficient suitable separating walls or floors in a development to carry out the number of tests specified in the appropriate Building Regulations or Standards, all of the available suitable separating walls or floors must be tested.	**4**	**3**		The Architect has indicated that three credits can be pursued for this credit issue with Robust Details currently identified to be used to achieve the targeted acoustic performance levels, where airborne sound insulation values should be at least 5dB higher and impact sound insulation values should be at least 5dB lower than the than the performance standards in the Building Regulations or Standards. Three credits are targeted.

Credit Reference	Brief Description *(Refer to the BREEAM Manual for a full description)*	Max Credits	Targeted Credits	Additional uplift credits identified	Comments
	Pre-assessment Provisional Scores:		**70.21%**	**73.35%**	
	Ratings		**BREEAM 'Excellent'**	**BREEAM 'Excellent'**	
Hea 06 **Safety and security**	**Safe access** Where external site areas form part of the assessed development the following apply: 1. Dedicated cycle lanes are provided and have been designed and constructed in accordance with the relevant standard. 2. The cycle lanes provide direct access from the site entrance(s) to any cycle storage facilities provided, without the need to deviate from the cycle path and, if relevant, connects to off-site cycle paths. 3. Footpaths on site provide direct access from the site entrance(s) to the building entrance(s) and connect to public footpaths off site (where existing), providing access to local transport nodes and other offsite amenities (where existing). 4. Where provided, drop-off areas are designed off/adjoining to the access road and provide direct access to pedestrian footpaths, therefore avoiding the need for the pedestrian to cross vehicle access routes. 5. Where a dedicated pedestrian crossing of a vehicle access route is provided, the road is raised to the pavement level (i.e. the pavement is not lowered to road level), unless pavement is at road level (this may be the case in some car parks). 6. For large developments with a high number of public users/visitors, pedestrian pathways must be signposted to other local amenities off site, including public transport nodes. 7. The lighting for access roads, pedestrian areas, footpaths and cycle lanes is compliant with the external lighting criteria defined in Hea 01. Where dedicated delivery access and drop-off areas form part of the assessed development the following apply: 8. Delivery areas are not directly accessed through general parking areas and do not cross or share pedestrian and cyclist routes and other outside amenity areas accessible to building users and general public. 9. There is a separate parking/waiting area for goods vehicles away from / adjacent to the manoeuvring area and staff/visitor car parking. 10. Parking and turning areas are designed for simple manoeuvring according to the type of delivery vehicle likely to access the site, thus avoiding the need for repeated shunting. 11. There is a dedicated space for the storage of refuse skips and pallets away from the delivery vehicle manoeuvring area and staff/visitor car parking (if appropriate given the building type/function).	**1**	**1**		**Safe Access credit** It is understood that safe access will be provided for the site in line with the relevant BREEAM requirements as the Proposed Development has a very limited external site area, with only a minibus drop-off area proposed. **Security of site and building** Further to correspondence with PRP Architects, a Crime Prevention Design Advisor (CPDA) has been consulted with at this stage and all recommendations will be incorporated into the final design in line with the principles and guidance of Secured by Design. Two credits are targeted for this issue.
	Security of site and building 12. The project team have accounted for security considerations in the new building design and site layout through consultation with a suitably qualified security consultant. 13. Consultation with the suitably qualified security consultant occurred during or prior to the concept design stage (RIBA stage C) or equivalent. 14. The final design embodies the recommendations/solutions of the suitably qualified security consultant and is built to conform to either : a) The principles and guidance of Secured by Design and/or Safer Parking (SP) Scheme Or where SbD/SP is of less relevance to the building type/operation: b) A site specific security risk and threat assessment and subsequent security strategy and recommendations for security measures (as developed/recommended by the suitably qualified security consultant).	**1**	**1**		

Credit Reference	Brief Description *(Refer to the BREEAM Manual for a full description)*	Max Credits	Targeted Credits	Additional uplift credits identified	Comments
	Pre-assessment Provisional Scores:		**70.21%**	**73.35%**	
	Ratings		**BREEAM 'Excellent'**	**BREEAM 'Excellent'**	
ENERGY- One credit is worth 0.70% for this category (apart from Exemplary Performance credits which are worth 1.00% each)					
Ene 01 **Reduction of emissions**	1. Calculate an Energy Performance Ratio for New Constructions (EPRNC) using BREEAM's Ene 01 calculator. 2. The EPRNC calculation takes account of the following parameters; a) the building's operational energy demand b) the energy delivered (consumption) and c) the total resulting CO2 emissions. The calculation is determined using the following performance data from modelling the building's specified/designed regulated fixed building services, as sourced from the approved building energy calculation software: i) Building floor area (m2) ii) Notional building energy demand (MJ/m2) iii) Actual building energy demand (MJ/m2) iv) Notional building energy consumption (kWh/m2) v) Actual building energy consumption (kWh/m2) vi) Target Emission Rate (kgCO2/m2) vii) Building Emission Rate (kgCO2/m2) 3. Compare the EPRNC achieved with Table 6-1 of benchmarks below and award the corresponding number of BREEAM credits. 0.06 -> 1 credit 0.12 -> 2 credits 0.18 -> 3 credits 0.24 -> 4 credits 0.3 -> 5 credits 0.36 -> 6 credits 0.42 -> 7 credits 0.48 -> 8 credits 0.54 -> 9 credits 0.6 -> 10 credits 0.66 -> 11 credits 0.72 -> 12 credits 0.78 -> 13 credits 0.84 -> 14 credits 0.9 -> 15 credits 4. Report the building's total modelled operational primary energy consumption in kWh/m2/yr and carbon dioxide emissions in kgCO2/m2/year via the BREEAM scoring and reporting tool.	**15**	**8**		**London Borough of Camden requires 60% un-weighted credits to be targeted for the Energy section of the BREEAM assessment, as stated within Section 9 of Camden's Sustainability Planning Guidance 3.** To meet this requirement, it is calculated that eight credits are targeted for this issue. Preliminary energy modelling has been undertaken to confirm that the targeted eight credits are considered achievable for the Proposed Development based on the current design proposals.
Ene 01 **Innovation**	**Exemplary level criteria** The following outlines the exemplary level criteria to achieve innovation credits for this BREEAM issue: Five credits 5. The building is 'carbon negative' in terms of its total modelled operational energy consumption (see Relevant definitions in the Additional Information section of this issue). **Up to four credits** 6. The building achieves an EPRNC≥ 0.9 and zero net CO2 emissions (see Relevant definitions) 7. An equivalent percentage of the buildings modelled 'regulated' operational energy consumption, as stipulated in the table below, is generated by carbon neutral on-site, near-site or 'accredited external' sources and used to meet energy demand from 'unregulated' building systems or processes.	**5**	**0**	**0**	Based on information collected about the scheme, these credits have been marked as non-achievable at present.
Ene 02 **Energy monitoring**	**One credit (Pre-requisite for Very Good)** 1. The following major energy consuming systems (where present) are monitored using either a Building Energy Management System (BEMS) or separate accessible energy sub-meters with a pulsed output to enable future connection to a BEMS: a. Space Heating; b. Domestic Hot Water; c. Humidification; d. Cooling; e. Fans (major) f. Lighting; g. Small Power; h. Other major energy-consuming items where appropriate. 2. The end energy consuming use is identifiable to the building user through labelling or data outputs.	**1**	**1**		**London Borough of Camden requires 60% un-weighted credits to be targeted for the Energy section of the BREEAM assessment, as stated within Section 9 of Camden's Sustainability Planning Guidance 3.** The design team stated at the meeting that this credit issue is targeted for the Proposed Development to achieve the BREEAM 'Excellent' rating.

Credit Reference	Brief Description *(Refer to the BREEAM Manual for a full description)*	Max Credits	Targeted Credits	Additional uplift credits identified	Comments
	Pre-assessment Provisional Scores:		**70.21%**	**73.35%**	
	Ratings		**BREEAM 'Excellent'**	**BREEAM 'Excellent'**	
Ene 03 **External lighting**	1. **All external light fittings for the building, access ways and pathways** have a luminous efficacy of at least 50 lamp lumens/circuit Watt when the lamp has a colour rendering index (Ra) greater than or equal to 60 OR 60 lamp Lumens / circuit Watt when the lamp has a colour rendering index (Ra) less than 60. 2. **All external light fittings to car parking areas, associated roads and floodlighting** has a luminous efficacy of at least 70 lamp lumens/circuit Watt when the lamp has a colour rendering index (Ra) greater than or equal to 60 OR 80 lamp Lumens / circuit Watts when the lamp has a colour rendering index (Ra) less than 60. 3. **All external light fittings for signs and uplighting** have a luminous efficacy of at least 60 lamp lumens/circuit Watt when the lamp wattage is greater than or equal to 25W OR 50 lamp lumens/circuit Watt when the lamp wattage is less than 25W. 4. External light fittings are controlled through a time switch, or daylight sensor, to prevent operation during daylight hours. Daylight sensor override on a manually switched lighting circuit is acceptable.	**1**	**1**		**London Borough of Camden requires 60% un-weighted credits to be targeted for the Energy section of the BREEAM assessment, as stated within Section 9 of Camden's Sustainability Planning Guidance 3.** The design team confirmed that this credit issue is targeted for the Proposed Development to achieve the BREEAM 'Excellent' rating.
Ene 04 **Low and Zero Carbon Technologies**	**Feasibility study/Renewable supply contract** **One credit** 1. A feasibility study has been carried out by an energy specialist (see Compliance notes) to establish the most appropriate local (on-site or near-site) low or zero carbon (LZC) energy source for the building/development. This study covers as a minimum: a. Energy generated from LZC energy source per year b. Life cycle cost of the potential specification, accounting for payback c. Local planning criteria, including land use and noise d. Feasibility of exporting heat/electricity from the system e. Any available grants f. All technologies appropriate to the site and energy demand of the development. g. Reasons for excluding other technologies. h. Where appropriate to the building type, connecting the proposed building to an existing local community CHP system or source of waste heat or power OR specifying a building/site CHP system or source of waste heat or power with the potential to export excess heat or power via a local community energy scheme. 2. A local LZC energy technology has been specified for the building/development in line with the recommendations of the above feasibility study. 3. The feasibility study has been carried out at RIBA stage C (concept design) or equivalent procurement stage.	**1**	**1**		**London Borough of Camden requires 60% un-weighted credits to be targeted for the Energy section of the BREEAM assessment, as stated within Section 9 of Camden's Sustainability Planning Guidance 3.** **Feasibility study/Renewable supply contract** One credit is targeted for the production of a BREEAM compliant feasibility study undertaken at RIBA Stage C in line will all relevant BREEAM criteria. A BREEAM compliant feasibility study will need to be carried out at this stage of works to pursue this credit. **Low or zero carbon technology specification and installation** Two credits are targeted at present to meet the above LBC requirement. It is currently proposed that Air Source Heat Pump (ASHP) systems as well as Photovoltaic (PV) panels have been identified as feasible for on-site heat and electricity generation respectively and could provide 20% reduction in regulated CO2 emissions.
	4. The organisation that occupies the building has in place a contract with an energy supplier to provide electricity for the assessed building/development from a 100% renewable energy source. This supply must be delivered by an accredited external renewable source. The contract must be valid for a minimum of 3 years from the date the assessed building becomes occupied.				
	Low or zero carbon technology specification and installation 5. The criterion above are achieved AND a local LZC energy technology has been installed in line with the recommendations of the feasibility study and this method of supply results in a reduction in regulated CO2 emissions as follows: For two credits, 10%, For three credits 20% OR alternatively Where the feasibility study includes a Life Cycle Assessment of the carbon impact of the chosen LZC system(s), accounting for its embodied carbon emissions and operational car-bon savings and emissions, and this method of supply results in a reduction in life cycle CO2 emissions as follows: For three credits, 10% For four credits 20% The LCA study must be completed in accordance with ISO 14044:2006 Environmental Man-agreement Life Cycle Assessment – Requirements and Guidelines6 The LCA must consider a 60 year period (a typical assumption for the life of a building) and any necessary replacements/maintenance requirements within this period. 6. Figures used for calculations of the percentage carbon reduction provided by LZC technology are based on the output from approved energy modelling software.	**3**	**2**		

Credit Reference	Brief Description *(Refer to the BREEAM Manual for a full description)*	Max Credits	Targeted Credits	Additional uplift credits identified	Comments
	Pre-assessment Provisional Scores:		**70.21%**	**73.35%**	
	Ratings		**BREEAM 'Excellent'**	**BREEAM 'Excellent'**	
Ene 04 **Low and Zero Carbon Technologies**	**Free cooling** 7. Where, regardless of the percentage reduction in the building's CO2 emissions from LZC sources and number of BREEAM credits achieved above, the building utilises ANY of the following free cooling strategies and the first credit within the BREEAM issue Hea 03 Thermal comfort has been achieved: 1) Night-time cooling (requires fabric to have a high thermal mass), 2) Ground coupled air cooling, 3) Displacement ventilation, 4) Ground water cooling, 5) Surface water cooling, 6) Evaporative cooling, direct or indirect, 7) Desiccant dehumidification and evaporative cooling, using waste heat, 8) Absorption cooling, using waste heat, 9) The building does not require any form of cooling (i.e. naturally ventilated)	**1**	**0**		No credits are targeted at present as free cooling is not proposed.
Ene 04 **Innovation**	**Exemplary level criteria** The exemplary level criteria to achieve an innovation credit for this BREEAM issue are outlined on Page 169 of the BREEAM Technical Guide.	**1**	**0**		Based on information collected about the scheme, these credits have been marked as non-achievable at present.
Ene 06 **Energy efficient transportation systems**	**One Credit** 1. Where either lifts, escalators or moving walks (transportation types) are required: a. An analysis of the transportation demand and usage patterns for the building has been carried out by the design team to determine the optimum number and size of lifts (including counter-balancing ratio), escalators and/or moving walks. b. The energy consumption has been estimated for one of the following: i. At least two types of system (for each transportation type required), OR ii. An arrangement of systems (e.g. for lifts, hydraulic, traction, MRL) OR iii. A system strategy which is 'fit for purpose' (scheduling) c. The lift/escalator/moving walk system/strategy with the lowest energy consumption is specified.	**1**	**1**		**London Borough of Camden requires 60% un-weighted credits to be targeted for the Energy section of the BREEAM assessment, as stated within Section 9 of Camden's Sustainability Planning Guidance 3.** Two credits are targeted for this issue. Please note the criteria relating to lifts within this issue do not apply to lifting platforms, wheelchair stair lift/platforms or other similar facilities to aid persons with impaired mobility. However, any lift with a rated speed greater than 0.15m/s must be assessed inclusive of goods, vehicle, passenger and impaired mobility lifts. Please note that the inclusion of three out of the following four features that offer the greatest potential energy savings for the development (stand-by operation during off-peak times, uses energy-efficient lighting and display lighting, variable-speed/ frequency/ voltage drive controller, regenerative drive unit) should be included within the specification. Furthermore, all credit requirements to target two credits for the ENE 06 issue should be included within the Contractor's responsibilities.
	One Credit 2. For lifts, of the following energy-efficient features the three that offer the greatest potential energy savings are specified: a. The lifts operate in a stand-by condition during off-peak periods. b. The lift car uses energy-efficient lighting and display lighting i.e. an average lamp efficacy, across all fittings in the car, of >55 lamp lumens/ circuit watt and lighting switches off after the lift has been idle for a prescribed length of time. c. The lift uses a drive controller capable of variable-speed, variable-voltage, variable-frequency (VVVF) control of the drive motor. d. The lift has a regenerative drive unit so that any energy generated by a traction lift (due to running up loaded to less than the counterbalancing ratio or running down loaded to more than the counter balancing ratio) or by a hydraulic lift (due to running down) is returned back to the electricity utility supplier or used elsewhere in the building	**1**	**1**		

Credit Reference	Brief Description *(Refer to the BREEAM Manual for a full description)*	Max Credits	Targeted Credits	Additional uplift credits identified	Comments
	Pre-assessment Provisional Scores:		**70.21%**	**73.35%**	
	Ratings		**BREEAM 'Excellent'**	**BREEAM 'Excellent'**	
Ene 08 **Energy efficient equipment**	1. Identify from the list below the functions/equipment that are or will be present within the assessed building. Of those functions identify which will be responsible for the significant majority of unregulated energy consumption in the multi-residential building, where applicable: A. Small power, plug in equipment The following equipment EITHER qualifies for an Enhanced Capital Allowance Scheme claim (i.e. is on the Energy Technology Product List, ETPL) OR has been awarded an Energy Star rating OR has been procured in accordance with the Government Buying Standards 1. Office equipment 2. Domestic scale white goods and other small powered equipment 3. Supplementary electric heating. B. Communal laundry facilities with commercial sized appliances: At least one of the following can be demonstrated for commercial sized appliances: 1. Specification of heat recovery from waste water 2. Use of greywater for part of the washing process i.e. either water from the final rinse used for the next pre-wash or water sourced from a rain water collection tank(s) 3. The commercial or industrial sized machine(s) is identified as eligible for the UK's Enhanced Capital Allowance Scheme. C. Residential areas with domestic scale appliances (individual and communal facilities): 1. Fridges, fridge freezers, washing machines, tumble dryers and dishwashers are all recommended by the Energy Savings Trust website 2. Washer-dryers have a B rating (or better) under the EU Energy Efficiency Labelling Scheme. OR 3. If appliances will be purchased during occupation by the tenant/owner, information on the EU Energy Efficiency Labelling Scheme of efficient white goods must be provided to the residential aspect of the building. Note: 1. Any white goods available to purchase from the developer must be compliant with criteria F1 and F2 above. 2. If criteria F3 is chosen to demonstrate compliance, only one of the two available credits can be awarded. D. Kitchen and catering facilities: Where the project team can demonstrate that the project has incorporated at least one energy efficiency measure outlined in each of the following sections of CIBSE Guide TM50: 1. Section 8 (Drainage and kitchen waste removal) 2. Section 9 (Energy controls - specifically controls relevant to equipment), 3. Section 11 (Appliance specification, fabrication specification - not utensil specification), 4. Section 12 (Refrigeration), 5. Section 13 (Warewashing: dishwashers and glasswashers), 6. Section 14 (Cooking appliance selection), 7. Section 15 (Water temperatures, taps, faucets and water saving controls) Ensure that those functions/equipment meet the specified criteria in the BREEAM manual.	**2**	**1**		**London Borough of Camden requires 60% un-weighted credits to be targeted for the Energy section of the BREEAM assessment, as stated within Section 9 of Camden's Sustainability Planning Guidance 3.** One credit is targeted for the specification of energy efficient equipment which will be responsible for the significant majority of unregulated energy consumption in the multi-residential building. Please note that for Item C of the credit requirements, as stated within the "Brief" column of this document, if criterion 3 (information on the EU Energy Efficiency Labelling Scheme of efficient white goods) will be used to demonstrate partial or full compliance for this function (i.e. if not all the white goods stated within criteria 1 and 2 will be provided by the Client), then one credit can be targeted as a maximum for the ENE 8 issue, provided compliance is met for all other functions that are likely to contribute to the "significant majority" of unregulated energy consumption. One credit is targeted at present.
Ene 09 **Drying lines**	**One credit** 1. Individual bedrooms: An adequate internal or external space with posts and footings, or fixings capable of holding: a. 2m+ of drying line per bedroom for developments with up to 30 individual bedrooms plus b. 1.0m of additional drying line for each bedroom over the 30 individual bedroom threshold. AND 3. The space (internal or external) is secure.	**1**	**1**		The design team confirmed that this credit would be targeted. There is potential to omit this credit if drying lines will be a danger to the residents, then this credit should be excluded from the assessment. This will be discussed with BREEAM assessor at the full assessment stage.
TRANSPORT- - One credit is worth 0.89% for this category (apart from Exemplary Performance credits which are worth 1.00% each)					
Tra 01 **Public transport accessibility**	**Accessibility index** 1. The public transport Accessibility Index (AI) for the assessed building is calculated and BREEAM credits awarded in accordance with the table of building types, AI benchmarks and BREEAM credits as described in the table on page 209 of the BREEAM Technical Guide. 2. The Accessibility Index is determined by entering the following information in to the BREEAM Tra 01 calculator: a) The distance (m) from the main building entrance to each compliant public transport node b) The public transport type(s) serving the compliant node e.g. bus or rail c) The average number of services stopping per hour at each compliant node during the standard operating hours of the building for a typical day (see Compliance notes and Table 7-1 in the Additional Information section of the BREEAM Technical Guide).	**3**	**3**		The PTAL for the Proposed Development is 5 and the Accessibility Index is over 12. Therefore three credits can be targeted.
	Dedicated bus service 3. For buildings with a fixed shift pattern i.e. where building users will predominantly arrive/depart at set times, one credit can be awarded where the building occupier will provide a dedicated bus service to and from the building at the beginning and end of each shift/day. This credit is available on the basis that the building is unable to achieve any of the available credits using the above methodology (i.e. it has a low Accessibility Index), yet the building occupier is providing a suitable alternative transport option for a majority of the building users	**-**	**0**		-

Credit Reference	Brief Description *(Refer to the BREEAM Manual for a full description)*	Max Credits	Targeted Credits	Additional uplift credits identified	Comments
	Pre-assessment Provisional Scores:		**70.21%**	**73.35%**	
	Ratings		**BREEAM 'Excellent'**	**BREEAM 'Excellent'**	
Tra 02 **Proximity to amenities**	**One credit** 1. Where the building is located within 500m and accessible to the following amenities: - Grocery shop or food outlet AND Post box AND cash machine **Two credits** 2. Where the building is located within 1000m and accessible to eight of the following amenities: - Grocery shop or food outlet, Post box, cash machine, Pharmacy, GP surgery/medical centre, Leisure/sport centre, Outdoor open public access area, Public House, Community centre, Place of Worship	**2**	**2**		It is understood that a Sainsbury's is approximately 200m walking distance from the Proposed Development which also contains an ATM . Furthermore, a post box is located nearby to the Sainsbury's (75-77 Chalk Farm Road). It is understood that a pharmacy, GP surgery, leisure centre, park, pub and church are located approximately 500m walking distance from the Proposed Development. Additionally, the Proposed Development contains a community centre on the ground floor. Two credits are therefore targeted.

Credit Reference	Brief Description *(Refer to the BREEAM Manual for a full description)*	Max Credits	Targeted Credits	Additional uplift credits identified	Comments
	Pre-assessment Provisional Scores:		**70.21%**	**73.35%**	
	Ratings		**BREEAM 'Excellent'**	**BREEAM 'Excellent'**	
Tra 03 **Cyclist facilities**	**Multi-residential:** **One credit** **-** 1 compliant space for every 10 staff and two out of three compliant cyclist facilities (compliant showers, changing space & lockers, drying space) - 1 compliant wheelchair/ electric buggy storage spaces for every 10 residents (Where the resident profile is not the elderly or physical disabled/impaired then, where appropriate, the requirement for wheelchair/electric buggy spaces should be changed to compliant cycle spaces) <u>Compliant showers:</u> One shower must be provided for every 10 cycle storage spaces , subject to a minimum of one shower. Any development providing eight showers or more will comply regardless the number of cycle storage spaces provided. Both male and female users must be catered for i.e. either separate showers within shared gender-specific facilities (required provision split 50-50) or single shower cubicles and changing space for mixed use. The showers do not need to be dedicated to cyclists and can be those shared with other users/uses. <u>Changing facilities and locker criteria;</u> • Changing areas must include adequate space and facilities to hang/store clothing and equipment whilst changing/showering e.g. bench seat and/or hooks. • The number of lockers is at least equal to the number of cycle spaces required. • Lockers are either in or adjacent to compliant changing rooms. • The lockers are sized appropriately for the storage of a cyclists equipment e.g. helmet, shoes, clothing, panniers/back-pack and cyclists equipment. 6. • Both male and female users are catered for i.e. either gender specific, shared facilities or individual changing cubicles in mixed use areas. Toilet/shower cubicles can not be counted as changing facilities. <u>Compliant Drying Space:</u> The drying space (for wet clothes) must be a specially designed and designated space with adequate heating/ventilation. A plant room is not a compliant drying space. <u>Compliant wheelchair and buggy storage facilities:</u> • Charging points for electric buggies (at least 2) provided within the storage space • The storage area must be secure yet easily accessible to both the internal and external parts of the building e.g. direct access to the outside. • Direct access from the storage space to the interior of the building, without having to return outside, must be provided. 4. • Lighting of the storage facility must be compliant with the external (or internal where relevant) lighting criteria defined in BREEAM issue Hea 01 Visual comfort. • The lighting must be controlled to avoid 'out-of-hours' use and operation during daylight hours, where there is sufficient daylight in/around the facility.	**1**	**1**		One credit is targeted at present for the provision of one complaint cycle space for every ten staff members as well as provision of two out of the there compliant cyclist facilities (compliant showers, changing space & lockers, drying space). Furthermore, it is understood that 31 one bedroom dwellings and 7 two bedroom dwellings are currently proposed for the residential element of the Proposed Development. This constitutes an average of 83 residents if it is assumed that two people will live in a one bedroom dwelling and three people will live in a two bedroom dwelling. Based on this assumption, a minimum of nine wheelchair/ electric buggy spaces are required to be provided within the storage space. The space should contain at least two charging points for electric buggies and have adequate lighting in line with BREEAM requirements. One credit is targeted.
Tra 04 **Maximum car parking capacity**	The following is required to demonstrate compliance: 1. The building's car parking capacity is compared to the maximum car parking capacity per-mitted according to the benchmarks in the table below, and the relevant number of BREEAM credits awarded. For most building types, except those where stated, the benchmarks vary according to the buildings public transport Accessibility Index (determined in accordance with BREEAM issue Tra 01). Therefore, for these building types the AI must be determined prior to assessing this issue. This is required to ensure that the building's car parking capacity is relative to the developments' accessibility to public transport links. Number of credits are dependant on the table starting on page 235 of the BREEAM Manual. **Multi-residential:** **One credit** One parking space for every six building users; **Two credits** One parking space for every seven building users.	**2**	**2**		Based on proposed floor plan dated 15/05/14, no car parking spaces are to be provided. Therefore two credits are targeted at present.

Credit Reference	Brief Description *(Refer to the BREEAM Manual for a full description)*	Max Credits	Targeted Credits	Additional uplift credits identified	Comments
		Pre-assessment Provisional Scores:	**70.21%**	**73.35%**	
		Ratings	**BREEAM 'Excellent'**	**BREEAM 'Excellent'**	
Tra 05 **Travel plan**	1. A travel plan has been developed as part of the feasibility and design stages which considers all types of travel relevant to the building type and users. 2. The travel plan takes into consideration the findings of a site-specific transport survey and assessment that covers the following: a. Existing travel patterns and opinions of existing building or site users towards cycling and walking so that constraints and opportunities can be identified b. Travel patterns and transport impact of future building users c. Current local environment for walkers and cyclists (accounting for visitors who may be accompanied by young children) d. Disabled access (accounting for varying levels of disability and visual impairment) e. Public transport links serving the site f. Current facilities for cyclists 3. The travel plan includes a package of measures that have been used to steer the design of the development in order to meet the travel plan objectives and minimise car-based travel patterns. This is demonstrated via specific examples such as: a. Providing parking priority spaces for car sharers b. Providing dedicated and convenient cycle storage and changing facilities c. Lighting, landscaping and shelter to make pedestrian and public transport waiting areas pleasant d. Negotiating improved bus services, i.e. altering bus routes or offering discounts e. Restricting and/or charging for car parking f. Criteria for lobby areas where information about public transport or car sharing can be made available g. Pedestrian and cycle friendly (for all types of user regardless of the level of mobility or visual impairment) via the provision of cycle lanes, safe crossing points, direct routes, appropriate tactile surfaces, well lit and signposted to other amenities, public transport nodes and adjoining offsite pedestrian and cycle routes. h. Providing suitable taxi drop-off/waiting areas. i. Ensuring that rural buildings are located with appropriate transport access to ensure that they adequately serve the local community (where procured to do so e.g. community centre). 4. Where appropriate to the building type, size and intended operation, the travel plan includes measures tailored to minimise the impacts of operational-related transport e.g. deliveries of supplies, equipment and support services to and from the site. 5. Where the building's final occupier is known, they confirm that the travel plan will be implemented post construction and supported by the building's management during building operation.	**1**	**1**		A BREEAM compliant Travel Plan will be produced at the feasibility and design stages which considers all types of travel relevant to the building type and users. One credit is targeted.
WATER- One credit is worth 0.67% for this category (apart from Exemplary Performance credits which are worth 1.00% each)					
Wat 01 **Water consumption**	**One credit - Pre-requisite for Very Good or above.** 1. An assessment of the efficiency of the building's domestic water consuming components is undertaken using the BREEAM Wat 01 calculator. 2. The water consumption (litres/person/day) for the assessed building is compared against a notional baseline performance and BREEAM credits awarded as follows: One credit where there is a 12.5% improvement Two credits where there is a 25% improvement Three credits where there is a 40% improvement Four credits where there is a 50% improvement Five credits where there is a 55% improvement 3. The efficiency of the following 'domestic scale' water consuming components must be included in the calculation (where specified): WCs, Urinals, Taps (wash hand basins and where specified kitchen taps and waste disposal unit), Showers, Baths, Dishwashers (domestic and commercial sized), Washing machine (domestic and commercial/industrial sized). The BREEAM Wat 01 calculator defines the building types and activity areas for which the above components must be assessed. 4. Where a greywater and/or rainwater system is specified, its yield (l/person/day) can be used to off-set non potable water demand from components that would otherwise be supplied using potable water. 5. Any greywater systems must be specified and installed in compliance with BS8525-1:2010 Greywater Systems - Part 1 Code of Practice1. Any rainwater systems must be specified and installed in compliance with BS8515:2009 Rainwater Harvesting Systems - Code of practice2. 6. Report the total net water consumption in m3/person/yr, via the BREEAM scoring and reporting tool (where total net water consumption can be modelled by the BREEAM Wat 01 calculator for the assessed building type). This figure is reported by the assessor via the BREEAM scoring and reporting tool.	**5**	**2**		**London Borough of Camden requires 60% un-weighted credits to be targeted for the Water section of the BREEAM assessment, as stated within Section 9 of Camden's Sustainability Planning Guidance 3.** Two credits are currently targeted for the specification of efficient sanitaryware within the Proposed Development.
Wat 01 **Innovation**	**Exemplary Criteria** The exemplary credit is awarded for 65% improvement in water consumption (litres/person/day) for the assessed building when compared against a notional baseline performance.	**1**	**0**		Further credits under this criterion would require rainwater or greywater recycling and therefore have not been considered for this scheme.

Credit Reference	Brief Description *(Refer to the BREEAM Manual for a full description)*	Max Credits	Targeted Credits	Additional uplift credits identified	Comments
	Pre-assessment Provisional Scores:		**70.21%**	**73.35%**	
	Ratings		**BREEAM 'Excellent'**	**BREEAM 'Excellent'**	
Wat 02 **Water monitoring**	**Pre-requisite** 1. The specification of a water meter on the mains water supply to each building; this includes instances where water is supplied via a borehole or other private source.	**1**	**-**		The design team confirmed that this credit issue is targeted. A water meter should be specified on the mains water supply to each building; this includes instances where water is supplied via a borehole or other private source.
	Water Monitoring 2. Water-consuming plant or building areas, consuming 10% or more of the building's total water demand, are either fitted with sub meters or have water monitoring equipment integral to the plant or area. 3. Each meter (main and sub) has a pulsed output to enable connection to a Building Management System (BMS) for the monitoring of water consumption. 4. If the site on which the building is located has an existing BMS, managed by the same occupier/owner (as the new building), the pulsed water meter(s) for the new building must be connected to the existing BMS.		**1**		**London Borough of Camden requires 60% un-weighted credits to be targeted for the Water section of the BREEAM assessment, as stated within Section 9 of Camden's Sustainability Planning Guidance 3.** One credit is targeted at present for specification of BREEAM compliant water monitoring system.
Wat 03 **Water leak detection and prevention**	1. A leak detection system which is capable of detecting a major water leak on the mains water supply within the building and between the building and the utilities water meter. 2. The leak detection system is: a. Audible when activated b. Activated when the flow of water passing through the water meter/data logger is at a flow rate above a pre-set maximum for a pre-set period of time c. Able to identify different flow and therefore leakage rates, e.g. continuous, high and/or low level, over set time periods d. Programmable to suit the owner/occupiers' water consumption criteria e. Where applicable, designed to avoid false alarms caused by normal operation of large water-consuming plant such as chillers.	**1**	**1**		**London Borough of Camden requires 60% un-weighted credits to be targeted for the Water section of the BREEAM assessment, as stated within Section 9 of Camden's Sustainability Planning Guidance 3.** One credit is targeted for the specification of BREEAM compliant water leak detection system.
	3. One of the following types of flow control device is fitted to each WC area/facility to ensure water is supplied only when needed: A time controller, A programmed time controller, A volume controller, A presence detector and controller, A central control unit. Please note that the specification of flow control devices in WC areas/facilities does not apply to ensuite facilities in residential areas e.g. ensuite in individual private bedrooms and a single bathroom for a collection of individual private bedrooms in halls of residence, key worker accommodation or sheltered accommodation. The credit and criteria are however applicable to buildings with guest bedrooms with ensuite facilities, e.g. hotel rooms, and communal WC areas/facilities, e.g. communal WC facilities in hotels/hostels and care homes.	**1**	**1**		**London Borough of Camden requires 60% un-weighted credits to be targeted for the Water section of the BREEAM assessment, as stated within Section 9 of Camden's Sustainability Planning Guidance 3.** One credit is targeted for the specification of BREEAM compliant flow control device fitted to each communal or guest WC area/facility within the Proposed Development to ensure water is supplied only when needed.
Wat 04 **Water efficient equipment**	1. Where an irrigation method specified for internal or external planting and/or landscaping, it complies with ANY ONE of the following: a. Drip feed subsurface irrigation that incorporates soil moisture sensors. The irrigation control should be zoned to permit variable irrigation to different planting assemblages. b. Reclaimed water from a rainwater or greywater system. The storage system must be appropriately sized i.e. storage capacity is relative to the size of the soft landscaped area. c. External landscaping and planting that relies solely on precipitation, during all seasons of the year. d. All planting specified is restricted to species that thrive in hot and dry conditions. e. Where no dedicated, mains-supplied irrigation systems (including pop-up sprinklers and hoses) are specified and planting will rely solely on manual watering by building occupier or landlord. 2. Where a sub surface drip feed irrigation system is installed for external areas, a rainstat must also be installed to prevent automatic irrigation of the planting and the landscape during periods of rainfall. 3. Where a vehicle wash system is specified, it uses a full or partial reclaim unit which contains one or more of the following: a hydro-cyclone, a sand or activated carbon filter, a sump tank(s), three chamber interceptors, and a cartridge filter or bag filter. This is in line with the ECA water technology list.	**1**	**1**		**London Borough of Camden requires 60% un-weighted credits to be targeted for the Water section of the BREEAM assessment, as stated within Section 9 of Camden's Sustainability Planning Guidance 3.** One credit is targeted at present for any/ all landscaping specified to rely solely on precipitation, during all seasons of the year.

Credit Reference	Brief Description *(Refer to the BREEAM Manual for a full description)*	Max Credits	Targeted Credits	Additional uplift credits identified	Comments
	Pre-assessment Provisional Scores:		**70.21%**	**73.35%**	
	Ratings		**BREEAM 'Excellent'**	**BREEAM 'Excellent'**	
MATERIALS- One credit is worth 0.96% for this category (apart from Exemplary Performance credits which are worth 1.00% each)					
Mat 01 **Life cycle impacts**	1. BREEAM awards credits on the basis of the building's quantified environmental life cycle impact through assessment of the main building elements, as set out in Table 9-1 of the BREEAM Technical Guide. 2. Credits are awarded on the basis of the total number of points achieved, as set out in Table 9-2, and calculated using the BREEAM Mat 01 calculator. This point's score is based on the Green Guide rating(s) achieved for the specifications that make-up the main building elements (as above). Note: Where an independently verified third-party Environmental Product Declaration (EPD), covering part of or the whole life cycle, is available for a material/product that forms part of an assessed building element, this can be used to increase the contribution of that element to the building's Mat 01 performance (refer to Calculation procedures in the Additional Information section for more detail). 3. Life cycle Green House Gas emissions (kgCO2 eq.) for each element are also required to be reported based on a 60-year building life. Where specific data is not available for a product or element, generic data should be used. Generic data can be obtained from the online Green Guide for each element and must be entered in to the BREEAM Mat 01 calculator.	**6**	**2**		**London Borough of Camden requires 40% un-weighted credits to be targeted for the Materials section of the BREEAM assessment, as stated within Section 9 of Camden's Sustainability Planning Guidance 3.** The architect confirmed at the meeting that the Proposed Development is made up of a concrete frame and brick outer skin. No further information was made available. Two credits are preliminarily targeted currently.
Mat 01 **Innovation**	**Exemplary level criteria** The following outlines the two exemplary level routes available to achieve up to three innovation credits for this BREEAM issue. **Route 1: Using the Green Guide to Specification (elemental approach) - one credit** 4. Where assessing four or more applicable building elements, the building achieves at least two points in addition to the total points required to achieve maximum credits under the standard BREEAM criteria (as outlined in the table above) OR 5. Where assessing fewer than four applicable building elements, the building achieves at least one point in addition to the total points required to achieve maximum credits under the standard BREEAM criteria. Where the assessed building does not specify an element listed above, see the Compliance note regarding the exemplary level benchmark. **Route 2: Using compliant Life Cycle Assessment software tools (Whole Building approach) - two credits** 6. Where the design team has used an IMPACT compliant software tool (or equivalent) to measure the environmental impact of the building. 7. Where the design team can demonstrate how the use of an IMPACT compliant soft-ware (or equivalent) has benefited the building in terms of measuring and reducing its environmental impact. 8. Where the design team submit the Building Information Model (BIM) from the IMPACT compliant software tool (or equivalent) for the assessed building to BRE Global (via the project's appointed BREEAM assessor)	**1**	**0**	**0**	At this stage this credit is marked as non-achievable.
Mat 02 **Hard landscaping and boundary protection**	1. Where at least 80% of all external hard landscaping and boundary protection (by area) achieves an A or A+ rating, as defined in the Green Guide to Specification.	**1**		**1**	**ADDITIONAL UPLIFT CREDIT** This credit is marked as an uplift credit currently, where a BREEAM 'Excellent' rating is to be pursued. To target this credit, the project team would need to confirm that materials will be procured to ensure that at least 80% of all external hard surfacing and boundary protection areas achieve an A or A+ rating, as defined in the Green Guide to Specification.. One credit is marked as an 'additional uplift' credit.

Credit Reference	Brief Description *(Refer to the BREEAM Manual for a full description)*	Max Credits	Targeted Credits	Additional uplift credits identified	Comments
	Pre-assessment Provisional Scores:		**70.21%**	**73.35%**	
	Ratings		**BREEAM 'Excellent'**	**BREEAM 'Excellent'**	
Mat 03 **Responsible sourcing of materials**	1. Each of the applicable specified materials comprising the main building elements are assigned a responsible sourcing tier level and points awarded as follows: Tier level - Points 1 - 4.0 2 - 3.5 3 - 3.0 4 - 2.5 5 - 2.0 6 - 1.5 7 - 1.0 8 - 0 2. The number of BREEAM credits achieved is determined as follows: One credit where 18% of all the available points are achieved Two credits where 36% of all the available points are achieved Three credits where 54% of all the available points are achieved Note: a. The BREEAM Mat 03 calculator must be used to determine the points and credits achieved for this issue. b. To achieve points for any given building element, at least 80% of the materials that make-up that element must be responsibly sourced i.e. classified in tier 1-7. c. The number of building elements present and therefore applicable determines the maximum number of points available e.g. if nine elements are present and assessed the maximum number of available points will be 36. d. Potential variance in tier levels achieved for materials within any one element will require a pro-rata calculation of the points total for any given element. e. Refer to the Calculation procedures in the Additional Information section for a description of how the number of points and credits are determined.	**3**	**2**		**London Borough of Camden requires 40% un-weighted credits to be targeted for the Materials section of the BREEAM assessment, as stated within Section 9 of Camden's Sustainability Planning Guidance 3.** The design team confirmed that two credits would be targeted for this issue. The contractor should be required to pursue these credits within their employers requirements documentation.
	Pre-requisite 3. Confirmation that all timber used on the project is sourced in accordance with the UK Government's Timber Procurement Policy.	**-**	**Y**		The contractor, as a minimum, would need to comply with the requirements of this credit.
Mat 03 **Innovation**	**Exemplary level criteria** The following outlines the exemplary level criteria to achieve an innovation credit for this BREEAM issue: 4. Where 70% of the available responsible sourcing points have been achieved.	**1**	**0**		At this stage this credit is marked as non-achievable.
Mat 04 **Insulation**	**Pre-requisite** 1. Any new insulation specified for use within the external walls, the ground floor, the roof and the building services must be assessed.	**-**	**-**		**London Borough of Camden requires 40% un-weighted credits to be targeted for the Materials section of the BREEAM assessment, as stated within Section 9 of Camden's Sustainability Planning Guidance 3.** Both credits are marked as targeted. Compliance for this credit issue should be demonstrated by including the requirements for this credit issue in the M&E and architectural specifications. The contractor should also be required in the Employer Requirements documentation to comply with the guidance.
	Embodied impact 2. The Green Guide rating for the thermal insulation materials must be determined. 3. The Insulation Index for the building insulation is the same as or greater than 2. 4. The Insulation Index is calculated using the BREEAM Mat 04 calculator which uses the calculation methodology as set out on page 315 of the BREEAM Technical Guide.	**1**	**1**		
	Responsible sourcing 5. At least 80% by volume of the thermal insulation used in the building elements identified in Item 1 must be responsibly sourced i.e. each insulation product must be certified in accordance with either tier levels 1, 2, 3, 4, 5 or 6 as described in BREEAM issue Mat 03 .	**1**	**1**		
Mat 05 **Designing for robustness**	1. Areas of the building have been identified (both internal and external) where vehicular, trolley and pedestrian movement occur. 2. The design incorporates suitable durability and protection measures or design features/solutions to prevent damage to the vulnerable parts of the building. This must include, but is not necessarily limited to: a. Protection from the effects of high pedestrian traffic in main entrances, public areas and thoroughfares (corridors, lifts, stairs, doors etc.). b. Protection against any internal vehicular/trolley movement within 1m of the internal building fabric in storage, delivery, corridor and kitchen areas. c. Protection against, or prevention from, any potential vehicular collision where vehicular parking and manoeuvring occurs within 1m of the external building façade for all car parking areas and within 2m for all delivery areas.	**1**	**1**		**London Borough of Camden requires 40% un-weighted credits to be targeted for the Materials section of the BREEAM assessment, as stated within Section 9 of Camden's Sustainability Planning Guidance 3.** Adequate internal and external (where appropriate) suitable durability and protection measures should be incorporated into the design. One credit is targeted.

Credit Reference	Brief Description *(Refer to the BREEAM Manual for a full description)*	Max Credits	Targeted Credits	Additional uplift credits identified	Comments
	Pre-assessment Provisional Scores:		**70.21%**	**73.35%**	
	Ratings		**BREEAM 'Excellent'**	**BREEAM 'Excellent'**	
WASTE- One credit is worth 1.25% for this category (apart from Exemplary Performance credits which are worth 1.00% each)					
Wst 01 **Construction waste management**	**Construction resource efficiency** 1. Non-hazardous construction waste (excluding demolition and excavation waste) generated by the building's design and construction meets or exceeds the following resource efficiency benchmarks: **One credit** where the amount of waste generated per 100m2 of GIA is below 13.3m2 or 11.1 tonnes **Two credits** where the amount of waste generated per 100m2 of GIA is below 7.5m2 or 6.5 tonnes **Three credits** where the amount of waste generated per 100m2 of GIA is below 3.4m2 or 3.2 tonnes 2. There is a compliant Site Waste Management Plan (SWMP). 3. Where existing buildings on the site will be demolished a pre-demolition audit of any existing buildings, structures or hard surfaces is completed to determine if, in the case of demolition, refurbishment/reuse is feasible and, if not, to maximise the recovery of material from demolition for subsequent high-grade/value applications. The audit must cover: a) Identification of the key refurbishment/demolition materials. b) Potential applications and any related issues for the reuse and recycling of the key refurbishment and demolition materials.	**3**	**2**		At this stage, three credits overall have been marked as targeted under this criterion. This corresponds to the production of a compliant Site Waste Management Plan (SWMP) and non-hazardous construction waste (excluding demolition and excavation waste) generated by the building's design and construction meets is below 7.5m2 or 6.5 tonnes of waste generated per 100m2 of GIA Furthermore, at least 70% by volume (80% by tonnage) of non-hazardous non-demolition waste should be diverted from landfill AND 80% by volume (90% by tonnage) of non-hazardous demolition waste has been diverted from landfill. This is a contractor credit and the requirements should be included in the employers requirements documentation.
	Diversion of resources from landfill 4. Where 70% by volume (80% by tonnage) of non-hazardous non-demolition waste has been diverted from landfill AND 80% by volume (90% by tonnage) of non-hazardous demolition waste has been diverted from landfill. 5. There is a compliant Site Waste Management Plan (SWMP). 6. Waste materials will be sorted into separate key waste groups either onsite or offsite through a licensed contractor for recovery.	**1**	**1**		
Wst 01 **Innovation**	**Exemplary level criteria** The following outlines the exemplary level criteria to achieve an innovation credit for this BREEAM issue: 7. Non-hazardous construction waste generated by the building's design and construction is no greater than the exemplary level resource efficiency benchmark (out-lined in the above table). 8. The percentage of non hazardous construction and demolition waste (if relevant) diverted from landfill meets or exceeds the exemplary level percentage benchmark (outlined in the above table) 9. All key waste groups are identified for diversion from landfill in the pre-construction stage SWMP.	**1**	**0**		At this stage, this credit is marked as non-achievable. It can be pursued at the time of the full assessment when more details on waste arisings are known.

Credit Reference	Brief Description *(Refer to the BREEAM Manual for a full description)*	Max Credits	Targeted Credits	Additional uplift credits identified	Comments
	Pre-assessment Provisional Scores:		**70.21%**	**73.35%**	
	Ratings		**BREEAM 'Excellent'**	**BREEAM 'Excellent'**	
Wst 02 **Recycled aggregates**	1. The total amount of recycled and/or secondary aggregate specified is greater than 25% (by weight or volume) of the total high-grade aggregate specified for the development. 2. To contribute to the total amount, the percentage of high-grade aggregate specified per application (where present) that is recycled and/or secondary aggregate, must meet the following minimum levels (by weight or volume): Structural Frame: 25% Floor Slabs: 25% Bitumen: 50% Concrete road surface: 25% Pipe Bedding: 50% Building Foundations: 25% Granular Fill & Capping: 75% Gravel landscaping 100% 3. The aggregates are EITHER: a) Obtained on site OR b) Obtained from waste processing site(s) within a 30km radius of the site; the source will be principally from construction, demolition and excavation waste (CD&E) – this includes road plannings OR c) Secondary aggregates obtained from a non-construction post-consumer or post-industrial by-product source	**1**		**1**	**ADDITIONAL UPLIFT CREDIT** This credit is marked as an uplift credit currently, where a BREEAM 'Excellent' rating is to be pursued. To target this credit, the project team would need to confirm that the total amount of recycled and/or secondary aggregate specified is greater than 25% (by weight or volume) of the total high-grade aggregate specified and confirm that all relevant BREEAM criteria can be met for the development. One credit is marked as an 'additional uplift' credit.
Wst 02 **Innovation**	**Exemplary level criteria** The following outlines the exemplary level criteria to achieve an innovation credit for this BREEAM issue. 4. Where the total amount of recycled and/or secondary aggregate specified is greater than 35% (by weight or volume) of the total high-grade aggregate specified for the project. 5. To contribute to the total amount, the percentage of high-grade aggregate specified per application (where present) that is recycled and/or secondary aggregate, must meet the exemplary minimum levels (by weight or volume), as defined in the table above.	**1**	**0**	**0**	At this stage, this credit is marked as non-achievable. It can be pursued at the time of the full assessment when more details on waste arisings are known.
Wst 03 **Operational waste**	**Mandatory credit for Excellent rating.** 1. There is dedicated space(s) to cater for the segregation and storage of operational recyclable waste volumes generated by the assessed building/unit, its occupant(s) and activities. - Where there is storage space for recyclables with at least 2m2 per 1000m2 of net floor area for buildings < 5000m2 2. The dedicated space(s) must be: a. Clearly labelled, to assist with segregation, storage and collection of the recyclable waste streams b. Accessible to building occupants / facilities operators for the deposit of materials and collections by waste management contractors c. Of a capacity appropriate to the building type, size, number of units (if relevant) and predicted volumes of waste that will arise from daily/weekly operational activities and occupancy rates. 3. Where the consistent generation in volume of the appropriate operational waste streams is likely to exist, e.g. large amounts of packaging or compostable waste generated by the building's use and operation, the following facilities are provided as part of its waste management strategy: a. Static waste compactor(s) or baler(s); situated in a service area or dedicated waste management space. b. Vessel(s) for composting suitable organic waste resulting from the building's daily operation and use OR adequate space(s) for storing segregated food waste and compostable organic material prior to collection and delivery to an alternative composting facility. c. Where organic waste is to be stored/composted on site, a water outlet is provided. 4. Every dwelling, which has its own kitchen facility has a provision of three internal storage containers, as follows: a. A minimum total capacity of 30 litres b. No individual container smaller than 7 litres c. All containers in a dedicated non obstructive position d. The storage containers for recycling are provided in addition to non-recyclable waste storage. 5. Home composting facilities and a home composting information leaflet is provided within the kitchen area or communal space for each self contained dwelling, bedsit or communal kitchen .	**1**	**1**		A dedicated space will be provided to cater for the segregation and storage of operational recyclable waste volumes generated by the assessed building/unit, its occupant(s) and activities with at least 2m2 of waste storage space provided per 1000m2 of net floor area under 5000m2. An additional 2m2 of waste storage space should be provided per 1000m2 of net floor area under 5000m2, if where catering is provided . Furthermore, it is anticipated that each dwelling which has its own kitchen facility, or every six bedrooms with access to communal kitchen facilities, will have provision of three internal storage containers, as follows: a. A minimum total capacity of 30 litres b. No individual container smaller than 7 litres c. All containers in a dedicated non obstructive position d. The storage containers for recycling are provided in addition to non-recyclable waste storage. Furthermore, it is understood that London Borough of Camden does have its own kitchen waste recycling service, and it is proposed that home composting facilities and a home composting information leaflet is to be provided within the kitchen area. This credit is targeted.

Credit Reference	Brief Description *(Refer to the BREEAM Manual for a full description)*	Max Credits	Targeted Credits	Additional uplift credits identified	Comments
	Pre-assessment Provisional Scores:		**70.21%**	**73.35%**	
	Ratings		**BREEAM 'Excellent'**	**BREEAM 'Excellent'**	
LAND USE & ECOLOGY- One credit is worth 1.00% for this category (apart from Exemplary Performance credits which are worth 1.00% each)					
LE 01 **Site selection**	**Previously developed land** 1. At least 75% of the proposed development's footprint is on an area of land which has previously been developed for use by industrial, commercial or domestic purposes in the last 50 years.	**1**	**1**		The design team confirmed at the meeting that at least 90% of the Proposed Development's footprint is on an area of land which has previously been developed for use by industrial, commercial or domestic purposes in the last 50 years. One credit is targeted.
	Contaminated land 2. The site is deemed to be significantly contaminated as confirmed by a contaminated land specialist's site investigation, risk assessment and appraisal, which has identified: a) The degree of contamination b) The contaminant sources/types c) The options for remediating sources of pollution which present an unacceptable risk to the site. 3. The client or principal contractor confirms that remediation of the site will be carried out in accordance with the remediation strategy and its implementation plan.	**1**	**0**		The design team confirmed that a ground investigation has been undertaken and it showed that the site was not contaminated. Therefore this credit cannot be targeted.

Credit Reference	Brief Description *(Refer to the BREEAM Manual for a full description)*	Max Credits	Targeted Credits	Additional uplift credits identified	Comments
	Pre-assessment Provisional Scores:		**70.21%**	**73.35%**	
	Ratings		**BREEAM 'Excellent'**	**BREEAM 'Excellent'**	
LE 02 **Ecological value of site and protection of ecological features**	1. Land within the construction zone is defined as 'land of low ecological value' using either: a) The BREEAM checklist for defining land of low ecological value (see Additional Information section below) OR b) A Suitably Qualified Ecologist who has identified the land as being of 'low ecological value' within an ecological assessment report, based on a site survey. 2. All existing features of ecological value surrounding the construction zone and site boundary area are adequately protected from damage during clearance, site preparation and construction activities as listed below: a) Trees of over 100 mm trunk diameter, and/or of significant ecological value, are protected by barriers. b) Trees are protected from direct impact and from severance or asphyxiation of the roots. c) Hedges and natural areas requiring protection must either have barriers erected and be protected, or, when remote from site works or storage areas, be protected with a prohibition of construction activity in their vicinity. d) Watercourses and wetland areas are to be protected by cut-off ditches and site drainage to prevent run-off to natural watercourses (as this may cause pollution, silting or erosion). 3. In all cases, the principal contractor is required to construct ecological protection prior to any preliminary site construction or preparation works (e.g. clearing of the site or erection of temporary site facilities).	**1**	**1**		Further to discussions at the meeting, this credit issue is targeted based on preliminary reporting undertaken by an Ecologist who states that the existing site has a low ecological value based on the BREEAM definition.
LE 03 **Mitigating Ecological Impact**	**One credit - Pre-requisite for Very Good** 1. The change in ecological value of the site is less than zero but equal to or greater than minus nine i.e. a minimal change, using the methods outlined in either (a) or (b) below: a. Determine the following information and input this data in to the BREEAM LE 03/LE 04 calculator: i. The broad habitat type(s) that define the landscape of the assessed site in its existing pre-developed state and proposed state (see checklists and tables in the Additional Information section); ii. Area (m2) of the existing and proposed broad habitat types. OR b.Where a suitably qualified ecologist (SQE) has been appointed and, based on their site survey they confirm the following and either the assessor or ecologist inputs this data in to the BREEAM LE 03/LE 04 calculator: i. The broad habitat types that define the landscape of the assessed site in its existing pre-developed state and proposed state; ii. Area (m2) of the existing and proposed broad habitat plot types; iii. Average total tax on (plant species) richness within each habitat type.	**1**	**1**		Two credits are targeted at present based on preliminary reporting undertaken by an Ecologist who states planting can be incorporated into the design so that there is a slight positive change in ecological value as a result of the Proposed Development. Two credits are targeted.
	2. Where the change in ecological value of the site is equal to or greater than zero i.e. no negative change, using the methods outlined in either (a) or (b) above.	**1**	**1**		
LE 04 **Enhancing site ecology**	**One credit** 1. A suitably qualified ecologist (SQE) has been appointed to report on enhancing and protecting the ecology of the site and: a) The SQE provides an Ecology Report with appropriate recommendations for protection and enhancement of the site's ecology. b) The report is based on a site visit/survey by the SQE at RIBA stage B 2. The general recommendations of the Ecology Report for enhancement and protection of site ecology have been, or will be, implemented. **Two credits** 3. The recommendations of the Ecology Report have been implemented, and the suitably qualified ecologist confirms that this will result in an increase in ecological value of the site up to (but not including) 6 plant species. 4. The increase in plant species has been calculated using the BREEAM LE03/LE04 calculator, using actual plant species numbers. **Three credits** 5. The recommendations of the Ecology Report have been implemented, and the suitably qualified ecologist confirms that this will result in an increase in ecological value of the site of 6 plant species or greater. 6. The increase in plant species has been calculated using the BREEAM LE 03/LE 04 calculator, using actual plant species numbers.	**3**	**2**		Two credits are targeted at present based on preliminary reporting undertaken by an Ecologist who states planting can be incorporated into the design so that there is a slight positive change in ecological value as a result of the Proposed Development. Two credits are targeted.

Credit Reference	Brief Description *(Refer to the BREEAM Manual for a full description)*	Max Credits	Targeted Credits	Additional uplift credits identified	Comments
	Pre-assessment Provisional Scores:		**70.21%**	**73.35%**	
	Ratings		**BREEAM 'Excellent'**	**BREEAM 'Excellent'**	
LE 05 **Long term impact on biodiversity**	**Mandatory Criteria** 1. A suitably qualified ecologist (SQE) has been appointed prior to commencement of activities on site. 2. The suitably qualified ecologist confirms that all relevant UK and EU legislation relating to protection and enhancement of ecology has been complied with during the design and construction process. 3. A landscape and habitat management plan, appropriate to the site, is produced covering at least the first five years after project completion. This is to be handed over to the building occupants and includes: a) Management of any protected features on site b) Management of any new, existing or enhanced habitats c) A reference to the current or future site level or local Biodiversity Action Plan.	-	Y		An Ecologist has been appointed at this stage. All mandatory criteria are marked as targeted.
LE 05 **Long term impact on biodiversity**	**Additional criteria- For ONE credit two of the additional criteria are met and for TWO credits four of the additional criteria are met** 5. The principal contractor nominates a 'Biodiversity Champion' with the authority to influence site activities and ensure that detrimental impacts on site biodiversity are minimised in line with the recommendations of a suitably qualified ecologist. 6. The principal contractor trains the site workforce on how to protect site ecology during the project. Specific training must be carried out for the entire site workforce to ensure they are aware of how to avoid damaging site ecology during operations on site. Training should be based on the findings and recommendations for protection of eco-logical features highlighted within a report prepared by a suitably qualified ecologist. 7. The principal contractor records actions taken to protect biodiversity and monitor their effectiveness throughout key stages of the construction process. The requirement commits the principal contractor to make such records available where publicly requested. 8. Where a new ecologically valuable habitat, appropriate to the local area, is created. This includes habitat that supports nationally, regionally or locally important biodiversity, and/or which is nationally, regionally or locally important itself; including any habitat listed in the UK Biodiversity Action Plan (UK BAP)1, Local Biodiversity Action Plan (LBAP), those protected within statutory sites (e.g. SSSIs), or those within non-statutory sites identified in local plans. 9. Where flora and/or fauna habitats exist on site, the contractor programmes site works to minimise disturbance to wildlife. For example, site preparation, ground works, and landscaping have been, or will be, scheduled at an appropriate time of year to minimise disturbance to wildlife. Timing of works may have a significant impact on, for example, breeding birds, flowering plants, seed germination, amphibians etc. Actions such as phased clearance of vegetation may help to mitigate ecological impacts. This additional requirement will be achieved where a clear plan has been produced detailing how activities will be timed to avoid any impact on site biodiversity in line with the recommendations of a suitably qualified ecologist.	**2**	**2**		Two credits are targeted. Based on preliminary reporting , undertaken by an Ecologist. The Ecologist states within the '*Charlie Ratchford Resource Centre London Borough of Camden, Extended Ecological Phase 1 Habitat Survey Report (compliant for BREEAM and CSH Ecology credits), Produced by Greengage, November 2014*' that "due to the nature of the application site with its high proportion of existing development the additional requirements are not applicable and three of the mandatory requirements require the client team's commitment." Two credits are targeted.

Credit Reference	Brief Description *(Refer to the BREEAM Manual for a full description)*	Max Credits	Targeted Credits	Additional uplift credits identified	Comments
	Pre-assessment Provisional Scores:		**70.21%**	**73.35%**	
	Ratings		**BREEAM 'Excellent'**	**BREEAM 'Excellent'**	
POLLUTION- One credit is worth 0.77% for this category (apart from Exemplary Performance credits which are worth 1.00% each)					
Pol 01 **Impact of refrigerants**	**Three credits** 1. Where the building does not require the use of refrigerants within its installed plant/systems. OR alternatively, where the building does require the use of refrigerants, the three credits can be awarded as follows: **Two credits** 2. Where the systems using refrigerants have Direct Effect Life Cycle CO2 equivalent emissions (DELC CO2e) of ≤100 kgCO2e/kW cooling capacity. To calculate the DELC CO2e the following information is sourced from the design team and entered into the BREEAM Pol 01 calculator: a) Global Warming Potential (GWP) of the specified system refrigerant(s) b) Total refrigerant charge (kg) c) Cooling capacity of the system(s) (kW) d) Sectoral release factors: i) Annual refrigerant leakage rate (% of refrigerant charge): ii) Annual purge release factor (% of refrigerant charge): iii) Annual service release factor (% of refrigerant charge): iv) Probability factor for catastrophic system failure (%) v) Recovery efficiency (% of refrigerant charge): OR 3. Where air-conditioning or refrigeration systems are installed the refrigerants used have a Global Warming Potential (GWP) ≤10. **One credit** 4. Where the systems using refrigerants have Direct Effect Life Cycle CO2 equivalent emissions of (DELC CO2e) of ≤1000 kgCO2e/kW cooling capacity. **One credit** 5. Where systems using refrigerants are contained in a moderately air tight enclosure (or a mechanically ventilated plant room), and an automated permanent refrigerant leak detection system is installed covering high-risk parts of the plant OR where a refrigerant leak-age/charge loss detection system is specified, which is not based on the principle of detecting or measuring the concentration of refrigerant in air. 6. The automatic shutdown and pump down of refrigerant occurs on the detection of refrigerant leakage/charge loss. 7. Automatic pump-down to either a separate storage tank or into the heat exchanger is acceptable, but only where automatic isolation valves are fitted to contain the refrigerant once fully pumped down. 8. The alarm threshold that triggers automatic pump down upon detection of refrigerant in the plant room/enclosure is set to a maximum of 2000ppm (0.2%), but lower levels can be set. 9. Use a robust and tested automated permanent refrigerant leak detection system, normally defined as that included on the Enhanced Capital Allowance (ECA) Energy Technology Product List1 (or an equivalent list).	**3**	**1**		A refrigerant leak detection system in line with the relevant BREEAM criteria will be incorporated into the design. One credit is targeted.
Pol 02 **NOx emissions**	1. Where the plant installed to meet the building's delivered heating demand has, under normal operating conditions, a dry NOx emission level (measured at 0% excess O2) as follows: One credit where NOx emissions are ≤100 mg/kWh (space heating) Two credits where NOx emissions are 70 mg/kWh (space heating) Three credits are where NOx emissions are 40 mg/kWh (space heating) 2. Report via the BREEAM scoring and reporting tool the direct and indirect NOx emissions in mg/kWh and energy consumption in kWh/m2/yr from meeting the building's heating and hot water demands.	**3**	**0**	**0**	It is anticipated that this credit issue cannot be achieved with the proposed heating systems consisting of ASHP and PVs within the proposed development. Therefore this credit issue is not targeted at present.
Pol 03 **Surface water run off**	**Flood risk** **Two credits** 1. Where the assessed development is situated in a flood zone that is defined by the relevant planning, policy and technical guidance documents, as having a low annual probability of flooding. 2. A site specific Flood Risk Assessment (FRA) confirms that there is a low risk of flooding from all sources.	**2**	**2**		**Flood Risk** After a brief review of the Flood Risk Assessment for the Proposed Development, it is identified that the site is situated in a low risk of flooding. Two credits are targeted.
	Surface water run off **Pre-requisite** 6. An appropriate consultant is appointed to carry out, demonstrate and/or confirm the following criteria	**-**	**Y**		

Credit Reference	Brief Description *(Refer to the BREEAM Manual for a full description)*	Max Credits	Targeted Credits	Additional uplift credits identified	Comments
	Pre-assessment Provisional Scores:		**70.21%**	**73.35%**	
	Ratings		**BREEAM 'Excellent'**	**BREEAM 'Excellent'**	
Pol 03 **Surface water run off**	**One credit** 7. Where drainage measures are specified to ensure that the peak rate of run-off from the site to the watercourses (natural or municipal) is no greater for the developed site than it was for the pre-development site. This should comply at the 1 year and 100 year return period events and should take into account changes due to climate change. 8. Calculations include an allowance for climate change; this should be made in accordance with current best practice planning guidance. **Two credits** 9. Where flooding of property will not occur in the event of local drainage system failure (caused either by extreme rainfall or a lack of maintenance)**AND** **EITHER** 10. The post development run-off volume, over the development lifetime, is no greater than it would have been prior to the assessed site's development. 11. Any additional predicted volume of run-off for the 100 year 6 hour event must be pre-vented from leaving the site by using infiltration or other SuDS techniques OR (only where criterion no. 11 for this credit cannot be achieved) 12. Justification from the Appropriate Consultant indicating why the above criteria cannot be achieved i.e. where infiltration or other SuDS techniques are not technically viable options. 13. The post development peak rate of run-off is reduced to a limiting discharge. The limiting discharge is defined as the following and the option with the highest flow rate must be achieved; a. The pre development 1-year peak flow rate OR b. The mean annual flow rate Qbar OR c. 2l/s/ha Note that for the 1-year peak flow rate the 1 year return period event criterion applies (as described in the peak run off criteria above). 14. For either option above calculations must include an allowance for climate change; this should be made in accordance with current best practice planning guidance.	**2**	**2**		**Surface water run-off** Two credits can be targeted based on discussions with the Flood Risk Consultant. **Minimising water course pollution** This credit is stated as not achievable based on discussions with the Flood Risk Consultant. Two credits are targeted.
	Minimising water course pollution 15. The Appropriate Consultant confirms that there is no discharge from the developed site for rainfall up to 5mm. 16. Specification of Sustainable Drainage Systems (SUDs) or source control systems such as permeable surfaces or infiltration trenches where run-off drains are in areas with a relatively low risk source of watercourse pollution. 17. Specification of oil/petrol separators (or equivalent system) in surface water drainage systems, where there is a high risk of contamination or spillage of substances such as petrol and oil (see Compliance notes for a list of areas). 18. All water pollution prevention systems have been designed and detailed in accordance with the recommendations of Pollution Prevention Guideline 37 and where applicable the SUDS manual. 19. A comprehensive and up-to-date drainage plan of the site will be made available for the building/site occupiers. 20. Where the building has chemical/liquid gas storage areas, shut-off valves are fitted to the site drainage system to prevent the escape of chemicals to natural watercourses (in the event of a spillage or bunding failure). 21. Where present, all external storage and delivery areas designed and detailed in accordance with the recommendations of the Environment Agency's publication Pollution Prevention Pays Guidance and, if relevant to the building type, PPG25 Hospitals and Healthcare establishments	**1**	**0**	**0**	

Credit Reference	Brief Description *(Refer to the BREEAM Manual for a full description)*	Max Credits	Targeted Credits	Additional uplift credits identified	Comments
	Pre-assessment Provisional Scores:		**70.21%**	**73.35%**	
	Ratings		**BREEAM 'Excellent'**	**BREEAM 'Excellent'**	
Pol 04 **Reduction of night time light pollution**	1. The external lighting strategy has been designed in compliance with Table 1 of the ILE Guidance notes for the reduction of obtrusive light, 2005. 2. All external lighting (except for safety and security lighting) can be automatically switched off between 2300hrs and 0700hrs. This can be achieved by providing a timer for all external lighting set to the appropriate hours. 3. If safety or security lighting is provided and will be used between 2300hrs and 0700hrs, this part of the lighting system complies with the lower levels of lighting recommended during these hours in Table 1 of the ILE's Guidance notes, for example by using an automatic switch to reduce the lighting levels at 2300 or earlier. 4. Illuminated advertisements, where specified, must be designed in compliance with ILE Technical Report 5 – The Brightness of Illuminated Advertisements.	**1**	**1**		M&E Engineer confirmed at the meeting that the all relevant criteria can be met for this credit issue. At this stage, this credit has been targeted.
Pol 05 **Noise attenuation**	1. The credit can be awarded by default where there are or will be no noise-sensitive areas or buildings within 800m radius of the assessed development. 2. Where there are or will be noise-sensitive areas or buildings within 800m radius of the assessed development a noise impact assessment in compliance with BS 7445:1991 has been carried out and the following noise levels measured/determined: a) Existing background noise levels at the nearest or most exposed noise-sensitive development to the proposed development or at a location where background conditions can be argued to be similar. b) The rating noise level resulting from the new noise-source. 3. The noise impact assessment must be carried out by a suitably qualified acoustic consultant holding a recognised acoustic qualification and membership of an appropriate professional body. 4. The noise level from the proposed site/building, as measured in the locality of the nearest or most exposed noise-sensitive development, is a difference no greater than +5dB during the day (0700hrs to 2300hrs) and +3dB at night (2300hrs to 0700hrs) compared to the background noise level. 5. Where the noise source(s) from the proposed site/building is greater than the levels described in above, measures have been installed to attenuate the noise at its source to a level where it will comply.	**1**	**1**		It is understood that a noise impact assessment has been carried out under BS 4142:2014. Please note that amendments may be required to the noise impact assessment to demonstrate compliance with BS 7445 as per the BREEAM criteria. It is understood that plant rating noise levels will be designed to be 3 dB below the background noise level. One credit is targeted.

APPENDIX B: REGIONAL POLICY DOCUMENTS RELEVANT TO SUSTAINABILITY IN THE BUILT ENVIRONMENT

The Renewables Toolkit, 2004

New developments are expected to be assessed using procedures set out in *Integrating Renewable Energy into New Developments: Toolkit for Planners, Developers and Consultants*, September 2004. This document, otherwise known as the '*Renewables Toolkit'*, provides a review of the planning context, guidance on feasibility studies, case histories and cost models for a wide range of applications. Renewables are defined as solar hot water, photovoltaics, biomass heating or CHP, geothermal, ground source heat pumps, borehole cooling, solar air heating, fuel cells using hydrogen from a renewable source, gas from anaerobic digestion, ground cooling and micro hydro-electric schemes.

Delivering London's Energy Future: The Mayor's Climate Change Mitigation Energy Strategy, 2011

The Mayor's Climate Change Mitigation and Energy Strategy sets out Mayor's strategic approach to limiting further climate change and securing a low carbon energy supply for London.

To limit further climate change the Mayor has set a target to reduce London's CO_2 emissions by 60% of 1990 levels by 2025. *The Mayor's Climate Change Mitigation and Energy Strategy* details the programmes and activities that are ongoing across London to achieve this. These include:

- RE: NEW – retrofitting London's homes with energy efficiency measures, and helping Londoners save money off their energy bills.
- RE: FIT – retrofitting London's public sector buildings, saving millions of pounds every year.
- RE: CONNECT – ten low carbon zones in London aiming to reduce CO_2 emissions by 20% by 2012 across the community.
- Decentralised energy programme – aiming to supply 25% of London's energy from secure, low carbon local sources.

The Mayor's Climate Change Mitigation and Energy Strategy also details policies and activities underway to reduce CO_2 emissions from new development and transport through the London Plan and the Mayor's Transport Strategy.

Energy Planning - GLA Guidance on Preparing Energy Assessments, 2014

This guidance provides details on how to address the Mayor's Energy Hierarchy through the provision of an energy assessment to accompany strategic planning applications. This Energy Statement report follows the methodology outlined in this guidance.

As also outlined in the Sustainable Design and Construction SPG, from 6 April 2014 the Mayor will apply a 35% reduction target beyond ADL 2013 of the Building Regulations.

To allow developers time to transfer to the new modelling software, Stage 1 applications received by the Mayor between 6 April and the 5th July 2014 (inclusive) can demonstrate compliance with

either the new 35% target beyond the 2013 Building Regulations or the 40% target beyond the 2010 Building Regulations. All applications received from the 6th July 2014 will be assessed against the 35% reduction target beyond ADL 2013 of the Building Regulations.

District Heating Manual for London, 2013

The District Heating Manual for London was published in February 2013 and provides l guidance for developers, network designers and planners with the aim of creating a consistent framework for delivering efficient, interconnecting, district heating networks. The document supports a range of initiatives provided by City Hall to promote the Mayor's target to achieve 25 % of London's energy supply from decentralised energy sources by 2025.

The Mayor's Biodiversity Strategy, 2002

The objectives of the Biodiversity Strategy include:

- Ensuring all Londoners have ready access to wildlife and natural green spaces;
- Conserving London's plants, animals and their habitats;
- Encouraging businesses to incorporate green design into their development proposals;
- Promoting the functional benefits of biodiversity, for example flood and erosion prevention and the amelioration of ambient noise and absorption of pollutants; and
- Providing sustainable development: good quality open spaces together with green footpaths and cycleways; growing food locally and organically in allotments and gardens (providing wildlife habitat) and composting green waste and growing energy crops in London to reduce its wider ecological footprint.

The Mayor's Draft Municipal Waste Management Strategy, 2010

The Mayor has published his waste management strategies: *London's Wasted Resource*, on the management of municipal waste, and *Making Business Sense of Waste*, his Business Waste Management strategy.

London's Wasted Resource: The Mayor's Municipal Waste Management Strategy sets out the Mayor's policies and proposals for reducing the amount of municipal waste produced, increasing the amount of waste reused, recycled or composted, and generating low carbon energy from waste remaining.

Making Business Sense of Waste: The Mayor's Business Waste Management Strategy sets out initiatives to help all kinds of London's businesses, from shops, restaurants, office buildings, manufacturers to construction companies to save money and reduce harm to the environment through better waste management.

The Mayor's Ambient Noise Strategy, 2004

The overall aim of the Mayor's *Ambient Noise Strategy* is to "minimise the adverse impacts of noise on people living and working in, and visiting London using the best available practise and technology within a sustainable development framework". Thus, in the context of building design, the strategy suggests measures such as:

- Designing buildings to screen housing and other uses from noise, and create quiet outdoor spaces;
- Combining photovoltaic cells, which convert sunlight into electricity, with noise screening;
- Building over noise sources so enhancing the protection of local areas while providing new spaces for local needs; and
- Guiding late-night activities to suitable areas, where better planning, policing, transport and street management can be focused.

The Mayor's Air Quality Strategy, 2010

The first priority of the *Mayor's Air Quality Strategy* is to achieve European Union limit values for PM_{10}, $PM_{2.5}$ and NO_2 in London.

The Mayor's vision for air quality is to protect and improve the health of Londoners and increase their quality of life by significantly improving the quality of the air we breathe in London. This will:

- Make London a more pleasant place to live and work in;
- Reduce the burden on health services in the capital;
- Enhance London's position as a green city – making it more attractive to tourists and businesses; and
- Make London cleaner, whilst safeguarding its biodiversity.

Securing London's Water Future: The Mayor's Water Strategy, 2011

The *Mayor's Water Strategy* promotes increasing water efficiency and reducing water wastage to balance supply and demand for water, safeguard the environment and help tackle water affordability problems. It also sets out how the Mayor will help communities at risk of flooding to increase their resilience to flooding.

Managing risks and increasing resilience: the Mayor's Climate Change Adaptation Strategy, 2011

The *Mayor's Climate Change Strategy* looks at the climate risks we face today and analyses how they are likely to change over the century as the climate changes. It then details the actions needed to help manage extreme weather today and the impacts of longer-term climate change in the future.

A key focus of the strategy is ensuring that buildings are comfortable, affordable and sustainable. As 80 per cent of the buildings we will be living and working in by the middle of the century are already with us, it is important that we adapt these to serve us well in the future. Retrofitting our buildings to be energy efficient, water efficient and climate resilient is therefore a key challenge. We also need to increase the quantity, quality, interconnectivity and performance of our green spaces to keep us cool in the summer and dry in wet weather.

APPENDIX B: REGIONAL POLICY DOCUMENTS RELEVANT TO SUSTAINABILITY IN THE BUILT ENVIRONMENT

Core Strategy

Policy CS1 – Distribution of growth: The council will promote developments that make full use of the site and resisting developments that make inefficient use of Camden's limited land. The council expects the development to be high density in locations served well by public transport, provide for mix of uses including housing where possible and significantly increase demand of travel to be located in growth areas and other highly accessible parts of the borough.

Policy CS11 – Promoting sustainable and efficient travel: The council will protect existing and proposed transport infrastructure and promote key transport infrastructure proposals that support Camden's growth. The council will take necessary measures to promote walking, cycling and use of public transport, and to minimise congestion and addressing the environmental impacts of travel. The council will seek to reduce freight movement by road; encourage the movement by canal, rail and bicycle and minimise the impact of freight movement on local amenity, traffic and the environment.

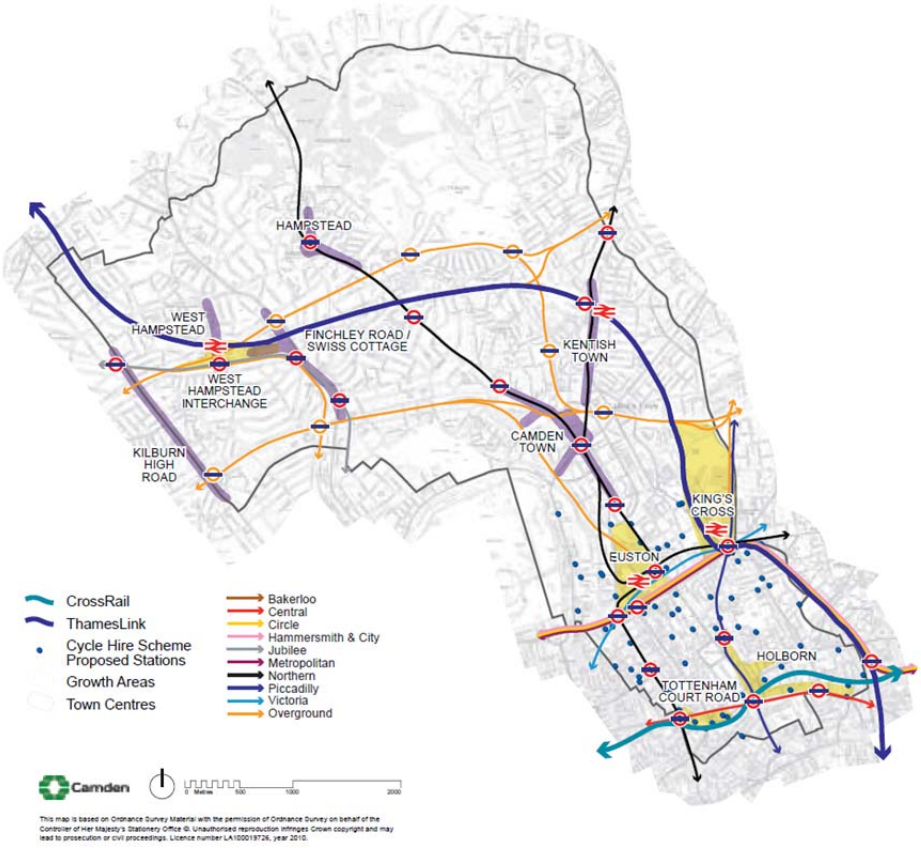

Figure 8 Location of the Proposed Development with respect to key existing and proposed transport infrastructure.

Policy CS13 – Tackling climate change through promoting higher environmental standards:

- The council requires all development to take measures to minimise the effects of, and adapt to climate change and encourage all development to meet the highest feasible environmental standards that are financially viable during construction and occupation;
- The council promotes local energy generations and networks;
- The council envisages Camden to minimise the potential for surface water flooding and be a water efficient borough and;
- By reducing carbon emissions, using new energy efficient technologies where possible and by raising awareness on mitigation and adaption measures, the council will take a lead in tackling climate change.

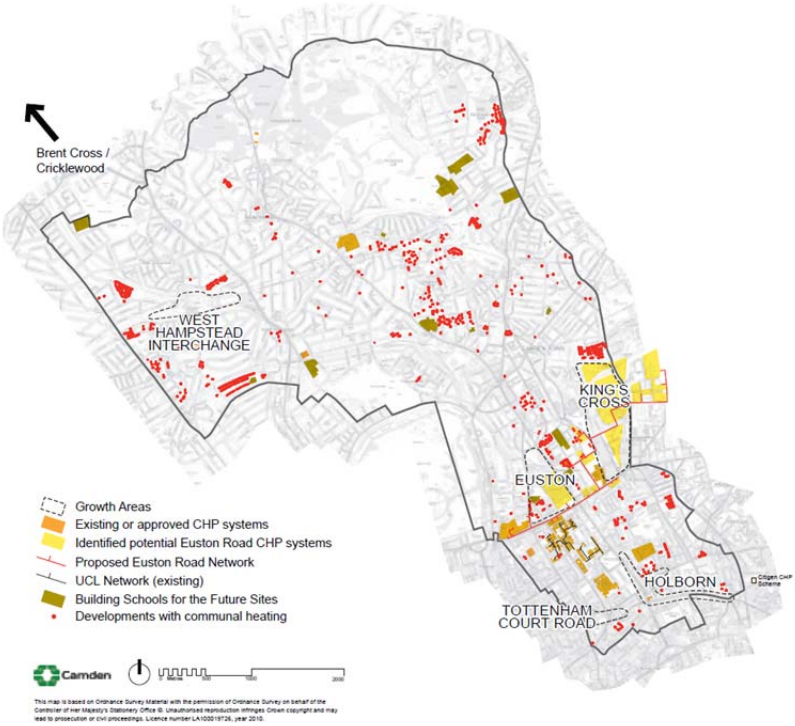

Figure 9 Location of the Proposed Development with respect to Combined heat and power network.

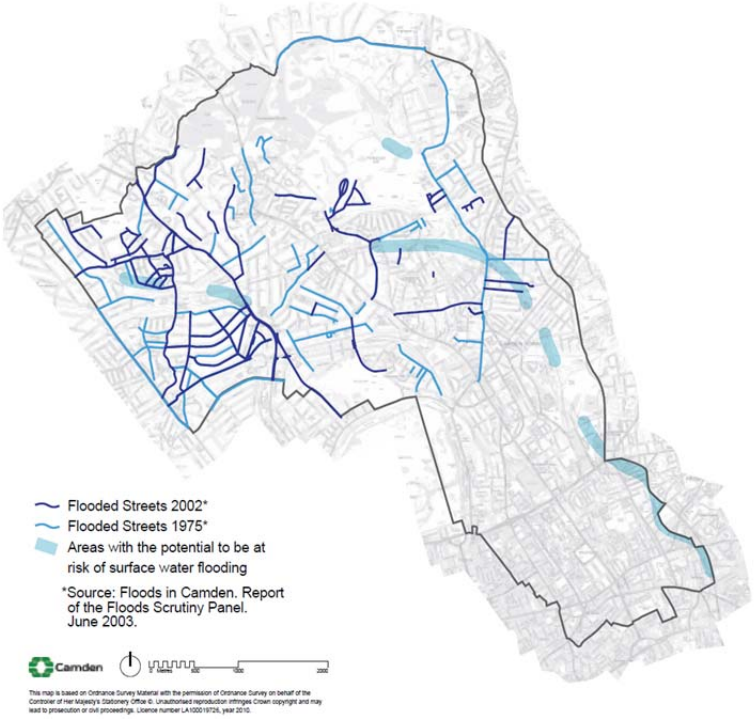

Figure 10 Location of the Proposed Development with respect to Surface water Flood risk Potential

Policy CS14 – Promoting high quality places and conserving our heritage: The council will ensure that Camden's places and buildings are attractive, safe and easy to use by protecting and enhancing Camden's rich and diverse heritage and by requiring the developments to be of highest standard of design and landscaping. Developments need to be designed to be inclusive and accessible and protect important local views.

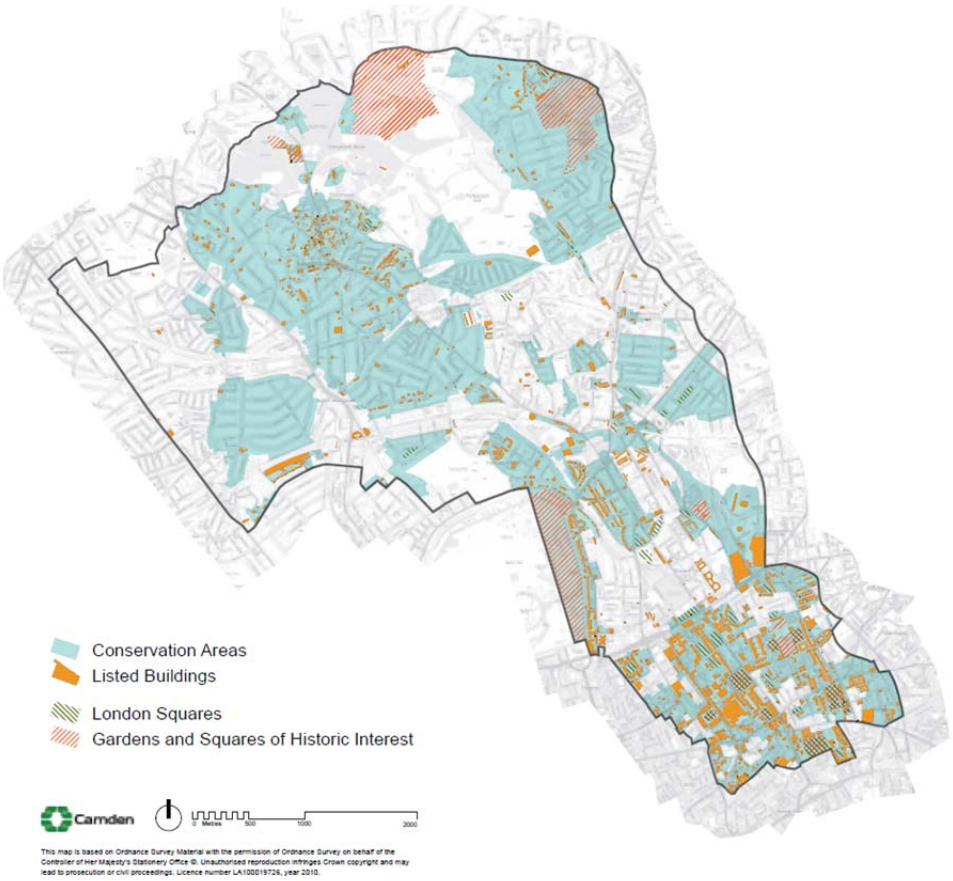

Figure 11 Location of the Proposed Development with respect to Heritage assets.

Policy CS15 – Protecting and improving our parks and open spaces and encouraging biodiversity: The council will protect and improve Camden's parks and open spaces designated in the open space schedule and by securing other opportunities for additional public open space. The council will also improve sites of nature conservation and biodiversity.

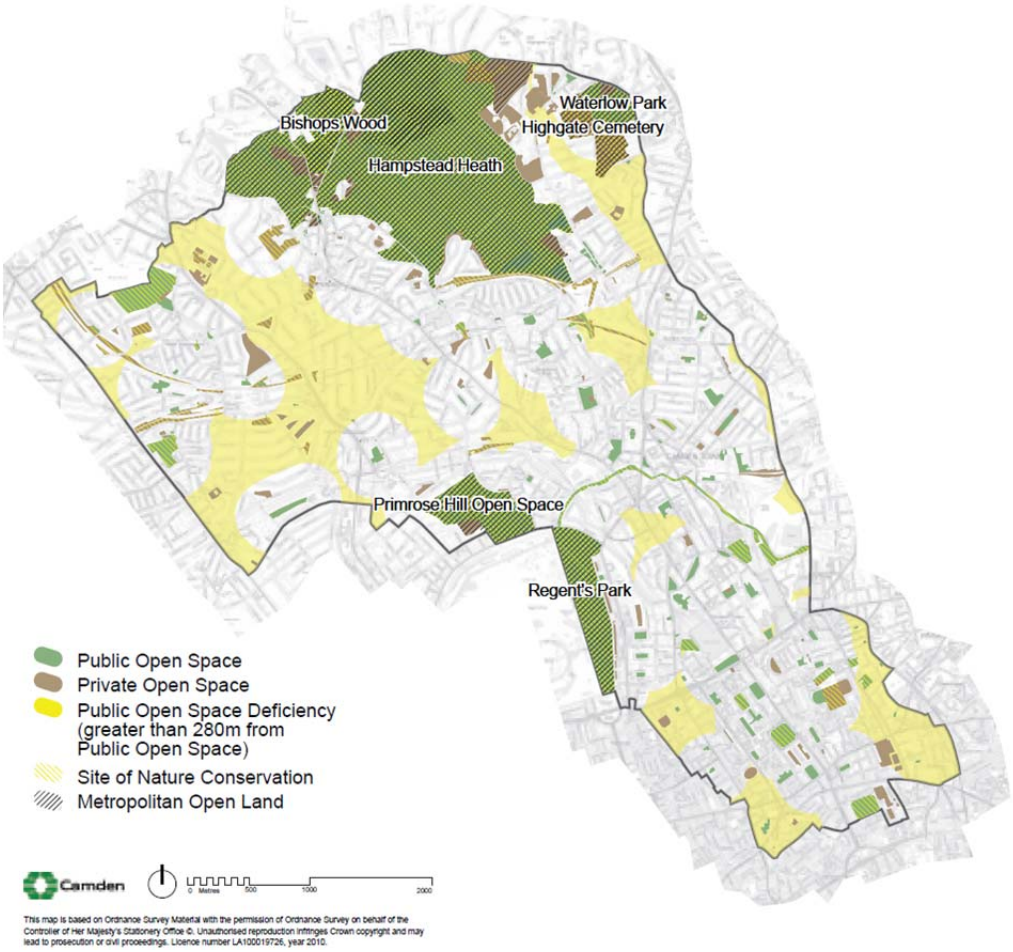

Figure 12 Location of the Proposed Development with respect to Open spaces.

Policy CS16 – Improving Camden's health and well-being: The council seeks to improve health and well-being in Camden by protecting existing health facilities, targeting measures to improve health in the areas with poorest health, support the provision of new or improved health facilities and by implementing Camden's Air Quality Action Plan.

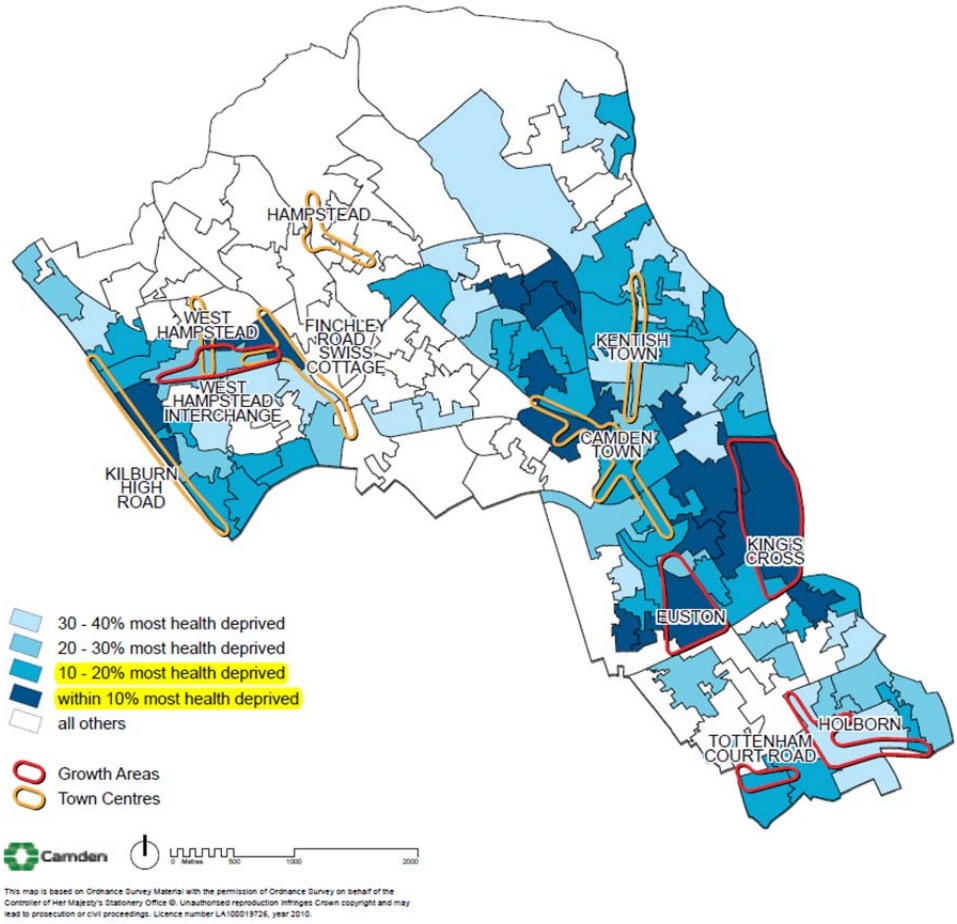

Figure 13 Location of the Proposed Development with respect to health deprivation.

Policy CS17 – Making Camden a safer place: The council aims to make Camden a safer place by requiring developments to demonstrate that they have incorporated design principles which contribute to community safety and security and promoting safer street and public areas.

Policy CS18 – Dealing with our waste and encouraging recycling: The council seeks to make Camden a low waste borough by aiming to reducing waste produced and requiring developments to include storage and collection facilities for waste and recycling.

Policy CS19 – Delivering and monitoring the Core Strategy: The council will use planning obligations and other suitable mechanism where appropriate to support sustainable development.

Development Policies

Policy DP16 – The transport implications of development:

- The developments are expected to make appropriate connections to highways and street spaces in accordance with Camden's road hierarchy and to public transport networks;

- Where appropriate the developments to provide information on likely impacts and mitigation measures;
- Provision on safe pick-up, drop-off points and waiting area for taxis and private cars and coaches where appropriate.

Policy DP17 – Walking, cycling and public transport: Developments to provide suitable provision for pedestrians, cyclist and public transport. The council will resist developments that would be dependent on travel by private motor vehicles.

Policy DP18 – Parking standards and limiting the availability of car parking: The council expects developments to be car free in central London Area. Developments to meet council's minimum standards for car and cycle parking set out in appendix 2 of the 'Development Policies Adoption: Design'.

Policy DP19 – Managing the impact of parking: The council will seek to ensure that creation of addition car parking spaces will not have negative impacts on parking, highways or the environment, The council will only permit off-street parking where it is supported by a transport assessment and is shown to meet a need that cannot be met by public transport.

Policy DP22 – Promoting sustainable design and construction:

- The developments must demonstrate how sustainable principles have been incorporated. The policy suggests inclusion of green or brown roofs and green walls where possible.
- All new build domestic housing is expected to meet Code for Sustainable Homes Level 4 by 2013 and Code Level 6 (zero carbon) is encouraged from 2016 onwards;
- All new non-domestic developments of 500sqm of floorspace or above is currently expected to achieve a BREEAM "Very Good" rating and a BREEAM "Excellent" rating from 2016 in assessments and encouraging zero carbon from 2019.
- The developments to be resilient to climate change and appropriate adaptation measures such as summer shading and planting, reducing water consumption or air pollution to be designed.

Policy DP23 – Water: The Council will require developments to reduce their water consumption, the pressure on the combined sewer network and the risk of flooding by incorporating water efficient features and equipment and limiting waste water entering the combined storm water and sewer network. If the development lies on areas where historic underground streams are known, the developments need to be assessed for upstream and downstream ground water flood risks.

Policy DP24 –Securing high quality design: The council requires all developments to be of highest standard of design and expects the developments to consider the setting of the building including existing natural features, materials used, provision of visually interesting frontages at

street level, appropriate location of building services equipment, appropriate hard and soft landscaping, provision of appropriate amenity space and accessibility.

Policy DP26 – Managing the impact of development on occupiers and neighbours: The council grants permission to developments that does not cause harm to amenity. Factors to be considered include visual privacy and overlooking, overshadowing and outlook, sunlight, daylight and artificial light levels, noise and vibration levels, odour, fumes and dust, microclimate and the inclusion of appropriate attenuation measures. Furthermore the development also require the developments to provide an acceptable standard of accommodation, facilities for the storage, recycling and disposal of waste, facilities for bicycle storage; and outdoor space for private or communal amenity space, wherever practical.

Policy DP28 – Noise and Vibration: The council will not grant planning permissions to developments likely to generate noise pollution or for developments sensitive to noise in locations with noise pollution unless appropriate noise attenuation measures are provided. Planning permission will only be granted for machinery provided it can be operated without causing haring to amenity and does not exceed noise thresholds.

Policy DP29 – Improving access: The developments to meet the highest practicable standards of access and inclusion especially to buildings that are public. Spaces between buildings need to be fully accessible. The developments to have accessible public transport, secure car park for disabled people and secure accessible homes.

Policy DP32 – Air quality and Camden's Clear Zone: Where developments could potentially cause significant harm to air quality, an air quality assessment needs to be carried out. Mitigation measures are to be carried out in areas of poor air-quality.

Camden Planning Guidance (CPG)

Energy efficiency: New buildings: All new developments are to be designed to minimise carbon dioxide emissions by being as energy efficient as is feasible and viable.

The council expects:

- A full model of the building to be carried out to ensure the building design optimises solar gain and daylight without resulting in overheating for developments comprising 5 dwellings or more or 500sq m or more of any floor space.
- Developments to consider maximising the use of natural systems within buildings before any mechanical services are considered.
- Any development proposing electric heating (including heat pumps) will need to provide calculations to demonstrate that the proposed electric heating system would result in lower carbon dioxide emissions than an efficiency gas fuelled heating system.
- Where traditional mechanical cooling are Proposed Developments must demonstrate that energy efficient ventilation and cooling methods have been considered first, and that they have been assessed for their carbon efficiency (Air source heat pumps will be considered to provide air conditioning in the summer unless it can be demonstrated that the model chosen is not capable of providing cooling).

Decentralised energy networks and combined heat and power:

- Where there is more than one occupier, use or building a community heating network will be expected.
- When demonstrating the feasibility and viability of not connecting to a decentralised energy network or including a combined heat and power plant developers are required to address the relevant considerations set out in the CPG3 pg38.
- Where a development is not connecting immediately to a network the measures need to be included in your scheme are space in the plant room for a heat exchanger, any other plant and pipe and electricity connections; and pipes from the plant room to the property boundary where the decentralised energy pipe is most likely to be located.

Renewable energy: All developments to target at least a 20% reduction in carbon dioxide emissions through the installation of on-site renewable energy technologies.

For Photovoltaic (PVs) the council expects PVs to be flush to the roof or wall, with considerations for efficiency of the panels and visibility. A meter needs to be installed for monitoring and specifications to include the overall sq. meters of PVs to be installed.

Water efficiency: All developments to be designed to be water efficient by minimising water use and maximising the re-use of water. Buildings with gardens and landscaped areas that require regular maintenance need to be fitted with water butts. For developments over 10 units or 1000 sq.m to include a grey water harvesting system, unless the applicant demonstrates to the Council's satisfaction that this is not feasible.

Sustainable use of materials: All developments to aim for at least 10% of the total value of materials used to be derived from recycled and reused sources. Major developments are anticipated to be able to achieve 15-20% of the total value of materials used to be derived from recycled and reused sources.

Sustainability assessment tools: Any non-residential development of more than 500 sq m needs to be designed in line with BREEAM.

- The developments are encouraged to meet the following standards in line with Development Policy DP 22 (Promoting sustainable design and construction):
  - A BREEAM 'Excellent' rating is encouraged to be achieved
  - Minimum standard for BREEAM credit categories (in terms of percentage of un-weighted credits achieved for each category):
    - Energy: 60%
    - Water: 60%
    - Materials: 40%
- A pre-assessment needs to be submitted at the planning application stage. The report should summarise the design strategy for achieving the chosen BREEAM level and include details of the credits proposed to be achieved. The pre-assessment report is to be carried out by a licensed assessor. The name of the assessor and their licence number should be clearly stated on the report.

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

Flooding:

- Developments must not increase the risk of flooding, and are required to put in place mitigation measures where there is known to be a risk of flooding.
- All developments are to manage drainage and surface water on-site or as close to the site as possible, using Sustainable Drainage Systems (SUDS) as per the hierarchy. Developments to achieve a greenfield surface water run-off rate once SUDS have been installed. As a minimum, surface water run-off rates should be reduced by 50% across the development.

Adapting to Climate change: All development to consider the impact of climate change and be designed to cope with the anticipated conditions.

Biodiversity: All developments need to demonstrate how biodiversity considerations have been incorporated into the development; if any mitigation measures will be included; and what positive measures for enhancing biodiversity are planned.

Local food growing: All developments are encouraged to grow food wherever possible and suitable.