Sustainability Strategy and Energy Assessment

2018 Resubmission of APP/X5210/A/14/2218052

Gondar Gardens, London Borough of Camden, London

For

July 2018

Revisions schedule V1		
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Executive Summary

This document has been prepared for Lifecare Residences Limited setting out the sustainability commitments in support of the application for full planning permission on the redevelopment of Gondar Gardens, London, NW6 1QF in the London Borough of Camden..

Each commitment accords with the London Borough of Camden's (LBC) planning policy and relevant supporting policies. Targets set out within the strategy are for residential use within the application area.

The Sustainability Statement considers the broad environmental concerns of climate change, pollution, impact on occupants and the wider community. It balances these with the need for high-quality, safe and healthy internal environments.

These standards accord with the requirements of Building Regulations and incorporate changes made since the previous application in December 2015

Sustainable development is the key principle underpinning the proposals for the re-development of the Gondar Gardens scheme. These proposals recognise the importance of effective protection of the environment and prudent use of natural resources. The proposed development will contribute to the sustainability of the district taking into account the need to tackle climate change by reducing carbon emissions, increasing the energy and water efficiency of the buildings, promoting the use of renewable energy systems and using natural resources wisely, through the use of sustainable building materials.

The Gondar Gardens scheme is situated in a low flood risk area and will incorporate sustainable drainage systems.

The utmost regard has been taken with respect to water conservation and proposals include the use of flow restrictors in taps and showers and delayed inlet valves fitted in WC's to restrict water flow and reduce the outlet flow and pressure to ensure the Government's maximum target of 110 litres per person per day is achieved.

The site is well placed to accommodate the development proposal as it is located in an area with a Public Transport Accessibility Level (PTAL) rating of 3 demonstrating an Good level of public transport.

The energy statement provides an overview of energy deficiency measures implemented and the available Low and Zero Carbon Technologies considered. The document provides analysis on how targets are achieved

The scheme has been designed to surpass the current Building Regulations for carbon emissions, achieving a **40.68% reduction**.

The site also achieves a **33.11% reduction** in carbon emissions from renewable energy.

Fabric efficiency standards are also defined within the report, as the most effective route for achieving significant carbon savings is based on first improving the building fabric.

This report proposes that the preferred solution for the development will be to deliver an energy efficiency fabric to reduce the heat demands where possible, a communal Air Source Heat Pump with Peak Load boilers, heat recovery and photovoltaics is proposed.

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An holistic sustainable approach has been the ultimate precursor when considering the overall design of this development. This approach includes minimising the waste going to landfill by reducing the materials used, reusing and recycling building materials and providing opportunities for recycling wherever possible. The development will use best practice to ensure resource efficiency and more sustainable construction including resourcing from local certified suppliers.

An integrated approach to waste management and minimisation will be adopted by implementing the 'Waste Hierarchy', Reduce, Re-use and Recycle. This will be accomplished with procedures and commitments to minimise monitor and measure non-hazardous and hazardous construction waste at design stage.

Space will be provided for segregated recycling waste bins within the kitchen areas. This will involve the installation of a recycling bin, in addition to non-recyclable bins, where waste can be segregated accordingly.

Other opportunities for incorporating sustainable features into the development were explored as a fundamental part of the design process, to ensure that where possible, the proposals achieve the latest standards in sustainable design. This can be seen in the significant enhancements in the Biodiversity of the site in the creation of the small nature reserve providing much needed green infrastructure.

Consideration of the principles of sustainable development has therefore formed an integral part of the design evolution and the resulting scheme reflects this.

Given the nature of the proposals the report shapes current thinking on the way in which the site addresses LBC & GLA policy on sustainability and as detailed design evolves should it become apparent that better/different options emerge then these will be explored.

Lifecare Residences recognises the importance of ensuring development is sustainable and commits to ensuring the Gondar Gardens development delivers on sustainability, where feasible, during both the construction phase and the occupation phase.

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1. Introduction

Lifecare Residences Limited is seeking to obtain full planning permission for the redevelopment for the updated frontage scheme at Gondar Gardens, London, NW6 1QF in the London Borough of Camden.

1.1. Project Description

The site consists of the redevelopment of the reservoir street frontage to provide 28 residential units (Class C3 use) in two blocks from lower ground to third floors with basement parking, following substantial demolition of the roof and internal structure of the reservoir and its subsequent re-landscaping.

The proposed redevelopment site faces Gondar Gardens road with the building line determined by the properties to the left and right being maintained. Building height rise above street level to four storeys and therefore is in keeping with nearby building heights. The scale, mass and grain of the development is also in keeping with nearby properties.

1.2. Pre-Application discussion

A meeting was held on the 22/06/2018 at the Council's offices to discuss the resubmission of planning application 2013/7585/P which was allowed at appeal (APP/X5210/A/14/2218052) on the 16/12/2015. The following advice was given with regards the scheme and in particular sustainability issues as they relate to the changes in policy context since the last submission:

- Withdrawal of the Code for Sustainable Homes
- New London Plan (2016)
- New Camden Local Plan (2017)
- Replacement and updating of Camden Supplementary Planning Guidance documents (CPGs)

Further material policy changes are forthcoming including:

- New London Plan (2019/2020)
- New NPPF (2018/2019)

1.3. Summary of proposals

This Sustainability Statement, submitted in support of the full planning re-application and the accompanying Energy Assessment, describe the approach that has been taken with regards to sustainability during the design stage process and considers the extent to which the development proposals accord with the principles of sustainable development. It has been prepared by Carbon Plan Engineering Limited, a specialist M&E Engineering led energy and environmental consultancy that focusses on planning and development projects.

The formulation of the sustainability strategy has been progressed in response to several key priorities including:

- Achieving a viable reduction in CO_2 emissions with an affordable, deliverable and technically appropriate strategy;
- Addressing national, regional and local planning policies and requirements;
- Providing high quality homes that are adaptable to future changes in climate;

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- To minimise the negative impact on the proposed development on both the local and wider climate and environment;
- To achieve high levels of sustainable design and construction;
- To minimise emissions of pollutants such as oxides of nitrogen and particulates;
- To create a pleasant, safe and friendly living environment that will be flexible to its residents';
- To enhance comfort and satisfaction;
- To enhance the ecological value by creating new and valuable habitats while protecting what s there.

In preparing this Sustainability Statement we have worked with the applicant to produce a strategy which recognises the economic, social and environmental roles of the planning system to achieve a sustainable form of development which is both policy compliant and deliverable. In preparing the strategy we have focussed on ensuring that the development is:

Economically Sustainable

- The provision of transport choice and options to those that live and visit within the development.

Socially Sustainable

- Effective and appropriate consultation of relevant stakeholders to inform the design of the proposed development;
- A housing mix which is beneficial to the needs of the area;
- Ensuring that the development is accessible to all;
- Deliver a healthy and socially conscious set of proposals;
- Committing to considerate construction practices

Environmentally Sustainable

- Integrating energy efficiency into the design of the development;
- Achieving a viable reduction in CO_2 emissions;
- Incorporating water efficiency measures to reduce consumption;
- Recognising the need to adapt to climate change;
- Sourcing materials in a sustainable way;
- Managing waste through measures to reduce, reuse and recycle.
- Provide significant enhancements in ecology and green infrastructure

The applicant is committed to delivering a truly sustainable development that is innovative in design and complements the existing environment.

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2. Policy Context

This Statement, and targets within it, comply with National, Regional and Local policy requirements, in particular the National Planning Policy Framework, the Consolidated London Plan March 2016, Housing in London, London Sustainable Design and Construction Supplementary Planning Guidance. The Camden's Local Plan and relevant Camden Supplementary Planning Guidance.

2.1 National policy

The National Planning Policy Framework (March 2012)

The National Planning Policy Framework (NPPF) was published on 27th March 2012. The NPPF seeks to complement the Localism Act, brought into force in November 2011. It is the UK Governments national policy for town planning.

The core principle of the National Planning Policy Framework (NPPF) is a 'presumption in favour of sustainable development', which should be seen as a golden thread running through plan making.

Sustainable development is defined positively, seeking to meet the needs of the borough unless the adverse impacts would outweigh the benefits, or the NPPF indicates development should be restricted.

The NPPF requires that Local Plans:

- Plan positively for the development and infrastructure required in the area
- Cover a 15-year timeframe, taking account of longer term requirements
- Be based on co-operation with neighbouring authorities, public, voluntary and private sector organisations

More generally, the NPPF sets out guidance in relation to key planning principles including building a strong economy; ensuring the vitality of town centres; promoting sustainable transport; delivering a wide choice of affordable homes; good design; promoting healthy communities; protecting open space and the built environment; conserving the historic environment; and meeting the challenge of climate change.

The Energy Act 2011

This act provides impetus to enable secure low-carbon energy supplies and fair competition in the energy markets. The act creates a new financing framework to enable the provision of fixed improvements to the energy efficiency of households and non-domestic properties; the 'Green Deal', will give householders, private landlords and businesses finance upfront to make energy efficiency improvements, which would then be paid for by energy bill savings.

Other measures include the roll out of smart meters, widening access to Energy Performance Certificates (EPC) and a new obligation on energy companies to help certain groups of consumers, who need extra support, with saving energy.

The Energy Act 2016 Chapter 20

The Energy Act is designed to help drive forward the government's energy goals and commitments, and received Royal Assent on

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12th May 2016 to become an Act of Parliament.

The Act gives local communities (via local council planning authorities) the say on new onshore windfarm planning decisions via local council planning authorities, and removes need for Secretary of State consent for large onshore windfarms in England & Wales. It also brings forward closure of the costly Renewable Obligations Subsidies Scheme for new onshore wind developments.

The document provides:

- expert advice and guidance to Government on achieving targets and carbon budgets
- greater energy efficiency, with more consumers becoming "producers" of their own energy at home
- Investment in low-carbon fuels and technologies, such as wind, wave, solar power and carbon capture and storage.

The Waste Management Plan for England (Dec 2013)

This document sets out where we are now in terms of the waste we generate in England and how we manage those materials.

2.2 Regional policy

The London Plan – Consolidated Alterations (Mar 2016)

The London Plan seeks to integrate economic, environmental, transport and social objectives and place them in a framework to progress London's development over the next 20-25 years.

Revised Early Minor Alterations (REMA) to the London Plan (2011) was adopted in October 2013 to ensure that it is consistent with the NPPF. Further Alterations to the London Plan (FALP) were adopted in March 2015. Additionally, on 14 March 2016, the Mayor adopted the Minor Amendments to the London Plan (MALP). From these dates respectively, the FALP and MALP are operative as formal alterations to the London Plan and form part of the development plan for Greater London. Where the London Plan is referenced within this document, this comprises the FALP and MALP as published.

The London Plan is a strategic document set out to produce a spatial development strategy. Legislation requires that the London Plan takes account of three cross cutting themes:

- economic development and wealth creation
- social development
- improvement of the environment

The following outlines key policies which are relevant to the proposed development and this Statement.

Policy 3.8 – Housing Choice Policy requires new developments to offer a range of housing choices, in terms of mix, size and types whereby 90% of new housing meets Building Regulation requirement M4 (2) 'accessible and adaptable dwellings" and at least 10% meets Building Regulation requirement M4 (3) 'wheelchair user dwellings'.

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Policy 5.2 – Minimising Carbon Dioxide Emissions requires boroughs and developers to ensure that major developments meet the following targets for carbon dioxide emissions reduction in buildings.

From October 2016 London Plan policy 5.2 requires major residential developments to achieve zero carbon (with at least 35% reduction achieved through on-site measures). The remaining regulated carbon emissions (to 100%) are to be offset through a cash in lieu contribution.

Policy 5.3 - Sustainable Design and Construction states that the highest standards of sustainable design and construction should be achieved in London to improve the environmental performance of new developments. Major development should meet the minimum standards outlined in the London Plan Supplementary Planning Guidance and this should be clearly demonstrated.

Policy 5.5 - Decentralised Energy Networks states that the Mayor expects 25% of the heat and power used in London to be generated through the use of localised decentralised energy systems by 2025. The Mayor will prioritise the development of decentralised heating and cooling networks at the development and area wide levels, including larger scale heat transmission networks.

Policy 5.6 - Decentralised Energy requires that all developments should evaluate the feasibility of Combined Heat and Power (CHP) systems, and examine the opportunities to extend the system beyond the site boundary to adjacent sites.

Policy 5.7 - Renewable Energy states that within the framework of the energy hierarchy, major development proposals should provide a reduction in expected carbon dioxide emissions through the use of on-site renewable energy generation. To this end there is a presumption that all major development proposals will seek to reduce carbon dioxide emissions by at least 20% through the use of on-site renewable energy generation wherever feasible.

Policy 5.8 - Innovative Energy Technologies encourages the more widespread use of innovative energy technologies to reduce use of fossil fuels and carbon dioxide emissions.

Policy 5.9 - Overheating and Cooling seeks to reduce the impact of the urban heat island effect, reduce potential overheating and reduce reliance on air conditioning systems.

Policy 5.12 - Flood Risk Management states that new developments must comply with the flood risk assessment and management requirements, and will be required to pass the Exceptions Test addressing flood resilient design and emergency planning.

Policy 5.13 - Sustainable Drainage requires that developments should use sustainable urban drainage systems (SUDS) unless there are practical reasons for not doing so, and should aim to achieve greenfield run-off rates

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and ensure that surface water run-off is managed as close to its source as possible.

Policy 5.15 - Water Use and Supplies requires that development should minimise the use of mains water by incorporating water saving measures and equipment and that residential development is designed so that mains water consumption meets a target of 105 litres/person/day or less**.**

Policy 5.18 – Construction, Excavation and Demolition Waste requires major development sites to recycle CE&D waste on-site wherever practicable. Developers are required to produce site waste management plans to arrange for the efficient handling of CE&D waste and materials.

Policy 6.9 – Cycling expects development proposals to provide secure, integrated and accessible cycle parking facilities.

Policy 6.10 – Walking requires high quality pedestrian environments including accessible, safe and convenient direct routes to town centres and transport nodes.

Policy 6.13 Parking necessitates the use of maximum standards in line with Table 6.2 of the Plan, electrical charging points, parking for disabled people and minimum cycle parking standards as set out in Table 6.3 of the Plan

Policy 7.3 - Designing Out Crime requires that development should reduce the opportunities for criminal behaviour and contribute to a sense of security without being overbearing or intimidating.

Policy 7.14 - Improving Air Quality requires developments to promote sustainable design and construction to reduce emissions form the demolition and construction of buildings. The policy also encourages sustainable travel behaviour to limit NOx emissions.

Policy 7.15 – Reducing and managing noise, improving and enhancing the acoustic environment and promoting appropriate soundscapes. This policy looks to avoid significant adverse noise impacts on health and quality of life by mitigating the potential impacts of noise in the vicinity of new development and improving and enhancing the acoustic environment.

The London Sustainable Design and Construction SPG (Apr 2014)

This document provides additional information to support the implementation of the Mayor's London Plan. The document forms part of the London Borough of Camden's Local Development Framework and should be read alongside the Core Strategy and London Plan. The SPG will be used to assist in determining planning applications.

This document reflects key sustainable design principles and outlines the standards applicable to developments.

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London Plan Housing Supplementary Guidance (2016)

This Supplementary Planning Guidance (SPG) provides guidance on the implementation of housing policies in the 2015 London Plan and the 2016 Minor Alterations to the Plan (MALP). It replaces the 2012 Housing SPG.

The document includes chapters on housing supply, housing choice and housing quality, which reflects the Government's new national technical standards through the MALP and other Mayoral guidance.

2.3 Local Policy

Camden's Local Plan (2016)

The Council's Local Plan was adopted in 2017 and this document superseded all policies within the following former policies:

- **The London Borough of Camden's adopted Core Strategy (8 November 2010)**
- **Camden Development Policies**

These documents are not considered a material consideration.

The following policies from the Camden Local Plan are relevant to this planning application when considering sustainability.

Policy H6 Housing Choice and mix

Policy C1 Health and Wellbeing

Policy C4 Safety and Security

Policy C5 Access for all

Policy A1 Managing impact of development

Policy A2 Open space

Policy A3 Biodiversity

Policy CC1 Climate change mitigation

Policy CC2 Adapting to climate change

Policy CC3 Water and flooding

Policy CC4 Air quality

Policy CC5 Waste

Policy T1 Prioritising walking, cycling and public transport

Policy T2 Car-free development and limiting the availability of parking.

UPDATED Camden Supplementary Planning Guidance documents (CPGs)

The Council is also going through the process of replacing and updating all Camden Supplementary Planning Guidance documents (CPGs). The following are **updated documents** deemed to be material when considering Sustainability.

Camden Planning Guidance 3: Sustainability (2015 – Update 2018)

This guidance provides information on ways to achieve carbon reductions and more sustainable developments. It also highlights the Council's requirements and guidelines which support the relevant Local Development Framework (LDF) policies.

Camden Planning Guidance 6: Amenity (2011 – Update 2018)

Most aspects of the 2011 Amenity document have been incorporated into the separate CPG on Amenity, however this document still deals with Air Quality and Access.

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Camden Planning Guidance 7: Transport (2011 – Update 2018)

Camden faces considerable transport challenges including congestion and poor air quality and this guidance contains information on a variety of transport issues including travel plans, car free development, vehicle access, public spaces and cycling facilities.

NEW Camden Supplementary Planning Guidance documents (CPGs)

Whereas the following are final versions of the new CPGs which are also relevant.

CPG Amenity (2018)

Standards of amenity are major factors in the health and quality of life of the borough's residents, workers and visitors and fundamental to Camden's attractiveness and success. This guidance provides relevant information on key amenity issues including:

- Overlooking, privacy and outlook
- Daylight and sunlight
- Artificial light
- Construction management plans
- Wind and micro-climate

CPG Biodiversity (2018)

Biodiversity is integral to the planning process. Where a protected species is present or where biodiversity can be enhanced, the Council will expect biodiversity to be fully incorporated into the design and construction stages of a proposal as well as post completion where appropriate. This CPG sets out:

How will the Council assess biodiversity in a proposed development and sets out guidance and targets relating to Biodiversity in relation to planning applications.

CPG Planning for health and wellbeing (2018)

The planning process can help to promote health and wellbeing across the Borough through its role in shaping the built and natural environment. As well as signposting to wider health strategies the CPG explains when Health Impact Assessments (HIA) should be prepared and what they might contain and how the planning process can enhance the quality of life for population groups

CPG Public open space (2018)

Public open space is open space that can be used and enjoyed by all the community. As well as setting out expectations provision for open space and play facilities the CPG defines:

- The amount & type of open space
- Calculation procedures
- Expectations relating on design and quality
- How contributions may be used to enhance 'green infrastructure' networks in Camden to provide environmental and quality of life benefits.

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3. Sustainability Assessment

Low environmental impact will be at the heart of the design for the proposed Gondar Gardens development. This Sustainability Statement outlines the development's sustainability, energy efficiency and renewable energy strategies in order to meet the sustainability targets set out in the guidance from Camden BC and GLA.

The assessments consider the broad environmental concerns of climate change, pollution, impact on occupants and the wider community. They balance these with the need for a high-quality, safe and healthy internal environment. These standards go beyond the minimum requirements of the Building Regulations.

The following sustainable features are included in the proposed design:

- A number of passive design measures and efficient systems will be incorporated to reduce energy consumption and associated CO_2 emissions.
- The proposed accommodation will have good natural lighting within all occupied areas, which will improve comfort and reduce the requirement for artificial lighting.
- Good solar control will be provided by the selection of glazing/shading so as to avoid overheating in summer and increase passive gains in winter.
- The development will use low energy lighting internally and externally and utilise daylight triggered controls to dim lighting and reduce energy consumption.
- Building materials will be sourced locally where possible to reduce transportation pollution and support the local economy.
- All timber used on site will be purchased from responsibly sources such as FSC approved vendors.
- Material selection to take into account their overall environmental impacts. Achieving 'A+' ratings from the BRE Green Guide to Specification, where possible.
- Recycling facilities will be provided for all occupants to reduce waste during operation.
- Water use will be minimised by the specification of water efficient taps, shower heads, dual flush toilets and low water use appliances.
- All construction on site will be managed in an environmentally sound manner in terms of resource use, storage, waste management, and potential sources of nuisance or pollution
- Cycling will be encouraged within the proposed development, by providing dedicated cycle storage spaces for residents.

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Following a review of the relevant Local, Regional and National policy objectives the following ten sustainability topics have been identified against which the development proposals were evaluated.

- Energy
- Land Use
- Waste
- Pollution
- Water
- Materials
- Transport
- Community, Health and Social Needs
- Economic Prosperity

These sections provide a general overview of each sustainability topic together with a precis detailing the site-specific initiatives committed to by the applicant and a commentary on how the initiatives comply with the objectives of sustainable development.

These can be mapped onto the above policy frameworks and in particular the Camden Local Plan CPG documents and the London Plan requirements.

Where relevant we have stated specific polices within the current framework as they are relevant within each section.

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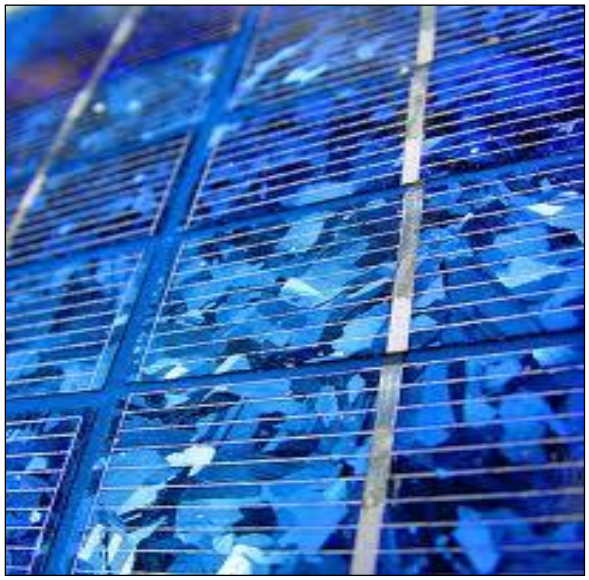
3.3 Energy



Relevant Policy Objectives

- **London Plan – Policy 5.2 – Minimising Carbon Dioxide Emissions**
- **London Plan – Policy 5.3 - Sustainable Design and Construction**
- **London Plan – Policy 5.5 - Decentralised Energy Networks**
- **London Plan – Policy 5.6 - Decentralised Energy**
- **London Plan – Policy 5.7 - Renewable Energy**
- **London Plan – Policy 5.8 - Innovative Energy Technologies**
- **London Plan – Policy 5.9 - Overheating and Cooling.**
- **The London Sustainable Design and Construction SPG (Apr 2014)**
- **Camden's Local Plan (2016)**
- **Camden Planning Guidance 3: Sustainability (2015 – Update 2018)**

The concentrations of greenhouse gases in the atmosphere has risen since the beginning of the industrial revolution, the quantity of CO_2 produced makes it the main contributor to climate change. Approximately 50% of the total UK CO_2 emissions are attributable to energy used in heating, lighting and cooling buildings. A further 10% of emissions are derived from energy used during the production and transportation of materials and the construction of the building.

As well as producing CO_2, fossil fuels such as oil, coal and gas are finite resources and the electricity they produce should therefore be used as efficiently as possible in homes and workspaces. Appropriate building design can minimise heat loss and maximise solar heating, natural lighting and passive ventilation can be designed in to reduce energy requirements.

Developing sustainable energy systems is an essential part of adapting to the impacts of present and future climate change. This involves increasing the use of renewable energy sources to reduce dependence on finite

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fossil fuel reserves and thus reducing CO_2 emissions.

3.3.1 Sustainable Design & Construction

Passive design has been integrated into the scheme where feasible thus achieving good daylight, with natural ventilation. Window location has been selected to reflect orientation and internal use. Windows have been set back in the facade to enable a degree of solar shading and a cantilevered top floor on the south facade provides further shading benefits for the floor below.

Potential overheating has been further reduced through the use of internal blinds which offer occupant control.

The proposed development incorporates measures such as high levels of insulation for walls, glazing, roofs and floors, high efficiency gas boilers and enhanced heating controls, reduced air leakage and maximising the use of energy efficient lighting.

3.3.2 Increase Energy Efficiency

The London Plan requires residential buildings to express a 100% improvement over the Target Emission Rate outlined in the national Building Regulations. The proposed development detailed within this document is considered a 'Major' development and the Design Team and Client aspire to achieve as close to the required 35% CO_2 reduction over Part L 2013 Building Regulations as possible and achieve a 20% reduction in CO_2 emissions from on-site renewable energy generation. These are the targets Camden Council recently published Camden Local Plan. During the development of the design plan, consideration has been given to ensuring that the design will meet the requirements of Part L1A 2013 of the Building Regulations which deals with the conservation of fuel and power in buildings throughout the UK.

The proposed development is substantially allocated to high quality residential accommodation. At 4 storeys in height the project will be medium density occupation and will therefore have relatively light demands on

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energy when considered on a unit area basis. The two new blocks will be built to the highest standards and will operate at much higher efficiencies than is the case than is required for Part L compliance.

The proposed development embraces the Mayoral energy hierarchy for feasible heating systems and ultimately is lean (uses less energy), clean (uses energy efficiently) and green (uses Renewable and Low and Zero Carbon Technologies). This is reflected in the development of the Energy Strategy (See Appendix A) which proposes the use of a high efficiency fabric specification to reduce the heat demands of the dwellings where possible, installation of highly efficient MVHR, an advances Air Source Heat pump / Gas Boiler Combination and other Low and Zero Carbon technologies (LZC).

The detailed Energy Assessment demonstrates how the targets for carbon dioxide emission reductions could be met within the framework of the energy hierarchy.

3.3.3 Minimising Carbon Dioxide Emission

the Energy Strategy has been produced by Carbon Plan Engineering Ltd and includes the calculation of the energy demand carbon dioxide emissions covered by Building Regulations and, separately, the energy demand and carbon dioxide emissions from any other part of the development, including plant or equipment, that are not covered by the Building Regulations at each stage of the energy hierarchy. The assessment also provides proposals to reduce carbon dioxide emissions through the energy efficient design of the site, buildings and services and proposals to further reduce carbon dioxide emissions through the use of on-site renewable energy technologies.

The building fabric is commonly agreed to be the most immediate and cost effective way of reducing energy use as it controls the ingress of sunlight and the ingress and egress of heat and air. The building has been modelled in SAP to accurately simulate how the building will work in real-world conditions and to enable accurate measurement of the effects of suggested improvement strategies. It far exceeds the minimum Fabric Energy Efficiency Standards (FEES) required by Part L of the Building Regulations.

All effort has been made to meet the specific carbon dioxide reduction targets on site using significantly improved fabric and energy efficient services and Photovoltaic panels.

The scheme has been designed to surpass the current Building Regulations for carbon emissions, **achieving a 40.68% reduction**.

3.3.4 Renewable Energy

The appropriateness of renewable energy types has been considered in the Energy Strategy which reviews the renewable energy options.

The Energy Strategy assesses the application of the most suitable technologies at the site, namely CHP, ASHP. solar water heating, photovoltaics and ground and air source heat pumps.

This identified that an ASHP system delivering 50% of the thermal load coupled with high

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efficiency fabric, Photovoltaic panels and peak load boilers is the likely to be the most viable and achieves this reduction in both regulated and unregulated CO_2 emissions.

3.3.5 Transport related Energy

The scheme's layout and design aim to facilitate travel by cycle or foot, thereby minimising private car travel and associated carbon dioxide emissions. Suitable provision of cycle parking and associated facilities are anticipated encouraging the use of bicycles to access and move around the local area. This in conjunction with the sites good links to existing public transport services will contribute to a reduction in reliance on the private car – a major user of fossil fuels and source of atmospheric pollution.

3.3.6 Construction related Energy

The procurement of materials for the development will prioritise renewable or sustainable sources with low energy impact, for example, all timber will be sourced from Forest Stewardship Council certified product suppliers or equivalent.

In addition, there is a commitment to use local materials, suppliers and labour during construction wherever practicable to reduce the need to travel.

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3.4 Land Use & Green Infrastructure

Relevant Policy Objectives

- London Plan – Policy 5.3 - Sustainable Design and Construction
- London Plan – Policy 5.10 – Urban Greening
- London Plan – Policy 5.11 – Green roofs and development site environs
- London Plan – Policy 7.18 – Protecting open space and addressing deficiency
- London Plan – Policy 7.19 – Biodiversity and access to nature
- Camden's Local Plan (2016)
- Camden Planning Guidance 3: Sustainability (2015 – Update 2018)
- Camden Supplementary Planning Guidance CPG Biodiversity
- Camden Supplementary Planning Guidance CPG Open Space

A sequential approach should be taken in locating new development. This involves giving preference to previously developed land or buildings within urban areas, followed by development on the edge of existing urban areas with the development of Greenfield sites as the last option. Reusing buildings can save significant amounts of waste material. Existing buildings can often be the basis of the character of the neighbourhood.

Local open spaces are key to many issues, such as health and biodiversity and so protecting and enhancing our ecological environment should be a key strand through the development process with the impact on green infrastructure, in terms of both open and private space, being evaluated.

Major Schemes should be designed to include roof, wall and site planting, especially green roofs where feasible always enhance the natural environment.

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3.4.1 Previously Developed Land

The Gondar Gardens reservoir basin site falls within Sites Important to Nature Conservation (SINC) Grade II because of its mostly neutral grassland, moderate diversity of common wild flower plants and a population of the locally uncommon spiked sedge (Carex spicata). The site also has the only known population of Slow Worms in Camden.

The site is currently not public open space due to the hazard of the deep, disused reservoir.

The development re-uses brown field land. 100% of the site is on previously developed land and as such the proposal involves the release of brown field land for redevelopment, the majority of which will be put back to open grassland.

3.4.2 Grain, massing and layout

The grain of the development is appropriate for needs, and in context with the surroundings. As a residential development the proposed designs reveal a human scale and a rhythm akin to the row of terraces to either side of the proposed development.

The layout of the proposal means the properties would 'fill in' the building line between nearby properties. Roads and pavements serving the developments would be users are currently in existence and serving nearby residents and visitors. It is proposed that goods vehicles will not enter the site. Refuse vehicles will serve the site from Gondar gardens. New access routes into the site will be interesting for residents using the space.

The scale of the development is appropriate in terms of height and massing of the building. Both the mass and height of the development reflect that of nearby properties.

The height of the development will not exceed 4 storeys above street level and will therefore be of a similar height to adjacent buildings. The building footprint shares a similar mass to adjacent buildings.

3.4.3 Enhancing Ecology and Green Infrastructure

A full ecological survey of species habitats and significant natural features has been carried out by a suitable qualified ecologist. All the key recommendations taken from this survey will be carried out and a third of the additional recommendations will be carried out.

The landscape proposals aim to retain and extend the key ecological habitats on the bulk of the site enhancing these to form a new Nature Reserve; managed to enhance and protect the existing wildlife. This will include the establishment of a traditional habitat, including a new pond and will increase the diversity of both flora and fauna, with the openness of the reserve being maintained to enhance the suitability for protected reptile species.

The existing trees in and around the boundaries of the open space shall be protected and boundary shrub planting will be enhanced to provide further habitat variety.

3.4.4 Green roofs

To further enhance the green infrastructure *Sustainable Roof Gardens* will be created using green roofs and solar panels. Making use of environmentally friendly materials, each roof will enable rainwater harvesting and will comprise of a native wildflower mix that provides a refuge for wildlife.

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These Green roofs will be incorporated into the proposals to the extent that these do not conflict with the requirements of the Photovoltaic panels on the roof.

3.4.5 Access to Public open space

Although public access to the nature reserve will be controlled, it will enable visitors to enjoy the area whilst minimising impact on the more ecologically sensitive areas. In addition, residents will have a substantial private garden overlooking the enhanced natural environment created as part of the green infrastructure. Residents will also be within reach of significant green spaces. These are Golders Hill Park and Hampstead

Heath located approximately 1.35km north east of the site and approximately1.9km east of the site respectively.

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3.5 Waste

Relevant Policy Objectives

- **London Plan – Policy 5.3 - Sustainable Design and Construction**
- **London Plan – Policy 5.18 – Construction, excavation and demolition waste**
- **London Plan – Policy 5.20 – Aggregates**
- **Camden's Local Plan (2016)**
- **Camden Planning Guidance 3: Sustainability (2015 – Update 2018)**

Waste of all types, if not managed safely, can also result in pollution of the environment. The most sustainable approach is to reduce the overall amount of waste generated 'at source'.

Following the Waste Hierarchy; Wastes that are generated should then be reused wherever possible or recycled as the next best environmental option. The least sustainable waste option is disposal (e.g. landfill). In order to turn around current patterns of waste management, we must minimise the amount of waste sent to landfill through diversion to other methods of disposal including re-use, recycling and composting, and using waste in energy generation.

Most development sites have existing materials which can be re-used, recycled or obtained from nearby development sites Re-use and recycling rates for construction, projects in London are already high. Nevertheless, the Mayor believes that there is room for improvement. Waste streams should be separated and target set on all construction projects.

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3.5.1 Waste Management – Construction Phase

The contractor will be committed to reducing waste during the demolition and construction phase of the development. To successfully reduce waste requires building in measures from the project outset, as such waste management has been considered at this early planning stage.

In addition, assurance will be sought that the contractor is obligated through the Contract Specification, to develop and implement a Waste Management Plan for maximising the recovery of materials and components that are able to be recycled at the end of their design life, wherever practicable. The Waste Management Plan will also require the contractor to monitor segregate and set targets on waste generated during the works.

As a minimum the contractor will be required to divert 95% of the non hazardous construction waste generated on site from Landfill. This will include demolition and excavation wastes.

3.5.2 Waste Management – Operational Phase

The applicant is committed to supporting the government's targets for recycling and landfill waste reduction. The following measures will be implemented to encourage and help ensure the residents will be able to maximise recycling of waste:

- Refuse storage is to be provided where both recyclable and non-recyclable waste can be stored;
- Space will be provided for segregated recycling waste bins within the kitchen areas. This will involve the installation of a recycling bin, in addition to non-recyclable bins, where waste can be segregated accordingly.
- External storage for waste and recycling will be provided in accordance with the LBC's waste collection service.
- Composting bins will be provided in all private gardens

The proposed refuse and servicing strategy is outlined further within the Design & Access Statement.

3.5.3 Measuring Recycled Content

During detailed design an evaluation will be undertaken of the total value of materials used to be derived from recycled and reused sources using the WRAP methodology. The LBC target in this regard is 10% by value, however we believe that 15 - 20% of the total value of materials used can be achieved.

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3.6 Pollution

Relevant Policy Objectives

- **London Plan – Policy 5.3 - Sustainable Design and Construction**
- **London Plan – Policy 5.12 – Flood risk management**
- **London Plan – Policy 7.14 – Improving air quality**
- **London Plan – Policy 7.15 – Reducing and managing noise**
- **Camden's Local Plan (2016)**
- **Camden Planning Guidance 3: Sustainability (2015 – Update 2018)**
- **Camden Supplementary Planning Guidance CPG Planning for health and wellbeing**

Physical pollutants of all types will likely have significant adverse health effects on humans, animals and plants as well as the broader ecosystems. As well as affecting plant and animal species, other forms of pollution such as light and noise can cause nuisance to neighbours and ill health.

The reduction or prevention of pollution is therefore critical to sustainable development and new developments of all sizes need to play their part in ensuring that they do not have adverse effects through two key strands both from construction and post construction stages of a development.

- Pollutants that affect air and water quality
- Light and noise pollution issues at all stages

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3.6.1 Air Quality

London has some of the highest pollution levels in the country.

Air quality issues in the borough are well known. The council's Air Quality Action Plan (AQAP) designates the whole borough as an Air Quality Management Area (AQMA), and identifies road transport as the major source of air pollution, giving rise to nitrogen dioxide and particulate matter which can cause respiratory illnesses and other adverse health effects.

The development has been designed to be car-free, instead concentrating on more sustainable means of travel and encouraging cycling and walking as alternatives.

During construction, air quality impacts are likely to be local to the development and will be temporary in nature (i.e. during the demolition/construction period only).

The construction phase impacts of the development will be mitigated through the adoption of best practice guidance. Operational phase mitigation will be based on assessing the impacts of the scheme with reference to National Air Quality Strategy Objectives and the implementation of appropriate mitigation measures based on preventing or minimising exposure to exceedence of the Objectives.

All contractors on site shall follow the regimen put in place for the development during construction stages to minimise emissions and comply with the relevant EA Pollution Prevention Guidelines. The contractor will sign up to achieve 'beyond best practice' standards with the Considerate Constructors Scheme.

3.6.2 Noise

CBRE, Environmental Consultancy are undertaking a Rapid HIA and have not identified any adverse Noise impacts relating to the proposed development.

3.6.3 Light Pollution

Lighting will be appropriate for the intended use; provide the minimum amount of light necessary to achieve its purpose; provide adequate protection from glare and light spill and be energy efficient.

It is anticipated that all external space and security lighting will be provided by energy efficient fittings with PIR and dusk to dawn daylight sensors and time switches. The lighting shall be designed in accordance with BS 5489-1: 2003 and BS EN 13201-2:2003 to ensure that an appropriate level of illumination is provided.

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3.7 Water

Relevant Policy Objectives

- **London Plan – Policy 5.3 - Sustainable Design and Construction**
- **London Plan – Policy 5.12 – Flood risk management**
- **London Plan – Policy 7.13 – Sustainable Drainage**
- **London Plan – Policy 7.14 – Water quality and wastewater infrastructure**
- **London Plan – Policy 7.15 – Water use and supplies**
- **Camden Planning Guidance 3: Sustainability (2015 – Update 2018)**

Water is becoming an increasingly scarce resource as demand continues to grow. To satisfy this increase in demand new sources of water and associated infrastructure have been required. However, the construction and operation of this infrastructure (for example reservoirs and treatment works) is expensive, energy intensive and damaging to the environment and therefore measures should be taken to reduce water consumption where possible.

Water resources face increasing demand arising from existing and new development, exacerbated by changes to the climate and rainfall patterns. Ensuring that new development has adequate supply and is water-efficient is therefore an important consideration.

New developments of all sizes need to play their part in sustainable water management ensuring that the developments do not have adverse effects through increased run-off rates and protection of river water quality and groundwater.

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3.7.1 *Water Conservation*

Legislative guidance and documentation currently stipulates that water consumption for all new dwellings must not exceed 125 litres per person per day (including external usage).

Under Approved Document G '*Sanitation, hot water safety and Water efficiency,* mandatory standards and requirements are stipulated to reduce internal water consumption.

The 2010 edition has been amended to incorporate the changes following the Housing Standard Review. As of 1 October 2015 Approved Document G includes the following:

- Introduction of an optional requirement for tighter water efficiency in Regulation 36 (section G2)
- Introduction of a fittings approach as an alternative to using the Water Efficiency Calculator (section G2).
- Inclusion of the Water Efficiency Calculator methodology

As Camden is located in an area of serious water stress LBC expect the higher standards of the 'optional requirement', 110 litres per person per day (including 5 litres external usage) to be met.

To meet this level the following maximum consumption must be achieved:

Table 2.2 **Maximum fittings consumption optional requirement level**

Water fitting	Maximum consumption
WC	4/2.6 litres dual flush
Shower	8 l/min
Bath	170 litres
Basin taps	5 l/min
Sink taps	6 l/min
Dishwasher	1.25 l/place setting
Washing machine	8.17 l/kilogram

3.7.2 *Flood Zone*

Following the incorporation of the reaches of the Rivers Fleet, Tyburn, Kilburn and Brent into the sewer network there are no main rivers in Camden and therefore the borough is located entirely in Flood Zone 1 which represents an annual probability of less than 0.1% of a flood occurring in any one year.

A full Flood Risk Assessment has been undertaken by RSK and is included in the application documents. The site is located entirely within Flood Zone 1 and sequential tests have been run and the development will have no impact on other forms of flooding.

3.7.3 *Sustainable Urban Drainage System (SUDS)*

The development will use a combination of SuDS methods consisting of both Green roof and a sub-terrain cellular storage structure delivering a controlled discharge at the maximum rate agreed by Thames Water.

The proposed scheme incorporates SuDS features such as green roofs, modular storage and an attenuation basin, permeable paving should also be considered. These features provide water improvements in the form of this treatment train before discharging into the Thames Water network. The runoff generated onsite will also be relatively clean because it will consist of roof drainage and runoff from the landscaped basin.

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3.8 Materials

Relevant Policy Objectives

- **London Plan – Policy 5.3 - Sustainable Design and Construction**
- **London Plan – Policy 5.18 – Construction, excavation and demolition waste**
- **London Plan – Policy 5.20 – Aggregates**
- **Camden's Local Plan (2016)**
- **Camden Planning Guidance 3: Sustainability (2015 – Update 2018)**

A sustainable resource management approach will help to minimise the contribution that both constructing and occupying a new development of any size makes to the problem. This is done by designing the development to use materials efficiently, specifying materials which are responsibly sourced, have low environmental impact and are reclaimed or recycled wherever possible, managing the construction process to minimise waste produced.

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3.8.1 Procurement

The procurement of materials for the development will prioritise renewable or sustainable sources with low energy impact, for example, all timber will be sourced in accordance with UK Governments Timber Procurement Policy and have Forest Stewardship Council, Pan European Forest Certification or the UK Woodland Assurance Scheme. All other materials will be sourced from companies holding EMS, IS14001 and BES6001 certification.

When selecting materials for the development, preference will be given to the use of locally sourced materials and local suppliers where viable. This will benefit the local economy as well as having environmental benefits through reducing transportation requirements. This will be addressed and considered in more detail during the detailed design stage.

Consideration will be given to using environmentally low impact materials for the building envelope elements (roof, windows, internal walls, external walls and upper and ground floors) using the BRE Green Guide to specification. The guide is a comprehensive reference website providing direction on the relative environmental impacts for a range of building specifications. The ratings within the Guide are based on Life Cycle Assessment, using the Environmental Profile Methodology. Green Guide ratings range from E to A+, the development will aim to achieve A and A+ rated materials. Beyond this the dwellings will use passive energy efficiency improvements and design considerations to minimise the energy consumption required by the development to create a resilient residential scheme.

The development will be designed to a high quality with the objective of delivering a scheme that will be durable. The construction techniques will utilise high standards of traditional building materials that are well established and robust.

3.8.2 Recycling

The recycled content of a material can be described as either post-consumer or post-industrial content. Specifying materials with a high-recycled content is another method of saving, processing or manufacturing energy. Some typical building materials that can contain a high percent of recycled material include reinforcing and framing steel, concrete masonry units, gypsum wallboard and facing paper, acoustic ceiling panels and their suspension system.

Scope for increased recycling will be incorporated by specifying recycled materials and ensuring that even where new materials are used, as much as possible can be recycled at the end of the buildings' life.

Where possible measures to minimise, re-use and recycle materials to ensure resource efficiency will be considered.

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3.9 Transport

Relevant Policy Objectives

- London Plan – Policy 5.3 - Sustainable Design and Construction
- London Plan – Policy 6.9 – Cycling
- London Plan – Policy 6.13 – Walking
- London Plan – Policy 6.13 – Parking
- Camden's Local Plan (2016)
- Camden Planning Guidance 7: Transport (2015 – Update 2018)

Certain modes of transport use significant amounts of energy, and are a major source of greenhouse and air pollution. In addition, increased road transport raises other considerations such as congestion and safety.

The promotion of more sustainable modes of transport; encouraging accessibility to jobs, shopping, leisure facilities and services by public transport, walking and cycling; and reducing the need to travel particularly by private car, are key aims of sustainable development.

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3.9.1 Reduce the need to travel

The development has been designed to be car-free; therefore no car parking is required.

Secure cycle parking is included within the building and is in line with Table 6.3 of the London Plan.

3.9.2 Cycling and walking

As mentioned in the paragraph above easily accessible cycle storage will encourage occupants to engage in a more sustainable mode of travel.

Existing pavements in and around the development offer safe access to amenities and leisure facilities, encouraging occupants to walk and offering a sustainable option to both driving and public transport.

3.9.3 Public Transport

A full transport assessment has been carried out by Royal Haskoning DHV and this confirms that the site is located in an area with a Public Transport Accessibility Level ('PTAL') rating of 3, demonstrating an Good level of public transport as calculated using the Transport for London ('TfL') PTAL calculation methodology.

There is excellent proximity to a variety of public transport links. West Hampstead train station is located just over 1,000m from the site and Kilburn Rail Station is 965m from the site.

There are also a number of bus services on Mill Lane and Fortune Green, which are within walking distance of the site and serve routes X11, 139 and 328.

3.9.4 Reduce traffic congestion

Air quality issues in the borough are well known. The council's Air Quality Action Plan (AQAP) designates the whole borough as an Air Quality Management Area (AQMA), and identifies road transport as the major source of air pollution, giving rise to nitrogen dioxide and particulate matter which can cause respiratory illnesses and other adverse health effects.

This development is car free which means there is no car parking within the site other than that for operational and servicing needs. In addition residents will not be permitted to apply for on-street parking permits for themselves or visitors; this will lead to reductions in air pollution, noise levels and congestion.

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3.10 Community, Health & Social Needs

Relevant Policy Objectives

- London Plan – Policy 3.2 – Improving health & addressing health Inequalities
- London Plan – Policy 3.6 – Children and young people's play & informal recreation facilities
- London Plan – Policy 3.16 – Protection & enhancement of social infrastructure
- London Plan – Policy 5.9 – Overheating and cooling
- London Plan – Policy 7.2 – An inclusive environment
- London Plan – Policy 7.3 – Designing out crime
- London Plan – Policy 7.14 – Improving air quality
- London Plan – Policy 7.15 – Reducing and managing noise
- Camden's Local Plan (2016)
- Camden Planning Guidance 3: Sustainability (2015 – Update 2018)
- Camden Supplementary Planning Guidance CPG Amenity

How a development effects society in terms of the interaction of occupants with neighbouring communities and the general public is fundamental to sustainable development.

Issues to focus on include access to education, health, welfare, developing a sense of community, delivering recreational facilities and public open space, as well as ensuring public safety and crime prevention.

It is important that residential developments are situated near to shops and services reducing the need to travel by car, but also that green infrastructure is enhanced as a result of development.

Health and wellbeing issues must be addressed such as noise, air and water pollution, access to external activity, play and social integration in any development proposals.

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3.10.1 Access to opportunities, services and facilities for all

There are a range of facilities within the vicinity Gondar Gardens along Mill Lane; these include a large number of well-known high street shops, restaurants, and coffee shops all within a 5 to 10 minute walk.

The nearest Doctors surgery is the Cholmley Gardens surgery which is 600m from the site with 4 other doctors surgeries in the immediate vicinity. Other key amenities are also situated within 1,00m walk including Post Office, Dentists and churches.

3.10.2 Increased access to leisure facilities

There are two fitness centres / gyms within a 10-minute walk with one being open 24 hours a day.

There are no designated cycleways in the vicinity of Gondar Gardens, however due to the urban layout of the locality and close local amenities make the site accessible by cycle from a variety of destinations. In addition Quietway 3 can be access from West Hampstead Station and links from Regents Park to Gladstone Park as well as the Belsize loop make cycling a reality for the site.

3.10.3 Reduce the level of noise

Where possible the development at will be designed to minimise the impact of noise from external sources. This will be achieved through specified minimum performance and utilising good quality construction methods, high levels of air tightness and robust details.

Sound insulation standards will exceed Building Regulation requirements to ensure that the building provides an acceptable noise climate for occupants.

3.10.4 Inclusive design

The principles of inclusive design have been adopted at the earliest stages of the development process to ensure that dwellings can be used safely, easily and with dignity by all regardless of disability, age, gender, ethnicity or economic circumstances. Beside this the physical environment can meet the highest standards of accessibility and inclusion complying with British Standard BS 8300.

The proposed apartments have been designed in accordance with the National Space Standards and building regulations Approved Document M4(2).

Appropriate facilities and access for disabled users have been incorporated into the design plan to ensure the dwellings are convenient and welcoming with no disabling barriers.

Full details can be found in the Design and Access Statement prepared by Rolfe Judd Architects in support of the planning application

3.10.5 Daylight and Sunlight

Please refer to the Daylight, Sunlight and Overshadowing Report by CHP Surveyors that accompanies this planning application.

3.10.6 Improve Health

The buildings high performance building fabric and specification ensures better temperature control and improved comfort through reducing draughts, solar glare, overheating and noise. This is achieved through the adoption of:

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- consideration of orientation and application of mitigation measures
- solar gain control within window specification
- mechanical ventilation with Summer bypass to help prevent overheating

Access to Oakley Square Gardens and Goldington Crescent Gardens are within a six minute walk from the development. Walking offers considerable benefits for human health and public gardens are an important facility for people to get out and walk.

The proposed development has pedestrian and cycle routes located in and around its location; encouraging walking and cycling not only makes a positive contribution to health and well-being, but also reduces pressure on existing transport systems.

3.10.7 Wider community involvement

A Statement of Community Involvement has been prepared by Rolfe Judd Architects and accompanies this planning application.

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3. Conclusion

Through the incorporation of sustainable design and construction methods, energy, water and waste saving measures the proposed development is considered high quality and sustainable.

The proposed development at Gondar Gardens aims to comply with and demonstrates how the development will meet National and Local Planning Policy for matters relating to sustainability and therefore the application should not fail on sustainability grounds.

The key sustainability features of the development proposals are as follows:

- The new dwellings will be constructed to significantly exceed the requirements of Part L 2013 Building Regulations in all ways;
- Water efficiency measure and devices will be installed to achieve a maximum daily water usage of 110 litres/person/day (including an allowance of 5 litres of less per day for external water consumption)
- Recycling facilities will be provided for domestic and construction related waste;
- The use of sustainable transport modes will be encouraged with cycle storage provision and no car parking on site;
- Where practical, building materials will be sourced locally to reduce transportation pollution and support the local community. Materials will be selected based on their environmental impact, with a preference to A+ or A rated materials from the BRE Green Guide to Specification where possible.
- Recycled content within the construction materials will be assessed using the WRAP methodology with at least 10% by value being shown to come from recycled sources
- The ecology of the site will be significantly enhances providing a significant item of green unfractured
- Sound insulation values will provide an improvement on Part E of the Building Regulations;
- New homes will be designed to minimise the risk of overheating where possible;
- The development will be registered with the Considerate Constructors Scheme.

The proposed development at Gondar Gardens aspires to provide a high quality development that serves the local community and aids the regions commitments to meeting on-going sustainability targets. The measures proposed in the Sustainability Strategy and Energy Assessment support the delivery of sustainability during both the construction phase and the occupation phase and therefore contribute to local sustainability targets.

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