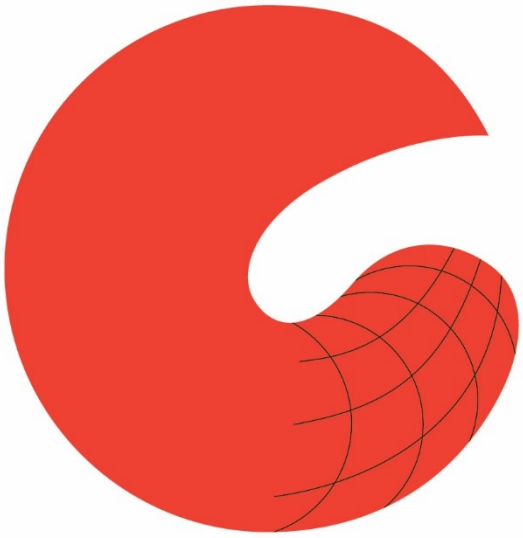

create
CONSULTING
ENGINEERS LTD

31 DALEHAM GARDENS, LONDON

Sustainability Statement

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Sustainability Statement

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Reference: AG/VL/P23-2822/06

Date: September 2023

31 DALEHAM GARDENS, LONDON
Sustainability Statement

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Sustainability Statement

Contents

Registration of Amendments

Revision and Date	Amendment Details	Revision Prepared By	Revision Approved By

EXECUTIVE SUMMARY

This Sustainability Statement is submitted to support the planning application for the residential proposed development located at 31 Daleham Gardens, London, NW3 5BU.

The London Borough of Camden and the GLA sustainability policies have been reviewed and used to optimise the environmental strategy of the development and to demonstrate the sustainability credentials of the scheme.

The Sustainability Statement for the proposed development demonstrates that the design will holistically incorporate sustainable principles into the full range of sustainability aspects covered by the London Borough of Camden's planning documents: Climate Change – Mitigation and Adaptation, HQM, Energy, Sustainable Construction Processes/Materials & Recycling, Daylight & Sunlight, Pollution and Land & Ecology.

It is proposed that the scheme will address the sustainable design and construction considerations through the adoption of a number of measures:

- Highly efficient building fabric to improve the energy performance of the building envelope well beyond Building Regulations compliance in order to reduce reliance on fossil fuels;
- Incorporation of Low and Zero carbon technology appropriate for the site – heating via Air Source Heat Pumps, and additional electricity generation via Photovoltaic panels on roofs;
- Passive measures to address potential overheating;
- Sustainable construction practices, local sourcing of materials and the use of materials with low life cycle impacts;
- Windows sized to maximise daylight;
- Reduce construction waste and provide facilities to enhance recycling rates;
- Measures to ensure compliance with air quality and noise policies.

The proposals for the scheme have fully considered opportunities for sustainable construction to provide positive environmental, social and economic benefits that are consistent with the policy requirements of the London Borough of Camden and the GLA.

1.0 INTRODUCTION

1.1 Create Consulting Engineers Ltd has been commissioned by Altair Ltd to undertake a sustainability assessment and produce a sustainability statement demonstrating project's compliance to the applicable planning policies and to support the planning application for the proposed development at 31 Daleham Gardens, NW3 5BU.

1.2 The objective of the sustainability statement is to assess the proposed development against the policy requirements of the Camden Local Plan (2017).

Site Location and Description

1.3 The site is located to the East of Daleham Gardens in Hampstead and Kilburn, London. The proposals were to provide 14 residential dwelling flats over six floors, with associated amenity. The proposed opening year of this development is summer 2025. The site lies within the jurisdiction of the London Borough of Camden (LBC). The existing site situation has been shown in the following figure:

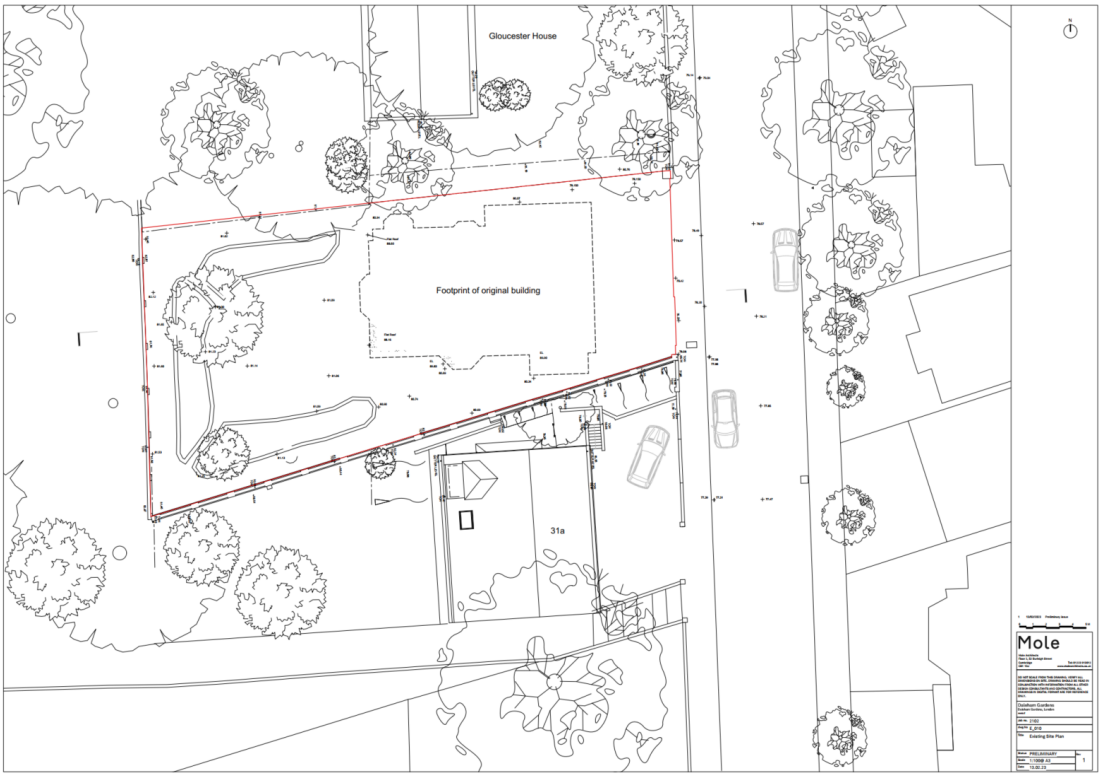

Figure 1.1: Site Location Plan *Excerpt from 2102_E_010_Existing Site plan [P01]*

Objectives

1.4 The objectives of this report are to:

- Demonstrate how the proposed development will meet the policy requirements of the Publication London Plan (2021) and Camden's Local plan (2017).
- Identify areas for consideration at the early stages of the project to facilitate the incorporation of the principles of sustainable design and construction into the design of the development.

Report Structure

1.5 This introductory section is followed by a comprehensive review of national/regional/local policies on sustainability and best practice standards. The following 3 sections address measures taken to mitigate the effects of climate change, and measures to enhance the energy efficiency and sustainability credentials of the scheme, as well as reducing CO_2 emissions. The remaining Sections 6 – 9 detail the sustainability strategy for the scheme related to Sustainable Construction Processes/Materials & Recycling, Daylight & Sunlight, Pollution and Land & Ecology.

2.0 CURRENT AND FUTURE PLANNING POLICIES/GOOD PRACTICE REVIEW AND PROJECT REQUIREMENTS

National Planning Policy Framework (July 2021)

2.1 The National Planning Policy Framework sets out the Government's planning policies for England and how these are expected to be applied. It provides a framework within which locally prepared plans for housing and other development can be produced. The ministerial foreword of this NPPF highlights that 'the purpose of planning is to contribute to the achievement of sustainable development' and that at the heart of the framework is a presumption in favour of sustainable development.

2.2 Sustainable development is summarised in the NPPF as comprising developments "meeting the needs of the present without compromising the ability of future generations to meet their own needs" in line with the definition of the Brundtland Commission ('Our Common Future', 1987). The NPPF also refers to the three overarching objectives, which are interdependent and need to be pursued in mutually supportive ways – an economic objective, a social objective and an environmental objective.

The Greater London Authority - London Plan 2021

2.3 The London Plan 2021 sets out the overall strategic plan for London, and it sets out a fully integrated economic, environmental, transport and social framework for the development of the capital over the next 20-25 years. It forms part of the development plan for Greater London. London boroughs' local plans need to be in general conformity with the London Plan, and its policies guide decisions on planning applications by councils and the Mayor. The Plan contains a number of policies directly related to energy and sustainability. In particular, relating to sustainability:

Policy SI 2: Minimising Greenhouse Gas Emissions

2.4 Major development should be net zero-carbon. This means reducing greenhouse gas emissions in operation and minimising both annual and peak energy demand in accordance with the following energy hierarchy:

1) be lean: use less energy and manage demand during operation
2) be clean: exploit local energy resources (such as secondary heat) and supply energy efficiently and cleanly
3) be green: maximise opportunities for renewable energy by producing, storing and using renewable energy on-site
4) be seen: monitor, verify and report on energy performance.

Policy SI 3 Energy infrastructure

2.5 Major development proposals within Heat Network Priority Areas should have a communal low-temperature heating system:

1) the heat source for the communal heating system should be selected in accordance with the following heating hierarchy:
    a) connect to local existing or planned heat networks
    b) use zero-emission or local secondary heat sources (in conjunction with heat pump, if required)
    c) use low-emission combined heat and power (CHP) (only where there is a case for CHP to enable the delivery of an area-wide heat network, meet the development's electricity demand and provide demand response to the local electricity network)
    d) use ultra-low NOx gas boilers

2) CHP and ultra-low NOx gas boiler communal or district heating systems should be designed to ensure that they meet the requirements in Part B of Policy SI 1 Improving air quality

3) where a heat network is planned but not yet in existence the development should be designed to allow for the cost-effective connection at a later date.

2.6 Where developments are proposed within Heat Network Priority Areas but are beyond existing heat networks, the heating system should be designed to facilitate cost-effective future connection.

Policy SI 4: Managing heat risk

2.7 Major development proposals should demonstrate through an energy strategy how they will reduce the potential for internal overheating and reliance on air conditioning systems in accordance with the following cooling hierarchy:

1) reduce the amount of heat entering a building through orientation, shading, high albedo materials, fenestration, insulation and the provision of green infrastructure;
2) minimise internal heat generation through energy efficient design;
3) manage the heat within the building through exposed internal thermal mass and high ceilings;
4) provide passive ventilation;
5) provide mechanical ventilation;
6) provide active cooling systems.

Policy SI 5: Water Infrastructure

2.8 An optional requirement set out in Part G of Building regulation shall be applied across London. A fitting-based approach with increased water efficiency and reduced leakage rate should be used to determine water consumption of a development.

A. In order to minimise the use of mains water, water supplies and resources should be protected and conserved in a sustainable manner.

B. Development Plans should promote improvements to water supply infrastructure to contribute to security of supply. This should be done in a timely, efficient and sustainable manner taking energy consumption into account.

C. Development proposals should:

1) through the use of Planning Conditions minimise the use of mains water in line with the Optional Requirement of the Building Regulations (residential development), achieving mains water consumption of 105 litres or less per head per day (excluding allowance of up to five litres for external water consumption)

2) achieve at least the BREEAM excellent standard for the 'Wat 01' water category 160 or equivalent (commercial development)

3) incorporate measures such as smart metering, water saving and recycling measures, including retrofitting, to help to achieve lower water consumption rates and to maximise future-proofing.

D. In terms of water quality, Development Plans should:

1) promote the protection and improvement of the water environment in line with the Thames River Basin Management Plan, and should take account of Catchment Plans

2) support wastewater treatment infrastructure investment to accommodate London's growth and climate change impacts. Such infrastructure should be constructed in a timely and sustainable manner taking account of new, smart technologies, intensification opportunities on existing sites, and energy implications. Boroughs should work with Thames Water in relation to local wastewater infrastructure requirements.

E. Development proposals should:

1) seek to improve the water environment and ensure that adequate wastewater infrastructure capacity is provided

2) take action to minimise the potential for misconnections between foul and surface water networks.

F. Development Plans and proposals for strategically or locally defined growth locations with particular flood risk constraints or where there is insufficient water infrastructure capacity should be informed by Integrated Water Management Strategies at an early stage.

Local Policy

Camden Local Plan 2017

2.9 The Camden Local Plan is the key strategic document in Camden's development plan. It sets out the vision for shaping the future of the Borough and contains policies for guiding planning decisions. The following policies have been identified as appropriate for assessing the sustainable performance of new developments:

Policy A4: Noise and vibration

2.10 The Council will seek to ensure that noise and vibration is controlled and managed.

2.11 Development should have regard to Camden's Noise and Vibration Thresholds. We will not grant planning permission for:

a. development likely to generate unacceptable noise and vibration impacts; or
b. development sensitive to noise in locations which experience high levels of noise, unless appropriate attenuation measures can be provided and will not harm the continued operation of existing uses.

Policy CC1 Climate change mitigation

2.12 The Council aims to tackle the causes of climate change in the borough by ensuring developments use less energy and assess the feasibility of decentralised energy and renewable energy technologies. Since any new development in Camden has the potential to increase carbon dioxide emissions in the borough and if we are to achieve local, and support national, carbon dioxide reduction targets, it is crucial that planning policy limits carbon dioxide emissions from new development wherever possible and supports sensitive energy efficiency improvements to existing buildings.

"The Council will require all development to minimise the effects of climate change and encourage all developments to meet the highest feasible environmental standards that are financially viable during construction and occupation. We will:
a. promote zero carbon development and require all development to reduce carbon dioxide emissions through following the steps in the energy hierarchy;
b. require all major development to demonstrate how London Plan targets for carbon dioxide emissions have been met;
c. ensure that the location of development and mix of land uses minimise the need to travel by car and help to support decentralised energy networks;
d. support and encourage sensitive energy efficiency improvements to existing buildings;
e. require all proposals that involve substantial demolition to demonstrate that it is not possible to retain and improve the existing building; and
f. expect all developments to optimise resource efficiency.

For decentralised energy networks, we will promote decentralised energy by:
g. working with local organisations and developers to implement decentralised energy networks in the parts of Camden most likely to support them;
h. protecting existing decentralised energy networks (e.g. at Gower Street, Bloomsbury, King's Cross, Gospel Oak and Somers Town) and safeguarding potential network routes; and requiring all major developments to assess the feasibility of connecting to an existing decentralised energy network, or where this is not possible establishing a new network.
To ensure that the Council can monitor the effectiveness of renewable and low carbon technologies, major developments will be required to install appropriate monitoring equipment."

Policy CC2 Adapting to climate change

2.13 The Council aims to tackle the causes of climate change in the borough by ensuring developments use less energy and assess the feasibility of decentralised energy and renewable energy technologies. Green Action for Change: Camden's environmental sustainability plan (2011- 2020) commits Camden to a 27% borough wide Carbon Dioxide (CO2) reduction by 2017 and a 40% borough wide CO2 reduction by 2020 (London carbon reduction target). Over 90% of Camden's carbon dioxide emissions are produced by the operation of buildings. The Council's Sustainability Plan 'Green Action for Change' commits the Council to seek low and where possible zero carbon buildings. New developments in Camden will be expected to be designed to minimise energy use and CO2 emissions in operation through the application of Be Lean, Be Clean and Be Green energy hierarchy.

"The Council will require development to be resilient to climate change. All development should adopt appropriate climate change adaptation measures such as:
a. the protection of existing green spaces and promoting new appropriate green infrastructure;
b. not increasing, and wherever possible reducing, surface water runoff through increasing permeable surfaces and use of Sustainable Drainage Systems;
c. incorporating bio-diverse roofs, combination green and blue roofs and green walls where appropriate; and
d. measures to reduce the impact of urban and dwelling overheating, including application of the cooling hierarchy.
Any development involving 5 or more residential units or 500 sqm or more of any additional floorspace is required to demonstrate the above in a Sustainability Statement.
Sustainable design and construction measures The Council will promote and measure sustainable design and construction by
e. ensuring development schemes demonstrate how adaptation measures and sustainable development principles have been incorporated into the design and proposed implementation;
f. encourage new build residential development to use the Home Quality Mark and Passivhaus design standards;

g. encouraging conversions and extensions of 500 sqm of residential floorspace or above or five or more dwellings to achieve "excellent" in BREEAM domestic refurbishment; and
h. expecting non-domestic developments of 500 sqm of floorspace or above to achieve "excellent" in BREEAM assessments and encouraging zero carbon in new development from 2019."

Policy CC3 Water and Flooding

2.14 Climate change adaptation is identified in Camden's environmental sustainability plan, Green Action for Change 2021-2020. The three key risks which require adaptation measures are flooding, drought and overheating. Ensuring new developments are designed to adapt to these risks should be a key consideration when assessing applications for development in the borough.

"The Council will seek to ensure that development does not increase flood risk and reduces the risk of flooding where possible.

We will require development to:

a. incorporate water efficiency measures;

b. avoid harm to the water environment and improve water quality;

c. consider the impact of development in areas at risk of flooding (including drainage);

d. incorporate flood resilient measures in areas prone to flooding;
e. utilise Sustainable Drainage Systems (SuDS) in line with the drainage hierarchy to achieve a greenfield run-off rate where feasible; and
f. not locate vulnerable development in flood-prone areas.
Where an assessment of flood risk is required, developments should consider surface water flooding in detail and groundwater flooding where applicable.
The Council will protect the borough's existing drinking water and foul water infrastructure, including the reservoirs at Barrow Hill, Hampstead Heath, Highgate and Kidderpore."

2.15 The Council will require developments to utilise Sustainable Drainage Systems (SuDS), to achieve greenfield run-off rates, unless demonstrated that this is not feasible. Surface water should be managed as close to its source as possible, in line with the drainage hierarchy in the London Plan. Where it is not possible to achieve greenfield run-off rates it should be as close to this as possible (a greenfield run-off rate is one that reflects the natural rate of water run-off from a site before it was developed). Major developments will be required to constrain runoff volumes for a 1 in 100 year, 6 hour rainfall event, where feasible.

Policy CC4 Air Quality

2.16 The focus of Policy CC4 is to mitigate the impact of development on air quality and to ensure exposure to poor air quality is reduced in the borough

"The Council will ensure that the impact of development on air quality is mitigated and ensure that exposure to poor air quality is reduced in the borough.
The Council will take into account the impact of air quality when assessing development proposals, through the consideration of both the exposure of occupants to air pollution and the effect of the development on air quality. Consideration must be taken to the actions identified in the Council's Air Quality Action Plan.
Air Quality Assessments (AQAs) are required where development is likely to expose residents to high levels of air pollution. Where the AQA shows that a development would cause harm to air quality, the Council will not grant planning permission unless measures are adopted to mitigate the impact. Similarly, developments that introduce sensitive receptors (i.e. housing, schools) in locations of poor air quality will not be acceptable unless designed to mitigate the impact.
Development that involves significant demolition, construction or earthworks will also be required to assess the risk of dust and emissions impacts in an AQA and include appropriate mitigation measures to be secured in a Construction Management Plan."

Policy CC5 Waste

2.17 This policy focuses on reducing amount of water by increased reuse and recycle of materials and reducing the proportion of waste exported out from London and finding sites of new waste facilities.

"The Council will seek to make Camden a low waste borough. We will:
a. aim to reduce the amount of waste produced in the borough and increase recycling and the reuse of materials to meet the London Plan targets of 50% of household waste recycled/composted by 2020 and aspiring to achieve 60% by 2031;
b. deal with North London's waste by working with our partner boroughs in North London to produce a Waste Plan, which will ensure that sufficient land is allocated to manage the amount of waste apportioned to the area in the London Plan;
c. safeguard Camden's existing waste site at Regis Road unless a suitable compensatory waste site is provided that replaces the maximum throughput achievable at the existing site; and
d. make sure that developments include facilities for the storage and collection of waste and recycling.

Camden Supplementary Planning Guidance- Energy and Efficiency (2021)

Chapter 3 – Making buildings energy efficient

2.18 Natural 'passive' measures should be prioritised over the active measures to reduce energy. Major residential development to achieve 10%, and non-residential development to achieve 15% reduction (beyond part L Building regulations), in accordance with the new London Plan, through on-site energy efficient measures (Be lean stage).

Chapter 6 – Energy statements

2.19 Energy statements are required for all developments involving 5 or more dwellings and/or more than 500sqm of any (gross internal) floorspace. Energy statements should demonstrate how a development has been designed following the steps in the energy hierarchy.

Chapter 7 – Energy reduction

2.20 All development in Camden is expected to reduce carbon dioxide emissions through the application of the energy hierarchy.

2.21 Developments of five or more dwellings and/or more than 500sqm of any gross internal floorspace to achieve 20% reduction in carbon dioxide emissions from on-site renewable energy generation.

Building Regulations Approved Document Part L

2.22 Part L of the current Building Regulations (2021) considers the reduction of carbon emissions in new and existing buildings. As the proposals consist of the creation of new domestic and non-domestic spaces, they fall under Part L1 and L2 of the Regulations.

2.23 The overall structure of compliance with the 2021 Building Regulations for new buildings includes five criteria to comply with:

- **Criterion 1** – The Dwelling/Building Emission Rate (DER/BER) should be better than the Target Emission Rate (TER) and Dwelling/Building Primary Energy Rate should not exceed the Target Primary Energy Rate.
- **Criterion 2** – Limit on design flexibility;
- **Criterion 3** – Limiting effects of heat gain in summer;
- **Criterion 4** – Commissioning and air-tightness;
- **Criterion 5** – Efficient operation of buildings.

2.24 The detailed energy strategy for the scheme will be developed to ensure the scheme meets the relevant requirements of the Building Regulations Part L.

3.0 CLIMATE CHANGE – MITIGATION AND ADAPTATION

3.1 Consideration will be made to the conservation of water resources through water efficiency measures, in addition to the risk posed by flooding and the use of Sustainable Urban Drainage Systems (SUDs) to reduce the risk of surface water flooding, in line with the Camden Local Plan.

Water Efficiency

3.2 The water consumption of the dwellings will be calculated using the Government's national calculation methodology for assessing water efficiency in new dwellings published by Communities and Local Government, September 2009. The document outlines the calculation methodology for assessing the whole house potable water consumption used, and to assess compliance against the water performance targets of the Building Regulations.

3.3 The dwellings will achieve a potable water use target of less than 105 litres per person per day through the use of water efficient fittings alone. This will meet the requirements of Part G of the Building Regulations.

3.4 Water efficient fittings and appliances use significantly less water than their traditional counterparts by limiting water flow through pipes and fittings and by changing conventional design to more ergonomic.

3.5 To achieve the targeted water consumption level of ≤ 105 litres/person/day, a combination of the following water efficient fittings are proposed for the dwellings:

- *Dual flush WCs* – cisterns with both a half flush and full flush. The half flush delivers 4 litres for the removal of liquids, whilst the full flush delivers 6 litres for a long flush. These cisterns save over 17% of water when compared to a 6 litre cistern.
- *Flow restrictors & aerators* – restrictors fit within the existing plumbing structure of the shower head or connection pipe to taps to restrict water flow and reduce the outlet flow and pressure. Aerators restrict the flow of water but maintain the pressure by adding air to the water giving a perception of a power shower/taps without the water and energy use.

3.6 The following table presents a combination of water efficient fittings which would allow the scheme achieving an aspirational indoor water use lower than 110 litres/person/day (including 5 litres for external water use) and details the government's calculation methodology for assessing water consumption for the dwellings at 31 Daleham Gardens. Water efficiency calculations have been carried out and presented in the table below to restrict the indoor water use to less than 105 litre/ person/ day as per London Plan Policy SI 5.

Installation Type	Unit of measure	Capacity/ flow rate (1)	Use Factor (2)	Fixed use (litres/ person/day) (3)	Litres/person/day= [(1) x (2)] + (3) (4)
WC (dual flush)	Full flush volume (litres)	6	1.46	0	8.76
	Part flush volume (litres)	4	2.96	0	11.84
Taps (excluding kitchen/ utility room taps)	Flow rate (litres/minute)	4	1.58	1.58	7.90
Bath (where shower also present)	Capacity to overflow (litres)	0	0.11	0	0
Shower	Flow rate (litres/minute)	8	4.37	0	34.96
Kitchen/ utility room sink taps	Flow rate (litres/minute)	6	0.44	10.36	13.00
Washing machine (not provided; calculations default value used)	Litres/ kg dry load	8.17	2.1	0	17.16
Dishwasher (not provided; calculations default value used)	Litres/ place setting	1.25	3.6	0	4.5
	(5)	Total calculated use (litres/person/day) = (SUM column 4)			114.62
	(6)	Contribution from greywater (litres/person/day)			
	(7)	Contribution from rainwater (litres/person/day)			
	(8)	Normalisation factor			0.91
	(9)	**Total water consumption (total used for HQM policy) = [(5) - (6) - (7)] x (8) (litres/person/day)**			**104.30**
	(10)	External water use			5
	(11)	Total water consumption (Building Regulations 17.K) = (9) + (10) (litres/person/day)			109.30

Table 3.1: Water Efficiency Calculator Tool

3.7 Please note that the exact combination of fittings selected for each dwelling is not prescriptive and may vary from the selection included in Table 4.1. The purpose of the table is to demonstrate the level of performance that can be achieved with commercially available fittings that are technically and economically feasible.

3.8 The water conservation strategy proposed for the scheme incorporates flexibility in the specification of water fittings and appliances, recognising the rapid industry progress in this field to allow the inclusion of new and innovative solutions where they are proven to offer:

- Occupant satisfaction;
- Technical Performance;
- Economic competitiveness.

3.9 A specification for water meters on the mains water supply will facilitate water consumption management and monitoring to reduce the impacts of water inefficiencies and leakage. The development shall incorporate a mains water meter on the main supply to the new housing blocks.

3.10 Flow control devices that regulate the supply of water to each WC area/ facilities shall be considered as an installation for the development in order to reduce water wastage.

3.11 In addition to the water conservation measures detailed above, occupants of the dwellings will be encouraged to adopt a more responsible attitude to water use.

Flood Risk & SUDS

3.12 A Flood Risk Assessment (FRA) in line with the 'National Planning Policy Framework' has been carried out by Subteno Engineering Consultants Ltd (ref: S221215-SUB-99-XX-FRAC-00001-01) which confirms that the site is in flood zone 1 and therefore lies outside an area at risk of fluvial flooding.

3.13 The site is deemed at low risk of flooding from land and sewers as the site is located outside of areas where records of external and internal sewer flooding have been reported.

3.14 The site is situated within a Critical Drainage Area (CDA) within Camden borough, this means the development is located within a catchment area which may contribute to a flooding hotspot elsewhere, such as the Belsize Park Swiss Cottage Hotspot.

3.15 The top floor will have a blue roof with a minimum of 150mm depth of water storage is proposed.

3.16 Areas of planting surrounding the development will be constructed as functioning rain gardens to provide bioretention areas able to withstand occasional temporary flooding.

3.17 An on-site flow control device with an approximate storage volume of 18m^3 is required to achieve the 1.0l/s maximum discharge rate for surface water runoff and to ensure the site does not flood up to and including the 1-100 year + 40% climate change allowance event.

3.18 A below-ground cellular attenuation crate is proposed as part of the below-ground drainage network.

3.19 Additional water quality measures will be provided by the inclusion of appropriate deep silt trapped gullies and silt boxes to all channel drains.

3.20 A maintenance schedule that includes the inspection of drainage channels and gullies, surface water flow control devices, catch pit manholes, chamber covers, and surface and foul water drainage pipes and geocellular attenuation storage tanks has been recommended accordingly.

3.21 The entire on-site system is to remain under private ownership and under the future maintenance of the developer.

3.22 Please refer to the Flood Risk Assessment for further information.

Overheating – Adapting to rising temperatures

3.23 A detailed overheating analysis has been prepared by Create Consulting Engineers Ltd and summarised in the Overheating Assessment report, reference (Ref: MB/VL/P23-2822/04).

3.24 The assessment found that all residential spaces pass the relevant criteria for overheating described in TM52 and TM59, in accordance with the mandatory weather file DMSY1, listed alongside other weather files additionally undertaken for study:

- DSY1 for 2020s, high emissions, 50% percentile scenario
- DSY2-2003: a year with a very intense single warm spell
- DSY3- 1976: a year with a single prolonged period of sustained warmth

3.25 Throughout the development passive measures have been implemented as far as possible through minimised internal gains and improved building fabric within the development design.

3.26 MVHR has been proposed to provide continuous ventilation for three-bedroom flats, while one-bedroom and two-bedroom flats are equipped with exhaust air source heat pumps to maintain ventilation when windows are closed. All flats have been assessed and meet the TM59 criterion for predominantly mechanically ventilated flats.

4.0 HOME QUALITY MARK

4.1 A review of the application of Home Quality Mark (HQM) 'best endeavour' measures for the proposed site has been carried out to guide the design in maximising the sustainability credentials of the development.

4.2 Attention will be paid to ensuring that sustainability measures are incorporated wherever possible to achieve the best possible results, such as:

- The buildings will achieve a good level of fabric performance and will benefit from the installation of highly efficient Air Source Heat Pumps and Exhaust Air Heat Pumps for the provision of heating and cooling.
- A communal garden will be provided as a shared space for residents. The designated zone for the development equates to approximately 15% of the total site area, allowing the maximum credits under the HQM Communal Space issue to be achieved.
- Balconies as part of the dwellings are designed with a minimum of 1.5 meters in depth, meeting the requirements for the award of at least one credit under the HQM access to private space issue.
- Materials will be responsibly sourced, with attention paid to their sustainability credentials across the supply chain, including extraction, processing, and manufacture.
- The communal cycle storage facilities of the proposed development will provide 28 cycle spaces, aligning with the achievement of all three credits available as part of the Sustainable Transport criteria under the HQM issue.
- Construction waste will be monitored and minimised throughout, with waste on site being recovered, reused and recycled where possible to divert as much waste as possible from going to landfill.
- All materials will be selected taking into consideration waste prevention and reduction, minimal damage to the environment, and their robustness. The design will also be fully adaptable for future use.
- All timber used on the scheme will be legally harvested. The principal contractor will be EMS 14001 certified, and the project will registered with a recognised responsible construction management scheme.

5.0 ENERGY

5.1 An Energy Statement has been prepared by Create Consulting Engineers (Ref: MB/VL/P23-2822/07) detailing how the development will meet the required energy efficiency standards.

5.2 The energy statement has been prepared in the context of the Camden Local Plan (2017) and the Camden Planning Guidance (2021), under the latter, new developments will be required to demonstrate a 20% carbon emission reduction compared with the Part L compliant case.

5.3 The energy strategy for the proposed development has at its core, the reduction of energy use on-site through effective fabric energy efficiency measures and efficient servicing solutions. The following features will lead to a significant reduction in anticipated energy consumption and CO_2 emissions compared to the Part L compliant case, through the specification of energy saving features within the services design:

- Excellent air tightness of 3.0m^3/m^2/hr @ 50Pa for all dwellings;
- High levels of insulation and high performance glazing to leading to very energy efficient building fabric well in excess of Part L 2021 targets;
- Highly efficient heating and control system via Air Source Heat Pumps (ASHP) and Exhaust Air Heat Pumps for dwellings;
- Mechanical ventilation with heat recovery for select dwellings;
- 100% dedicated energy efficient lighting;
- Accredited Construction Details to all new units to mitigate cold bridging.

5.4 An LZC feasibility study was undertaken to assess the potential use of renewable and low carbon energy technologies on site, taking into account practical considerations of deliverability, the likely requirements of the end users and the likely energy use profile of the operational building. The study concluded that the most feasible technology for the development is ASHPs.

5.5 CO_2 emissions for the site, after the inclusion of improved building fabric and systems are estimated as approximately 11.8 tonnes of CO_2 per year which is a reduction of 18% compared to the baseline scenario.

5.6 The proposed strategy of efficient building fabric and services design, and the incorporation of ASHPs, will allow the scheme to achieve a CO_2 emission reduction of 68%, exceeding the London Borough of Camden requirement for the site.

5.7 For further information please refer to the energy strategy.

6.0 SUSTAINABLE CONSTRUCTION PROCESSES/MATERIALS & RECYCLING

6.1 Impact of material selection is an important consideration when designing new development. The energy and natural resources consumed over the course of extraction or procurement, processing and manufacturing can be significant. Preference will be given to the selection of sustainable materials with a low environmental impact over their life cycle, as well as sustainable procurement, supply chain management and waste disposal.

6.2 The origin of materials chosen in the design and construction where possible will be selected to minimise the local and wider negative impact to the natural environment.

6.3 The principal contractor, operating on behalf of the Applicant, will be required to ensure that commitments and specifications within the Sustainable Procurement Plan are upheld and accounted for. Good-practice principles for the responsible sourcing of sustainable materials will be applied across the scheme.

6.4 The selection of materials for domestic elements of the scheme will be carried out with reference to the Building Research Establishment (BRE) Green Guide Specification wherever feasible with the objective of sourcing at least three key elements of the building envelope with a rating of A+ to D. Construction and insulation materials will be considered for their potential impact on the internal and external environment and specified, where feasible, to ensure they do not contain gases that have an Ozone Depleting Potential (ODP) or Global Warming Potential (GWP). An example of one such sustainable insulation material is Rockwool which is 97% recyclable and has a zero ODP and zero GWP.

6.5 The development scheme will be constructed to incorporate, where possible, robust materials which have low embodied impact, high recycled content where possible (for example, PFA in concrete) and high durability.

6.6 The Applicant will avoid the use of materials which have the potential to impact on human health. Building materials and products that produce VOC (Volatile Organic Compounds and Formaldehyde) will be avoided whilst non-toxic and environmentally-sensitive materials will take precedence.

6.7 The environmental impact of construction activities will be minimised through the implementation of best practice measures detailed in the sections below:

Sustainable Construction

6.8 Sustainable construction practices include good site management to encourage resource efficiency, increase materials recovery and avoid the disposal of waste to landfill.

6.9 The following sustainable construction practices will be considered within the development:

- Reducing construction and excavation waste to landfill;
- Ensuring the products used in construction are responsibly sourced;
- Carrying out biodiversity surveys and following up with necessary actions;
- Best practice site management principles through registering the site with the Considerate Constructor Scheme to commit to manage the site beyond best practice.

6.10 As part of achieving a sustainable approach to construction, the main contractor will be encouraged to commit to reducing the impact of the construction processes on the environment through monitoring and mitigating construction site impacts throughout the construction period. Best practice pollution prevention policies will be encouraged in respect of air (dust) and water pollution arising from site activities. To minimise air (dust) pollution, skips will be covered, dust generating site activities will be dampened down and wet cutters will be used. Low emission and efficient equipment will be used on site.

6.11 A construction and demolition management plan will be in place prior to commencement of the development. The construction management plan will appropriately demonstrate how the impacts of air/water pollution, noise and vibration will be mitigated against during the construction of the development. Where feasible timber used on site will be reclaimed, re-used or responsibly sourced.

Construction Materials

6.12 The proposed development will give preference to the selection of sustainable materials and the minimisation of waste. The following measures will be considered to demonstrate that the materials specified are sourced, managed and used in a sustainable manner:

- The use of locally sourced materials will be prioritised, where feasible to reduce transport related emissions and to support local supply chains;
- Responsible sourcing of materials from suppliers that operate an Environmental Management System will be prioritised. 100% of all timber included in the construction of floors, roofs, walls and staircase will be legally sourced;
- The use of recyclable materials, such as aggregate will be considered;
- The use of insulation materials with low Global Warming Potential (GWP) will be prioritised;
- The use of high VOC content paints, sealants and all ozone depleting materials including insulation will be avoided where possible. Specific consideration will be given to embodied energy and durability and strength of materials selected for the scheme.

Construction Waste

6.13 Waste reduction and recycling is a focus withing the London Plan. The waste hierarchy illustrates the importance of a waste management decisions in the context of their wider

impact on the natural environment. The waste hierarchy (London Plan, 2021) identified the following steps.

- Prevention
- Preparing for re-use
- Recycling
- Other recovery
- Disposal

6.14 The Applicant is committed to prioritising steps of the waste hierarchy and implements the following Strategy to ensure a sustainable and environmentally-responsible approach is taken to the management of domestic waste and waste during the construction process.

6.15 On-site waste will be minimised, and a high proportion of the waste that is produced will be diverted from landfill, through either:

- Re-use on site (in situ or for new applications) or re-use on other sites;
- Salvaged/reclaimed for re-use;
- Returned to the suppliers via 'take-back' schemes;
- Recovered and recycled using an approved waste management contractor.

6.16 Where it is not possible to reduce or re-use materials on site, opportunities to recycle the materials off-site will be explored, where feasible.

Operational Waste

6.17 The building will be provided with secure accessible external waste storage to enable segregation of waste into recyclable and non-recyclable waste streams prior to collection and additional allocation of storage designated for garden and food waste.

6.18 Information will be provided to all new applicants which will highlight importance of recycling domestic waste, including location and details of the nearest local authority recycling centre.

7.0 DAYLIGHT AND SUNLIGHT

7.1 A Daylight and Sunlight Assessment has been prepared by Create Consulting Engineers (ref: MB/VL/P23-2822/05) in accordance with the BRE guidance.

7.2 The majority of relevant spaces meet the BRE guidance threshold values for Vertical Sky Component (VSC) and Annual Probable Sunlight Hours (APSH). Those rooms that fail the VSC check have been further assessed to determine their Average Daylight Factor (ADF). The results demonstrate that the majority of the dwellings will receive an adequate level of daylight.

7.3 The impact of the proposed development on neighbouring buildings has been assessed. The residential buildings in close proximity to the site was found to be negligibly affected by the proposed development should be justifiable in areas designated for urban re-development.

7.4 Please refer to the Daylight and Sunlight Assessment for further information.

8.0 POLLUTION

Noise Pollution

8.1 A Noise Impact Assessment has been carried out by Create Consulting Engineers (ref: BD/CS/P23-2822/01) to assess the potential environmental acoustic constraints associated with the proposed development.

8.2 Data collected as part of the baseline sound survey undertaken showed that internal noise level thresholds can be achieved with windows closed when double glazing and standard construction techniques are utilised.

8.3 The internal noise levels measured for the site indicate that additional measures of mitigation would be required to ensure natural ventilation was suitable for all areas of the proposed development.

8.4 External amenity areas have been preliminarily assessed and shown to be within the design targets of BS 8233 with the appropriate design and mitigation measures.

8.5 A design threshold for all building services plant associated with the development is provided as a rated level of 37 dB $L_{Ar,Tr}$ for daytime and 32 dB $L_{Ar,Tr}$ for the night-time periods.

8.6 Based on the identified mitigation strategies identified, the proposed development should avoid noise giving rise to adverse impacts on health and quality of life, satisfying guidelines produced by the NPPF.

8.7 Based on the assessment and proposed acoustic strategy for the scheme, it is concluded that the design scheme should not impede any decision to grant permission for the development of this project.

8.8 Please refer to the Noise Impact Assessment for further information.

Indoor Environment and Air Quality

8.9 An Air Quality Assessment (AQA) has been carried out by Create Consulting Engineers (Ref: TR/VL/P23-2822/03 DRAFT) to consider the air quality impacts associated with construction and operation phase of the proposed development.

8.10 As a result of fugitive dust emissions from the site, assessed in accordance with the MOL SPG methodology, there is potential for air quality impacts during the construction phase for the development as assessed in accordance with the MOL SPG methodology.

8.11 Under the assumption that good practice dust control measures are implemented, the residual significance of potential air quality impacts from dust generated by demolition, earthworks, construction and track out activities are predicted to be negligible.

8.12 The air quality impact assessment undertaken in accordance with EPUK-IAQM guidance found that there is the potential for air quality impacts during the operational phase of the development, due to traffic exhaust emissions associated with vehicles travelling to and from the site.

8.13 Since the development is car-free and there will be no centralised energy facility processes, the air quality impacts associated with the proposed development are considered negligible and no further assessment is considered necessary.

8.14 Dispersion modelling undertaken indicates predicted annual NO_2, PM_{10} and $PM_{2.5}$ concentrations for all scenarios are below the UK Air Quality Objective (AQO).

8.15 To understand the building and transport emissions associated with the proposed development, an air quality neutral assessment was conducted. Since the development is based on ASHP's and exhaust air heat pumps, and is also car-free, the site is considered air quality neutral, necessitating neither additional mitigation measures nor a financial contribution.

8.16 In conclusion, based results of the assessment and implementation of best practice techniques, air quality is not considered a constraint to planning consent for the proposed development.

8.17 For further information please refer to the Air Quality Assessment report

8.18 Enhanced indoor air quality would help to improve occupant comfort and well-being and prevent or minimise exposure of building occupants, indoor surfaces. Indoor air quality performance shall me improved by making provision of low-emitting materials and materials with low VOC content for:

- Adhesives and sealants
- Paints and coatings
- Polishes and finishes
- Flooring system
- Composite wood and Agri fiber products.

8.19 During construction, measures for air pollution control shall be taken. Before operating the rooms, it is recommended to flush out indoor spaces where possible. Entryway systems selected have grills/ grates/mats etc. can help to prevent the entry of outdoor dust indoors.

Mats appropriate to the climate can be selected. Matting can be provided in the identified entryway systems of the building on the ground floor.

9.0 LAND AND ECOLOGY

9.1 A preliminary Arboricultural Report has been prepared by Sharon Hosegood Associates (ref: SHA 1198) to assess the constraints existing trees and vegetation pose to the proposed development in accordance with BS 5837:2021.

9.2 A landscape statement has been prepared by BBUK Landscape Architecture. This document details the opportunities that exists at the site for increasing green cover in line with principles of sustainable development.

9.3 The site is located within The Fitzjohn's Netherhall Conservation Area. The landscape from the street is characterised by planted trees in the front gardens and at the read large gardens are planted with high level of tree canopy cover. The arboricultural report indicates a high tree population, including large mature trees, were identified within the immediate area of the proposed development during the site survey. There were 13 individual trees in the site which were surveyed. The result of that survey is presented in the chart below.

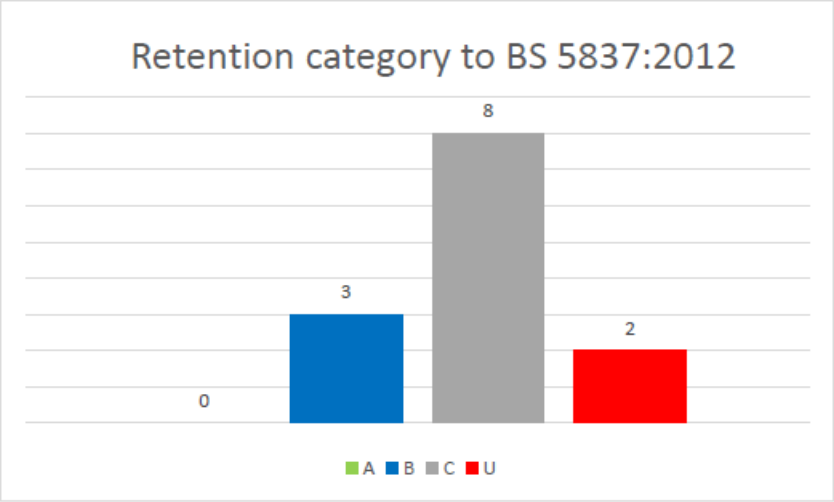

Figure 9.1: Tree retention category

A – high quality

B – moderate quality

C – low quality

U – unsuitable for retention

9.4 The trees internal to the rear of the site and to the south of 31a Daleham Gardens do not pose any constraint on the proposed development due to their size, form, or location.

9.5 A site visit is required in the post demolition phase of the development to verify the copper beach tree located to the north of the proposed development does not pose a constraint.

9.6 The rooting area of the two neighboring London plan trees located to the west of the site are constrained by a boundary wall which is likely to act as a root barrier.

9.7 Large dead branches from one of the London Plan trees which overhangs the site is likely to have resulted from Massaria disease. The removal of overhanging dead branches is recommended, and further details of the removal will be supplied within the Arboricultural Tree Survey and Impact Assessment report.

9.8 Recommendation made in the Aboricultural Tree Survey and Impact Assessment report for the management of existing trees shall be followed. Please refer to the preliminary Arboricultural Report for further information.

9.9 The Landscape Statement indicate the Urban Greening Factor (UGF) of 0.24 has been calculated based on surface cover type (based on potential rainwater infiltration) and area. The UGF is a tool to evaluate the quality and quantity of urban greening. It enables major developments to demonstrate how they have included urban greening as a fundamental element of site and building design in order to meet to meet London Plan Policy G5 Urban Greening.

9.10 The urban greening factor is below the target UGF score of 0.4 for residential development. The landscape proposal developed for the site within the site constraints includes significant areas of planting with a high greening factor, including 5 new trees, a green roof to the bin store, flower-rich perennial planting, and rain gardens. Increase in green space will help to maintain the local streetscape character and improve the social, aesthetic, economic and environmental values of the site and its surroundings.

9.11 The new planting strategies should promote local ecology through the use of native seed and fruit-bearing species to attract pollinators such as bees and butterflies. This can be done through the use of flowering, nectar-rich species, and a combination of natural and ornamental species to enrich the planting mix and promote local biodiversity. Creation of new habitats which attract local fauna and interconnect existing and proposed habitats of the site and its surroundings where possible should be undertaken. Furthermore, trees will provide shading and will regulate the microclimate.

- The development shall incorporate urban greening in the design and submit an Urban Greening Factor Statement in line with London plan Policy G5 and G6 and Camden Local Plan Policy A3.
- Mitigation measures shall be developed prior to site clearing to minimise the existing environment and disruption to wildlife.
- Where relevant, the design to include low maintenance landscaping regime.
- The design to avoid the specification of water-intensive plant species.
- Where appropriate and practicable, prepare a biodiversity action plan to minimise the loss of site ecology.
- During design consider the use of indigenous plant species in landscaped areas and the net gain of biodiversity. Biodiversity net gain can be achieved by planning trees onsite or offsite such as planting a woodland or sowing a wildflower meadow.

- Biodiversity metric is used to assess the biodiversity unit value of the area, to demonstrate biodiversity net gains or losses, to measure and account for direct impacts on biodiversity and to compare proposals for a site for creating or enhancing habitat on-site or off-site. An ecologist shall be consulted to develop biodiversity net gain strategy for the project.
- During design consider the introduction of in-built habitats, e.g., green roofs and green walls, as appropriate.
- During design consider the use of bird or bat nesting boxes, as appropriate.

Strategies for Ecological Enhancement

9.12 The following enhancement measures will be incorporated into the development to enhance site habitats and species:

- Provision of bird boxes on retained trees to increase nesting opportunities.
- Provision of bat boxes mounted on retained mature trees.
- Native shrub and tree planting.
- Enhancement of retained boundary features with new planting and management practices.
- Fences should have gaps or 'hedgehog highways' to prevent the isolation of mammals and other species

10.0 CONCLUSION

10.1 This report has been developed to detail the sustainability features of the development and demonstrates how they relate to the relevant planning policy documents including the Publication London Plan (2021) and the Camden Local Plan (2017).

10.2 The Sustainability Statement for the scheme demonstrates that the design will holistically incorporate sustainable principles into the full range of sustainability aspects covered by the relevant policies.

11.0 DISCLAIMER

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