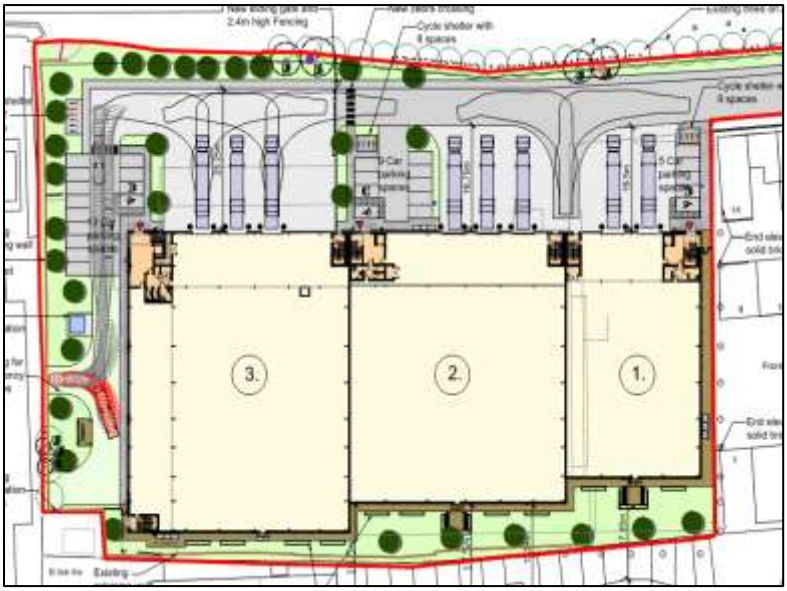
Queen Street, Tottenham, N17 8HZ

Client – Verity Trustees LTD

Energy Plan



Cudd Bentley Consulting Ltd.

Ascot Office:
Ashurst Manor, Church Lane,
Sunninghill,
Berkshire,
SL5 7DD
Tel: (01344) 628821

London Office;
12 Devonshire Street,
London,
W1G 7AB
Tel (0203) 393 6446

Solihull Office;
Regus, Central Boulevard,
Blythe Valley Business Park,
Solihull, West Midlands,
B90 8AG
Tel (0121) 711 4343

www.cuddbentley.co.uk

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RECORD OF REVISIONS.		
Date.	**Revision.**	**Description of change.**
08/03/2024	1	First Issue
20/03/2024	2	Updated Key Application Details
21/03/2024	3	Updated Plans
21/03/2024	4	Updated results
22/03/2024	5	LZC BREEAM Information Incorporated
13/10/2025	6	Tender Issue
21/05/2026	7	Enhanced ASHP, PV & fabric details.
15/10/2026	8	DHN Information Expanded

1 EXECUTIVE SUMMARY

This report considers the energy and sustainability measures to be incorporated within the Proposed Queens Street, Tottenham Development. This document reviews the requirements at both national and local level, as set out in the National Planning Policy Framework (2023), The London Plan (Adopted March 2021) and the Haringey development plan, which is made up of the Strategic Policies, Development Management Policies, Site Allocations and Tottenham Area Action Plan, alongside the North London Waste Plan.

The recommended sustainability features for the Proposed Development, resulting from a Part L compliant SBEM model, will allow for a 109% carbon reduction from a base Part L 2021 compliance build. The sustainability features will allow for a 22.70 tonnes reduction in annual CO_2 emissions. This development is compliant with The London Plan 2021 (Policy SI2) through use of passive measures, an air source heat pump and Photovoltaic Panels which result in an overall 109% carbon reduction. In addition, the proposed development is anticipated to achieve a BREEAM "Outstanding" rating.

The energy and carbon savings are to be achieved through passive design, energy efficient measures incorporating design features such as energy efficient lighting, submetering of relevant areas, upgrading of 'U' values and occupancy sensing in relative areas, as well as the incorporation of an Air Source Heat Pump and Photovoltaic Panels.

To reduce the energy demand of the development as well as help to conserve water resources within the local area, it is anticipated that the fit out works will provide for sanitary fittings which will be water efficient through measures such as dual flush toilets and low flow taps.

The Proposed Development will also prioritise sustainable modes of transport. The location of the site makes it easy to access via public transport. Additionally, it is anticipated cycle storage facilities will be provided in order to allow for the reduction of car-based travel and transport related pollution.

The incorporation of these sustainability measures allows for the proposed development to be deemed sustainable whilst targeting compliance with local and national policy. A pre-application engagement meeting was held with Haringey council regarding the proposed development (Reference - PRE/2022/0181).

This report includes annualised baseline calculations which predict the likely energy consumption and associated CO_2 emissions for the entire development. The total baseline energy and carbon emissions for the entire development, taking into account regulated energy demands are:

- ***135,651.16 kWh/Annum***
- ***20.90 Tonnes CO_2/Annum***

Unregulated energy use is not covered by existing regulations and includes energy consumed by the occupants through activities and appliances; in this case it would typically be small power usage (computers, equipment, appliances *etc*.). The following unregulated energy use for the development was calculated:

- ***26,526.88 kWh/Annum***
- ***4.49 Tonnes CO_2/Annum***

The following energy hierarchy has been adhered to in order to determine the most appropriate strategy for the development:

1. Be Lean, Reduce energy and carbon emissions through the use of passive design and energy efficiency measures.

2. Be Clean, Reduce energy and carbon emissions by investigating the possibility of installing a site wide CHP system or connecting to an existing decentralised Combined Heat and Power (CHP) network;
3. Be Green, Reduce energy and carbon emissions by installing Low or Zero Carbon (LZC) Technologies such as Solar panels, Photovoltaics, Wind Turbines etc.
4. A requirement for all major development to 'be seen' i.e. to monitor and report its energy performance post-construction to ensure that the actual carbon performance of the development is aligned with the Mayor's net zero carbon target. (Be Seen Policy)

Be Lean

In order to initially reduce carbon emissions from a base Part L 2021 compliant development, passive design and energy efficiency measures have been incorporated, such as:

- *Additional improvements to the thermal performance of the fabric of the buildings;*
- *The provision of energy efficient lighting;*
- *The provision of time and temperature zone controls.*

Further examples of the proposed measures to be provided are in Section 9.0 'Passive Design and Energy Efficiency Measures' of this report.

Following the incorporation of the above measures the total energy consumption and carbon emissions for the development, taking into account regulated energy demands, are reduced to:

- ***107,850.34*** ***kWh/Annum***
- ***3.60*** ***Tonnes CO_2/Annum***

Be Clean

The following two 'be clean' strategies have been considered for the Proposed Development:

1. Connection to an existing Combined Cooling Heat and Power (CCHP) / Combined Heat and Power (CHP) distribution Networks.

    - *There are currently no existing CHP distribution networks available to connect to.*

2. A Gas fired site wide CCHP/CHP

    - *A site wide CHP heating network is not suggested for the development due to the low heating and hot water load due to the fact the development anticipated to be used as storage.*

Be Green

After analysing the various renewable energy options, it is considered that the most appropriate low or zero carbon (LZC) technology is Photovoltaics (PV) panels to help meet the zero-carbon target by maximising carbon reduction.

Further details of the feasibility analysis of low or zero carbon technologies are detailed within Section 10.0 'Renewable Energy' of this report.

Following the inclusion of the PV, the total energy consumption and carbon emissions for the Proposed Development, taking into account regulated energy demands have further reduced to:

- ***-39,508.35*** ***kWh/Annum***
- ***-1.80*** ***Tonnes CO_2/Annum***

Proposed Energy Strategy for the Queens Street, Tottenham:

In summary the energy strategy comprises of:

- *Passive Design and Energy Efficient Measures (Section 9.0)*
- *Air Source Heat Pumps (Section 10.0)*
- *Photovoltaic Panels (Section 10.0)*

The strategy takes into consideration the site layout and requirements for the building type to produce a design that incorporates the most appropriate technologies available to the site. This provides a scheme that is commercially viable whilst targeting compliance with all policies applicable to this development. The development is compliant with policy SI 2 (Minimising Greenhouse Gas Emissions) of London Plan 2021 by achieving a 109% carbon reduction. The Energy Strategy consists of passive design and energy efficient measures such as the provision of energy efficient lighting, the provision of time and temperature zone heating controls, and accredited construction details for the development.

This review has resulted in the formation of an Energy Strategy to be adopted for the development which involves the use of passive design and energy efficiency measures, and the use of Photovoltaics.

The energy strategy for the development is shown in Table 1.1 below.

Development Energy Strategy	
Heating	Split System Air conditioners within office areas. electric panel heaters within the WC's and circulation area's
Hot water (DHW)	High Efficiency Electric point of use water heater
Cooling	Cooling provided via ASHP
Ventilation	Extract system provided in WC's
Lighting	Energy efficient LED lighting where applicable

Table 1.1 Proposed Energy Strategy for the development

Tables 1.2 – 1.5, highlight the carbon and energy savings that are currently anticipated for the development from a base Part L 2021 compliant build.

Development	Predicted Energy Consumption (kWh/Annum)	
	Regulated	Unregulated
Baseline: Part L 2021 of the Building Regulations Compliant Development	135,651.16	26,526.88
After Energy Efficient and Passive Measures	107,850.34	-
After PV	-39,508.35	-

Table 1.2 Predicted Energy Consumption

Development	Regulated Energy Savings	
	kWh/Annum	%
Savings from Passive	27,800.82	20.49
Savings from PV	147,358.69	108.63
Total Cumulative Saving	**175,159.51**	**129.12**

Table 1.3 Regulated Energy Savings

Development	Carbon Dioxide Emissions (Tonnes/Annum)	
	Regulated	Unregulated
Baseline: Part L 2021 of the Building Regulations Compliant Development	20.90	4.49
After Energy Efficient and Passive Measures	3.60	-
After PV	-1.80	-

Table 1.4 Predicted Carbon Emissions

Development	Regulated Carbon Dioxide Emissions	
	Tonnes/Annum	%
Savings from Passive	17.20	83
Savings from PV	5.40	26
Total Cumulative Saving	**22.70**	**109**

Table 1.5 Regulated Carbon Emissions Savings

The development shall have an anticipated CO_2 improvement of 109% beyond Part L 2021, complying with local policy requirements. The energy and carbon calculations for the development at each stage (baseline, passive measures and PV), are displayed in full within Appendix C. Furthermore, sample BRUKL documents for the development are displayed in Appendix E.

2 INTRODUCTION

This report has been prepared by Cudd Bentley Consulting Ltd, to investigate the issues of energy and sustainability surrounding the Proposed Development in Tottenham. Works include redevelopment of the site for industrial and warehousing purposes (within Classes E(g)(ii), (iii), B2 and B8, with ancillary office accommodation) along with related access, service yard, car and cycle parking, landscaping, boundary treatment and other related works including demolition. Due to the redevelopment of the area, the new proposed development could support between 103 and 191 FTE jobs (based on HCA Employment Densities Guide 2015). A breakdown of the total proposed floorspace for each of the 3 units can be seen below:

- Proposed Total GIA – 6,885sqm
- Proposed Total GEA – 7,189sqm
  - Unit 1 (GEA / SQM)
  - Ground - 1,218
  - First – 226
  - Unit 2 (GEA / SQM)
  - Ground – 2,124
  - First - 396
  - Unit 3 (GEA / SQM)
  - Ground - 2,410
  - First Floor – 815
- Existing Floorspace – 5,036sqm

Government policies now require significant energy reductions from proposed buildings. Building a greener future sets a planned trajectory outlined via Part L 2021 of the Building Regulations. These commitments have been the key focus point in addressing policies and strategies to reduce energy use and carbon emissions through energy efficiency and low or zero carbon technologies (LZC).

In line with best practice the following approach has been adopted in forming the energy strategy for the development:

1. To propose to improve the building fabric from minimum Part L 2021 Building Regulations requirements; (BE LEAN)
2. To propose to reduce energy consumption and carbon dioxide emissions through passive and energy efficiency measures; (BE LEAN)
3. Investigate the feasibility of connecting into an existing district heat network and where this is not available investigate the feasibility of providing a central CHP Plant to serve the base heating and hot water requirements for the development; (BE CLEAN)
4. To propose to reduce energy consumption and carbon dioxide emissions further through the use of on-site renewable / LZC energy technologies. (BE GREEN)

The recommended strategy takes into consideration the site layout and requirements for the building to produce a design that incorporates the most appropriate technologies available to the site that are commercially viable, whilst targeting compliance with all policies applicable to this development.

The Proposed Development has a site area of 2.9 acres and is located approximately 10 miles from Central London. The location offers easy access to White Hart Lane Rail Underground station which provides a sustainable transport option into central London. In addition, the Site forms part of the Queen Street Locally Significant Industrial Site (LSIS). Strategic Policy SP8 of the Local Plan supports the principle of redevelopment of the site for Class B uses.

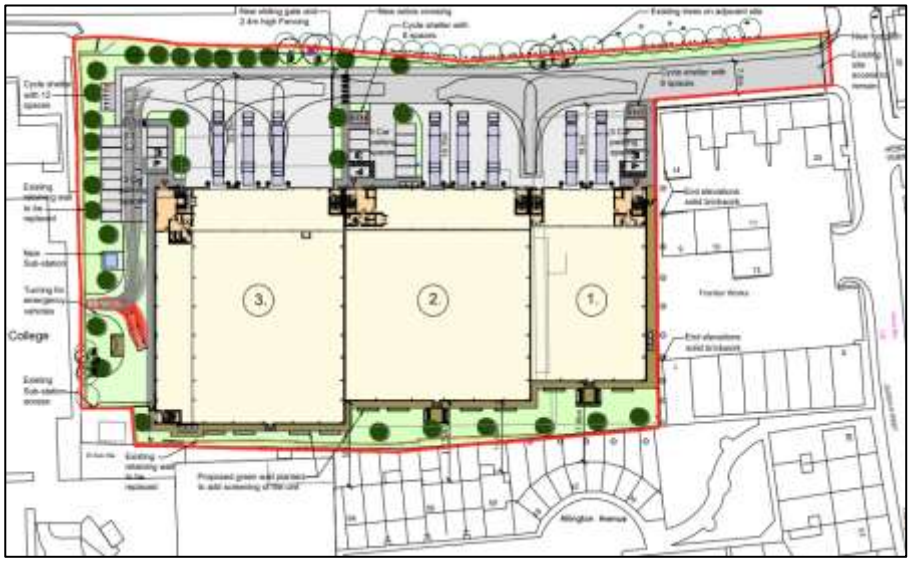


Figure 2: Proposed Site Plan

3 DRIVERS OF SUSTAINABILITY

The term Sustainable Development, is defined by the Department for the Environment, Food and Rural Affairs as:

'… making sure people throughout the world can satisfy their basic needs now, while making sure that future generations can also look forward to the same quality of life. It recognises that the "three pillars" – economy, society and environment – are interconnected.'

United Nations Framework Convention on Climate Change

To achieve this objective of sustainable development in any industry, sector strict regulations have been put in place that have filtered down through EU Directives from the European Climate Change Programme, to National UK Acts such as the Climate Change Act 2008, to Local Policy in the form of Core Strategies. However, there are larger drivers behind the concept of sustainable development.

Kyoto Protocol

In 1997, the Kyoto Protocol was adopted as part of the United Nations Framework Convention on Climate Change, to which the UK is a signatory. The key feature of the protocol was the binding targets that were set for industrialised countries to reduce their Green House Gas emissions by 12.5% below 1990 levels by 2008-2012.

Cancun Agreements

Since the initial adoption of the Kyoto Protocol, extensive research has been put forward as to the causes and markers of climate change from the Intergovernmental Panel on Climate Change, which has led to new targets and objectives being made. In 2012, the international community met to discuss new directions for responding to climate change by adopting new agreements. The key objectives of the Cancun Agreements are:

- Establish clear objectives for reducing human-generated greenhouse gas emissions over time to keep the global average temperature rise below two degrees;
- Mobilise the development and transfer of clean technology to boost efforts to address climate change, getting it to the right place at the right time and for the best effect;
- Assist the particularly vulnerable people in the world to adapt to the inevitable impacts of climate change;
- Protect the world's forests, which are a major repository of carbon;
- Establish effective institutions and systems which will ensure these objectives are implemented successfully.

COP21: Paris Global Climate Agreement

In December 2015, a global climate deal was reached in a summit involving all of the world's nations. The targets of this aimed principally to curb the dangerous levels of climate change and drive an increase low-carbon infrastructure investment. Numerous organisations and corporations also committed to helping create a greener future by making their own pledges through the course of the summit. The key elements of the agreement are:

- To keep global temperatures "well below" 2.0°C above pre-industrial times and "endeavour to limit" them even more, to 1.5C
- To limit the amount of greenhouse gases emitted by human activity to the same levels that trees, soil and oceans can absorb naturally, beginning at some point between 2050 and 2100

- To review each country's contribution to cutting emissions every five years so they scale up to the challenge
- For rich countries to help poorer nations by providing "climate finance" to adapt to climate change and switch to renewable energy.

BRE's COP21 Climate Pledge (December 2015)

"We commit to continue to drive best practice and carbon reduction, as we have through the use of BREEAM for the past 25 years. By reaching over 9,000 BREEAM rated buildings we predict emissions savings will be in excess of 900,000 tonnes of CO_2, compared to regulatory minimum performance requirements, by 2020. Saving not only carbon, but bringing wider benefits to both the owner and occupiers."

4 NATIONAL POLICY

National Planning Policy

An effective planning system is required to contribute to achieving sustainable development. The ***National Planning Policy Framework*** (NPPF), 2023, outlines what the government deems as sustainable development in England.

Sustainable development is defined as having the following 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.

1. Economic objective – to help build a strong, responsive and competitive economy, by ensuring that sufficient land of the right types is available in the right places and at the right time to support growth, innovation and improved productivity; and by identifying and coordinating the provision of infrastructure;
2. Social objective – to support strong, vibrant and healthy communities, by ensuring that a sufficient number and range of homes can be provided to meet the needs of present and future generations; and by fostering a well-designed and safe built environment, with accessible services and open spaces that reflect current and future needs and support communities' health, social and cultural well-being; and
3. Environmental objective – to contribute to protecting and enhancing our natural, built and historic environment; including making effective use of land, helping to improve biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy.

The above objectives can be described as an energy trilemma, this is demonstrated in Figure 4.1 below. Each dimension is dependent on each other and sustainable development proposals should adhere to each role. This energy statement shall ensure the proposed Development is one that contributes economically, socially and environmentally in accordance with the NPPF, 2023.

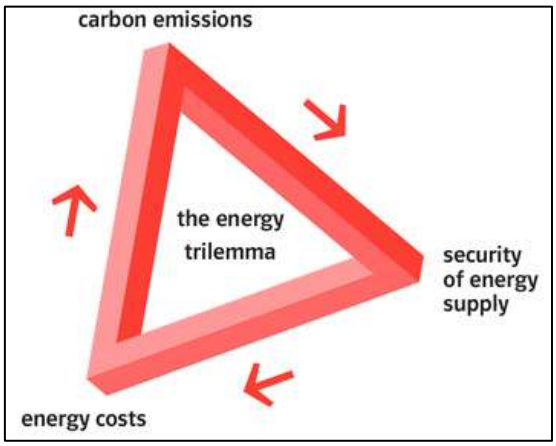


Figure 4.1 The Energy Trilemma

Guidance has been followed from the (NPPF), 2023, to provide an energy strategy which reduces energy use and carbon emissions, in line with best practice. This will provide a balanced scheme which focuses on optimal use of non-renewable resources (energy efficiency measures) whilst providing a renewable energy strategy best suited to the sites and their building uses. Below are some key extracts relevant to the development from Chapter fourteen 'Meeting the Challenge of Climate Change, Flooding & Coastal Change':

Paragraph 158

Plans should take a proactive approach to mitigating and adapting to climate change, taking into account the long-term implications for flood risk, coastal change, water supply, biodiversity and landscapes, and the risk of overheating from rising temperatures. Policies should support appropriate measures to ensure the future resilience of communities and infrastructure to climate change impacts, such as providing space for physical protection measures, or making provision for the possible future relocation of vulnerable development and infrastructure.

Paragraph 159

New development should be planned for in ways that:

a. avoid increased vulnerability to the range of impacts arising from climate change. When new development is brought forward in areas which are vulnerable, care should be taken to ensure that risks can be managed through suitable adaptation measures, including through the planning of green infrastructure; and

b. can help to reduce greenhouse gas emissions, such as through its location, orientation and design. Any local requirements for the sustainability of buildings should reflect the Government's policy for national technical standards.

Paragraph 160

To help increase the use and supply of renewable and low carbon energy and heat, plans should:

a. provide a positive strategy for energy from these sources, that maximises the potential for suitable development, while ensuring that adverse impacts are addressed satisfactorily (including cumulative landscape and visual impacts);

b. consider identifying suitable areas for renewable and low carbon energy sources, and supporting infrastructure, where this would help secure their development; and

c. identify opportunities for development to draw its energy supply from decentralised, renewable or low carbon energy supply systems and for locating potential heat customers and suppliers.

Paragraph 161

Local planning authorities should support community-led initiatives for renewable and low carbon energy, including developments outside areas identified in local plans or other strategic policies that are being taken forward through neighbourhood planning.

Paragraph 162

In determining planning applications, local planning authorities should expect new development to:

a. comply with any development plan policies on local requirements for decentralised energy supply unless it can be demonstrated by the applicant, having regard to the type of development involved and its design, that this is not feasible or viable; and

b. take account of landform, layout, building orientation, massing and landscaping to minimise energy consumption.

Paragraph 163

When determining planning applications for renewable and low carbon development, local planning authorities should:

a. not require applicants to demonstrate the overall need for renewable or low carbon energy, and recognise that even small-scale projects provide a valuable contribution to cutting greenhouse gas emissions; and

b. approve the application if its impacts are (or can be made) acceptable. Once suitable areas for renewable and low carbon energy have been identified in plans, local planning authorities should expect subsequent applications for commercial scale projects outside these areas to demonstrate that the proposed location meets the criteria used in identifying suitable areas.

Paragraph 164

In determining planning applications, local planning authorities should give significant weight to the need to support energy efficiency and low carbon heating improvements to existing buildings, both domestic and non-domestic (including through installation of heat pumps and solar panels where these do not already benefit from permitted development rights). Where the proposals would affect conservation areas, listed buildings or other relevant designated heritage assets, local planning authorities should also apply the policies set out in chapter 16 of this Framework.

5 PLANNING POLICIES

This section aims to highlight guidance available and the minimum requirements at local level from London Plan and Haringey Local plan, which states the Council's vision, spatial strategy and policies for the future development of the area.

5.1 REGIONAL POLICY

The London Plan (March 2021)

Policy SI 1 – Improving Air Quality

A. Development Plans, through relevant strategic, site-specific and area based policies, should seek opportunities to identify and deliver further improvements to air quality and should not reduce air quality benefits that result from the Mayor's or boroughs' activities to improve air quality.
B. To tackle poor air quality, protect health and meet legal obligations the following criteria should be addressed:
    1. Development proposals should not:
        a) lead to further deterioration of existing poor air quality
        b) create any new areas that exceed air quality limits, or delay the date at which compliance will be achieved in areas that are currently in exceedance of legal limits
        c) create unacceptable risk of high levels of exposure to poor air quality.
    2. In order to meet the requirements in Part 1, as a minimum:
        a) development proposals must be at least Air Quality Neutral
        b) development proposals should use design solutions to prevent or minimise increased exposure to existing air pollution and make provision to address local problems of air quality in preference to post-design or retro-fitted mitigation measures
        c) major development proposals must be submitted with an Air Quality Assessment. Air quality assessments should show how the development will meet the requirements of B1
        d) development proposals in Air Quality Focus Areas or that are likely to be used by large numbers of people particularly vulnerable to poor air quality, such as children or older people should demonstrate that design measures have been used to minimise exposure.

Policy SI 2 – Minimising Greenhouse Gas Emissions

A. 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.
B. Major development proposals should include a detailed energy strategy to demonstrate how the zero-carbon target will be met within the framework of the energy hierarchy.
C. A minimum on-site reduction of at least 35 per cent beyond Building Regulations is required for major development. Residential development should achieve 10 per cent, and non-residential development

should achieve 15 per cent through energy efficiency measures. Where it is clearly demonstrated that the zero-carbon target cannot be fully achieved on-site, any shortfall should be provided, in agreement with the borough, either:

1) through a cash in lieu contribution to the borough's carbon offset fund, or
2) off-site provided that an alternative proposal is identified and delivery is certain.

D. Boroughs must establish and administer a carbon offset fund. Offset fund payments must be ring-fenced to implement projects that deliver carbon reductions. The operation of offset funds should be monitored and reported on annually.

E. Major development proposals should calculate and minimise carbon emissions from any other part of the development, including plant or equipment, that are not covered by Building Regulations, i.e. unregulated emissions.

F. Development proposals referable to the Mayor should calculate whole lifecycle carbon emissions through a nationally recognised Whole Life-Cycle Carbon Assessment and demonstrate actions taken to reduce life-cycle carbon emissions.

Policy SI 3 – Energy Infrastructure

A. Boroughs and developers should engage at an early stage with relevant energy companies and bodies to establish the future energy and infrastructure requirements arising from large-scale development proposals such as Opportunity Areas, Town Centres, other growth areas or clusters of significant new development.

B. Development Plans should:

1. identify the need for, and suitable sites for, any necessary energy infrastructure requirements including energy centres, energy storage and upgrades to existing infrastructure
2. identify existing heating and cooling networks, identify proposed locations for future heating and cooling networks and identify opportunities for expanding and inter-connecting existing networks as well as establishing new networks.

Policy SI 4 – Managing Heat Risk

A. Development proposals should minimise adverse impacts on the urban heat island through design, layout, orientation, materials and the incorporation of green infrastructure.

B. 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

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 category160 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.

A. Development proposals for utility services should be designed to remain operational under flood conditions and buildings should be designed for quick recovery following a flood.

Policy SI 13 – Sustainable Drainage

A. Lead Local Flood Authorities should identify – through their Local Flood Risk Management Strategies and Surface Water Management Plans – areas where there are particular surface water management issues and aim to reduce these risks. Increases in surface water run-off outside these areas also need to be identified and addressed.
B. Development proposals should aim to achieve greenfield run-off rates and ensure that surface water run-off is managed as close to its source as possible. There should also be a preference for green over grey features, in line with the following drainage hierarchy:
    1) rainwater use as a resource (for example rainwater harvesting, blue roofs for irrigation)
    2) rainwater infiltration to ground at or close to source
    3) rainwater attenuation in green infrastructure features for gradual release (for example green roofs, rain gardens)
    4) rainwater discharge direct to a watercourse (unless not appropriate)
    5) controlled rainwater discharge to a surface water sewer or drain
    6) controlled rainwater discharge to a combined sewer
C. Development proposals for impermeable surfacing should normally be resisted unless they can be shown to be unavoidable, including on small surfaces such as front gardens and driveways.
D. Drainage should be designed and implemented in ways that promote multiple benefits including increased water use efficiency, improved water quality, and enhanced biodiversity, urban greening, amenity and recreation.

Policy D4 – Delivering Good Design

Maintaining Design Quality

F. The design quality of development should be retained through to completion by:

1) ensuring maximum detail appropriate for the design stage is provided to avoid the need for later design amendments and to ensure scheme quality is not adversely affected by later decisions on construction, materials, landscaping details or minor alterations to layout or form of the development

2) ensuring the wording of the planning permission, and associated conditions and legal agreement, provide clarity regarding the quality of design
3) avoiding deferring the assessment of the design quality of large elements of a development to the consideration of a planning condition or referred matter
4) local planning authorities considering conditioning the ongoing involvement of the original design team to monitor the design quality of a development through to completion.

Policy D14 - Noise

A. In order to reduce, manage and mitigate noise to improve health and quality of life, residential and other non-aviation development proposals should manage noise by:
   1) avoiding significant adverse noise impacts on health and quality of life
   2) reflecting the Agent of Change principle as set out in Policy D13 Agent of Change
   3) mitigating and minimising the existing and potential adverse impacts of noise on, from, within, as a result of, or in the vicinity of new development without placing unreasonable restrictions on existing noise-generating uses
   4) improving and enhancing the acoustic environment and promoting appropriate soundscapes (including Quiet Areas and spaces of relative tranquillity)
   5) separating new noise-sensitive development from major noise sources (such as road, rail, air transport and some types of industrial use) through the use of distance, screening, layout, orientation, uses and materials – in preference to sole reliance on sound insulation
   6) where it is not possible to achieve separation of noise-sensitive development and noise sources without undue impact on other sustainable development objectives, then any potential adverse effects should be controlled and mitigated through applying good acoustic design principles
   7) promoting new technologies and improved practices to reduce noise at source, and on the transmission path from source to receiver.

Greater London Authority Sustainable Design and Construction Supplementary Planning Guidance (2014)

2.4 Energy and Carbon Dioxide Emissions

In line with The London Plan Policy the following carbon savings are required:

Residential:

- 2013 – 2016 40% improvement beyond 2010 Building Regulations;
- 2016 – 2031 Zero carbon.

Non-Domestic:

- 2013 – 2016 40% improvement beyond 2010 Building Regulations;
- 2016 – 2019 As per the Building Regulations requirements;
- 2019 – 2031 Zero carbon.

To avoid complexity and extra costs, the Mayor has adopted a flat carbon dioxide improvement beyond Part L 2013 of 35% for both residential and non-residential developments.

In order to be compliant with SPG minimum standards must be met the core values are as follows:

- Minimising carbon dioxide emissions across the site including the building and services (such as heating and cooling systems).
- Avoiding internal overheating contributing to the urban heat island effect.
- Efficient use of natural resources including water.
- Minimising pollution including noise, air and urban runoff.
- Avoiding impacts from natural hazards such as flooding.
- Ensuring developments are comfortable and secure for residents.
- Securing sustainable procurement of materials.
- Promoting and protecting biodiversity and green infrastructure.

5.2 LOCAL PLANNING POLICY

Development Management DPD (July 2017)

Policy DM4: Provision and Design of Waste Management Facilities

A. All proposals should consider how to sustainably manage waste arising from the development during the design, construction and occupation phases of new developments.
B. All proposals will be required to make on-site provision for general waste, the separation of recyclable materials and organic material for composting. The on-site provision must:
    a. Ensure adequate dedicated internal and external storage space to manage the volume of waste arising from the site;
    b. Provide accessible and safe access to onsite storage facilities, both for occupiers and collection operatives, including vehicles, having regard to the Council's Refuse Collection Strategy;
    c. Be located and screened to avoid nuisance and adverse impact on visual and other amenity to occupiers and neighbouring uses, and are within the maximum permitted carrying and reversing distances; and
    d. For mixed-use development, suitably separate household and commercial waste.
C. In addition, proposals for new multi-storey flatted residential development will be required to make provision for:
    a. Adequate temporary storage space within each flat, allowing for separate storage of recyclable materials;
    b. Adequate communal storage for waste, including separate storage for recyclables, pending its collection; and
    c. Storage and collection systems at each floor (such as dedicated rooms, storage areas and chutes or underground waste collection systems) which are sensitively integrated into the development, with the Council giving preference to basement servicing over the use of forecourts or ground floor internal storage.

Policy DM19: Nature Conservation

A. Development proposals on sites which are, or are adjacent to, internationally designated sites, Sites of Special Scientific Interest, Local Nature Reserves, Sites of Importance for Nature Conservation or Ecological Corridors, should protect and enhance the nature conservation value of the site.
B. Development that has a direct or indirect adverse impact upon important ecological assets, either individually or in combination with other development, will only be permitted where:
    a. The harm cannot be reasonably avoided; and
    b. It has been suitably demonstrated that appropriate mitigation can address the harm caused.

Policy DM21: Sustainable Design, Layout and Construction

A. All new development, including building and landscape works, will be expected to consider and implement sustainable design, layout and construction techniques. Proposals should:
   a. Apply the energy hierarchy to minimise energy use in order to meet, and if possible exceed, minimum carbon dioxide reduction requirements;
   b. Apply the cooling hierarchy to reduce the potential for overheating and limit reliance on mechanical air conditioning systems;
   c. Maximise opportunities to enhance biodiversity on-site, including through appropriate landscaping, Sustainable Drainage Systems, living roofs and green walls
   d. Wherever possible, use building materials with high environmental performance ratings; and e Seek opportunities for locally sourced labour.
B. The Council will support appropriate measures to sustainably retrofit existing homes and nonresidential buildings.
C. Proposals that fail to demonstrate adequate consideration for sustainable design, layout and construction techniques will be resisted.
D. Consideration will be given to the use of carbon offset payments, to be secured by planning obligations, where it can be demonstrated that proposals are unable to meet carbon dioxide emission reduction targets on-site.

Policy DM31: Sustainable Transport

A. A The Council will require that developments with high trip generating characteristics locate where public transport accessibility is high and car parking is minimised to mitigate generated car travel.
B. B The Council will support the protection, improvement and creation of pedestrian and cycle routes in the Borough to encourage walking and cycling both as a means of transport and as a recreational activity. The Council will also encourage improved links between pedestrian and cycle routes and public transport facilities, particularly at transport hubs.
C. C The Council will require the submission of a Travel Plan and a Transport Assessment/ Statement in support of development proposals in accordance with the Transport for London thresholds.

Haringey's Local Plan – Strategic Policies (March 2013)

SP0: Presumption in Favour of Sustainable Development

When considering development proposals, the Council will take a positive approach that reflects the presumption in favour of sustainable development contained in the National Planning Policy Framework (NPPF). The Council will always work proactively with applicants to find solutions, which mean that proposals can be approved wherever possible and to secure development that improves the economic social and environmental conditions in Haringey. Planning applications that accord with the policies in Haringey's Local Plan (and, where relevant, with policies in neighbourhood plans) will be approved without delay, unless material considerations indicate otherwise.

Where there are no policies relevant to the application or relevant policies are out of date at the time of making the decision, then the Council will grant permission unless material considerations indicate otherwise taking into account whether:

- Any adverse impacts of granting permission would significantly and demonstrably outweigh the benefits, when assessed against the policies of the NPPF taken as a whole; or

- Specific policies in the NPPF indicate that development should be restricted.

SP4: Working towards a Low Carbon Haringey

Over the lifetime of the Local Plan, reducing energy use in buildings and working towards a low carbon borough will be one of the key challenges facing Haringey. The Council will promote the measures outlined below to reduce carbon emissions from new and existing buildings.

1. In line with London Plan policy, the Council will promote and require all new developments to take measures to reduce energy use and carbon emissions during design, construction and occupation, by incorporating the following measures:

a. From 2011 onwards, all new residential development will achieve a minimum 25% reduction in total (regulated) CO2 emissions in line with Code for Sustainable Homes Level 4 energy standards, and should aim to achieve Level 6. All new residential development shall be zero carbon from 2016 onwards; and

b. From 2011 onwards all new non-residential development shall be built to at least BREEAM "very good" standard and should aim to achieve BREEAM "excellent" or the current nationally agreed standard. All new non-residential development shall be zero carbon from 2019.

2. The Council will promote low- and zero-carbon energy generation through the following measures:

a. Requiring all developments to assess, identify and implement, where viable, site-wide and area-wide decentralised energy facilities including the potential to link into a wider network;
b. Establishing local networks of decentralised heat and energy facilities by requiring developers to prioritise connection to existing or planned networks where feasible;
c. Working with neighbouring boroughs and other partners to explore ways of implementing sub-regional decentralised energy networks including the potential in the Upper Lee Valley Opportunity Area; and
d. All new developments are required, where viable, to achieve a reduction in predicted carbon dioxide emissions of 20% from on site renewable energy regeneration, which can include connections to local sources of decentralised renewable energy.

SP5: Water Management and Flooding

The Council will require all development in Haringey to be water efficient during construction and operation and to reduce all forms of flood risk. All development shall:

- Improve the water environment, water quality and drainage systems; ▪ Minimise water use and illustrate how development would contribute to general and flash flooding;
- Take account of flood risk vulnerability classification as set out in paragraph 100 of the NPPF and will apply the NPPF Sequential Test and Exception Test;
- Implement measures to prevent (or mitigate as last resort) local surface water and downstream flooding; ▪ Implement Sustainable Drainage Systems from strategic to individual site level to improve water attenuation, quality and amenity;
- Restore and enhance the Blue Ribbon Network including Pymmes Brook, Moselle Brook, the River Lee and its tributaries, deculverting wherever feasible, to improve water quality and amenity of these waterways and to help reduce flood risk (in line with London River Action Plan); and
- Require higher resilience and levels of flood protection for critical infrastructure to ensure the protection of essential services such as water and power

SP6: Waste and Recycling

The Council supports the objectives of sustainable waste management set out by the Government in PPS10 Planning for Sustainable Waste Management and the Mayor's London Plan. To achieve these, the Council shall:

- Safeguard existing waste sites unless compensatory provision is made;
- Maximise self-sufficiency in waste management capacity;
- Seek to minimise waste creation, increase recycling rates in relation to commercial, industrial and municipal waste in order to achieve the Mayor's recycling targets;
- Address waste as a resource and look to disposal as the last option, in line with the Mayor's waste hierarchy;
- Require integrated, well-designed recycling facilities to be incorporated into all new developments;
- Monitor changes in the stock of waste management facilities, waste arisings, and the amount of waste recycled, recovered and going for disposal; and
- Continue working with its partners in the North London Waste Authority to adopt the North London Waste Plan (NLWP) which has identified locations suitable for waste management facilities to meet the London Plan apportionment of 1.9 2.1m tonnes and the Haringey apportionment of 237,000 182,000 tonnes.

SP7: Transport Delivering Regeneration and Access

In line with London Plan policies, the Local Implementation Plan (LIP) and the Mayor's Transport Strategy, the Council will work with its partners to promote the following key infrastructure proposals to support Haringey's regeneration and local/strategic access to London, employment areas and local services;

- The Council, in cooperation with neighbouring boroughs, will seek to reduce the impact of larger lorries in local residential areas and town centres and investigate the feasibility of a freight distribution hub;
- Improvements to the Piccadilly, Victoria and Northern Lines including new trains, new signalling and new control centres;
- Improvements to overground routes along West Anglia, East Coast (Great Northern) and Barking - Gospel Oak line that service the centre and east of the borough;
- Access and interchange improvements to overground stations at Alexandra Palace, Finsbury Park, Harringay, Hornsey White Hart Lane, Northumberland Park, South Tottenham, and Bruce Grove;
- Improvements to interchanges at Tottenham Hale and Seven Sisters;
- Improvements to the Tottenham Gyratory; and
- Improvements to east - west bus routes as well as promoting new east - west routes.

Delivering Action on Climate Change and Quality and Healthy Places In line with the London Plan, the Council will work with its partners to promote the following travel demand management schemes to tackle climate change, improve local place shaping and public realm, and environmental and transport quality and safety by:

- Minimising congestion and addressing the environmental impacts of travel;
- Promoting public transport, walking and cycling (including minimum cycle parking standards);
- Promoting road safety and pedestrian movement particularly in town centres and close to local services;

- Promoting car sharing and establishing car clubs; ▪ Seeking to locate major trip generating developments in locations with good access to public transport and so better integrate transport and land use planning;
- Adopting maximum car parking standards and car free housing wherever feasible;
- Seeking to mitigate the impact of road based freight and promote alternatives;
- Supporting measures to influence behavioural change such as promoting low carbon vehicles; and
- Requiring the submission of transport assessments and travel plans for large scale proposals in line with TfL guidance.

SP11: Design

All new development should enhance and enrich Haringey's built environment and create places and buildings that are high quality, attractive, sustainable, safe and easy to use. To achieve this all development shall:

- Be of the highest standard of design that respects its local context and character and historic significance, to contribute to the creation and enhancement of Haringey's sense of place and identity;
- Ensure impacts on health, climate change, natural resources and biodiversity are minimised by adopting and improving sustainable design and construction techniques;
- Incorporate solutions to reduce crime and the fear of crime, such as promoting social inclusion; creating well-connected and high quality public realm that is easy and safe to use; and by applying the principles set out in 'Secured by Design' and Safer Places;
- Promote high quality landscaping on and off site, including improvements to existing streets and public spaces;
- Seek the highest standards of access in all buildings and places; and
- Ensure buildings are designed to be flexible and adaptable – and able to integrate services and functions.

SP13: Open Space and Biodiversity

All development shall protect and improve sites of biodiversity and nature conservation, including private gardens through its:

- Contribution to wildlife and ecological habitats and, where possible, include green and brown roofs, rainwater harvesting, green walls, bird and bat nesting/roosting opportunities;
- Protection, management and maintenance of existing trees and the planting of new trees where appropriate; and
- Protection, enhancement and creation of Sites of Importance for Nature Conservation (SINCs) and Local Nature Reserves (LNRs).

6 DEVELOPMENT APPROACH

This report adopts the following approach to provide compliance with the Local and National Planning Policies:

1. To propose to improve building fabric from minimum Part L (2021) Building Regulations requirements.
2. To propose to reduce energy consumption and carbon dioxide emissions through passive and energy efficiency measures
3. Investigate the possibility of connection into existing District Heating / Cooling Networks
4. To propose to reduce energy consumption and carbon dioxide emissions further through the use of on-site renewable / LZC energy technologies.

Table 4.1 below outlines the Part L Building Regulations that the development shall be assessed under:

Building Element	Part L Building Regulations Applicable
Use Class B8	Part L2 (2021)

Table 6.1 Part L Building Regulations Applicable

7 ASSESSMENT OF BASELINE ENERGY DEMAND

The primary energy demands of the development will be:

- *Heating*
- *Lighting*
- *Hot water*
- *General Power*
- *Cooling*
- *Ventilation*

To assess the preliminary energy consumption of the proposed development, calculations have been completed using approved SBEM software (Hevacomp V8i SS1 SP10). The calculations generate annualised energy consumption for the buildings, from which the "carbon footprint" can be assessed.

The assessment of the energy demand for the site has been based on the notional development according to the building's uses, through the construction of a building model in compliance with the requirements of Part L 2021 of the Building Regulations.

The total baseline energy and carbon emissions for the entire development, taking into account regulated energy demands are:

- *135,651.16* *kWh/Annum*
- *20.90* *Tonnes CO_2/Annum*

(A full set of calculations supporting these figures included in Appendix C of this document)

8 ENERGY USAGE AND CARBON EMISSIONS

Government policies require significant energy reductions from buildings. Building a Greener Future sets a planned trajectory (delivered via Part L of the building regulations 2021) with an aspiration for all non-domestic new buildings to be zero carbon by 2020. The Climate Change Act (Nov 2008) sets the UK targets of; CO_2 reduction of 26% by 2020 and CO_2 reduction of 80% by 2050.

8.1 POLICY REVIEW

National Planning Policy Framework (2023)

Section 14 – Meeting the Challenge of Climate Change, Flooding and Coastal Change

To help increase the use and supply of renewable and low carbon energy and heat, plans should;

a. provide a positive strategy for energy from these sources, that maximises the potential for suitable development, while ensuring that adverse impacts are addressed satisfactorily (including cumulative landscape and visual impacts);

b. consider identifying suitable areas for renewable areas for renewable and low carbon energy sources, and supporting infrastructure, where this would help secure their development; and

c. identify opportunities for development to draw its energy supply from decentralised, renewable or low carbon energy supply systems and for collocating potential heat customers and suppliers.

The London Plan (March 2021)

Policy SI 2 – Minimising Greenhouse Gas Emissions

A minimum on-site reduction of at least 35 per cent beyond Building Regulations is required for major development. Residential development should achieve 10 per cent, and non-residential development should

Haringey's Local Plan – Strategic Policies (March 2013)

SP4: Working towards a Low Carbon Haringey

1. In line with London Plan policy, the Council will promote and require all new developments to take measures to reduce energy use and carbon emissions during design, construction and occupation, by incorporating the following measures:

    b. From 2011 onwards all new non-residential development shall be built to at least BREEAM "very good" standard and should aim to achieve BREEAM "excellent" or the current nationally agreed standard. All new non-residential development shall be zero carbon from 2019.

2. The Council will promote low- and zero-carbon energy generation through the following measures:

    a. Requiring all developments to assess, identify and implement, where viable, site-wide and area-wide decentralised energy facilities including the potential to link into a wider network;
    b. Establishing local networks of decentralised heat and energy facilities by requiring developers to prioritise connection to existing or planned networks where feasible;
    d. All new developments are required, where viable, to achieve a reduction in predicted carbon dioxide emissions of 20% from on site renewable energy regeneration, which can include connections to local sources of decentralised renewable energy.

8.2 DEVELOPMENT SUSTAINABILITY FEATURES

Energy modelling has been undertaken which adopts the following hierarchy for reducing carbon emissions for the development; Be Lean, Be Clean, Be Green.

The total baseline energy and carbon emissions for the development (built to Part L 2021, taking into account regulated energy demands are:

- *135,651.16 kWh/annum*
- *20.90 Tonnes CO_2/annum*

The primary energy demands of the development will be:

- Lighting;
- General power;
- Heating and ventilation;
- Cooling;
- Hot water supply.

Unregulated energy use is not covered by existing regulations and includes energy consumed by the occupants through activities and appliances; in this case it would typically be small power usage (appliances, computers etc.). The following unregulated energy use for the development was calculated:

- *26,526.88 kWh/annum*
- *4.49 Tonnes CO_2/annum*

Be Lean

In order to initially reduce carbon emissions from a base Part L 2021 compliant development, passive design and energy efficiency measures have been incorporated, such as:

- The provision of energy efficient lighting (PIR controls and occupancy sensing in relevant areas);
- Additional improvements to the thermal performance of the fabric of the buildings;
- The provision of zonal thermal and lighting controls;
- The provision of variable speed pumps and fans;
- The enhancement of pipework and ductwork, thermal insulation;
- Specific Fan Powers improved beyond Part L requirements.

Further examples of the proposed measures to be provided are in Section 7.0 ‘Passive Design and Energy Efficiency Measures’ of this report.

Be Clean - District Heat Network

As part of the Be Clean stage of the Energy Hierarchy, consideration has been given to the feasibility of connecting the proposed development to a District Heat Network (DHN). The proposed building services strategy and discussions with the local district energy provider, Energetik, are outlined below.

The current strategy for the new development (base build) includes the following fitout to each unit:

• VRF ASHP units for the first-floor office heating and cooling, providing a LZC solution

• Electric wall-mounted panel heaters for heating in ancillary, welfare and sanitary areas

• Electric point-of-use instantaneous water heaters for welfare and sanitary areas

• As a result, no combustible material are proposed as part of the base build for the site to perform / operate

Given the above fitout to the core areas within each new property, a connection to a district energy network (DEN) would be solely to heat the warehouse space. We have approached the local DEN provider (Energetik), who have advised our proposed development and the resultant estimated energy usage for each property will not warrant a connection to their network and is deemed unfeasible at this stage. As such, Energetik have confirmed our proposed strategy to provide a safeguarded route (of ducts) from the site boundary into each industrial unit to facilitate a future connection to the DEN is in principle compliant with their specification and expectations.

The proposed safeguarded route for a future connection is illustrated in the District Heating Network Services Layout drawing below. Supporting documentation, including the District Energy Network Planning Justification Note, correspondence with Energetik and the proposed DHN layout drawing, is provided in **Appendix I – District Heat Network Supporting Documentation**.

Following the incorporation of the above measures the total energy consumption and carbon emissions for the development, taking into account regulated energy demands, are reduced to:

- *107,850.34 kWh/annum*
- *3.60 Tonnes CO_2/annum*

Be Green

After incorporation of PV the energy consumption and carbon emissions for the development, taking into account regulated energy demands, are reduced to:

- *-39,508.35 kWh/annum*
- *-1.80 Tonnes CO_2/annum*

Proposed Energy Strategy for the Queens Street, Tottenham Development:

In summary the energy strategy comprises of:

- *Passive Design and Energy Efficient Measures (Section 9.0)*
- *Air Source Heat Pumps (Section 10.0)*
- *Photovoltaic Panels (Section 10.0)*

The strategy takes into consideration the site layout and requirements for the building type to produce a design that incorporates the most appropriate technologies available to the site. This provides a scheme that is commercially viable whilst targeting compliance with all policies applicable to this development.

This review has resulted in the formation of an Energy Strategy to be adopted for the development which involves the use of passive design and energy efficiency measures, and the use of Photovoltaics.

The energy strategy for the development is shown in table 8.1 below.

Development Energy Strategy	
Heating	Split System Air conditioners within office areas. electric panel heaters within the WC's and circulation area's
Hot water (DHW)	High Efficiency Electric point of use boilers
Cooling	Cooling provided via ASHP
Ventilation	Extract system provided in WC's
Lighting	Energy efficient LED lighting where applicable

Table 8.1 Proposed Energy Strategy for the development

The development shall have an anticipated CO_2 improvement of 109% beyond Part L 2021. The energy and carbon calculations for the development are displayed in full within Appendix C. Furthermore, sample BRUKL documents. for the development are displayed in Appendix E. The development's energy consumption and carbon emissions are shown in Figures 8.1 and 8.2.

The local council's planning team (Haringey) confirmed that there are no current district heat networks available for connection within the borough.

Cudd Bentley Consulting have been in discussion with energetik to enquire about a possible DHN connection to the proposed site. It was confirmed that a connection is not available at this stage, and site should be future proofed if a connection becomes available at a later date.

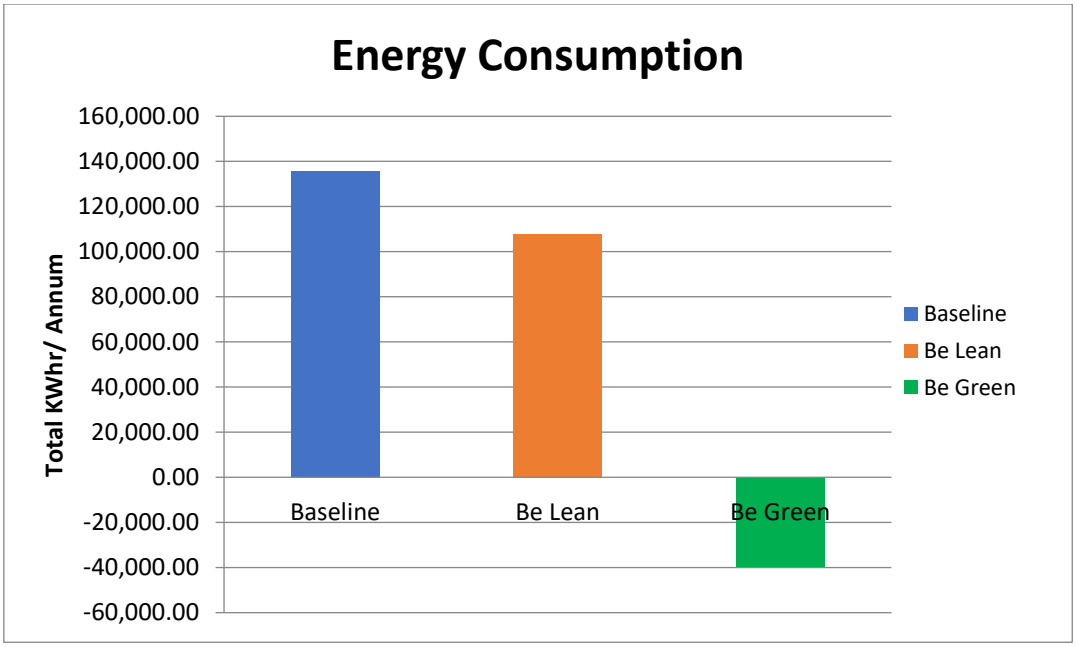


Figure 8.1 Annual Energy Consumption for the development

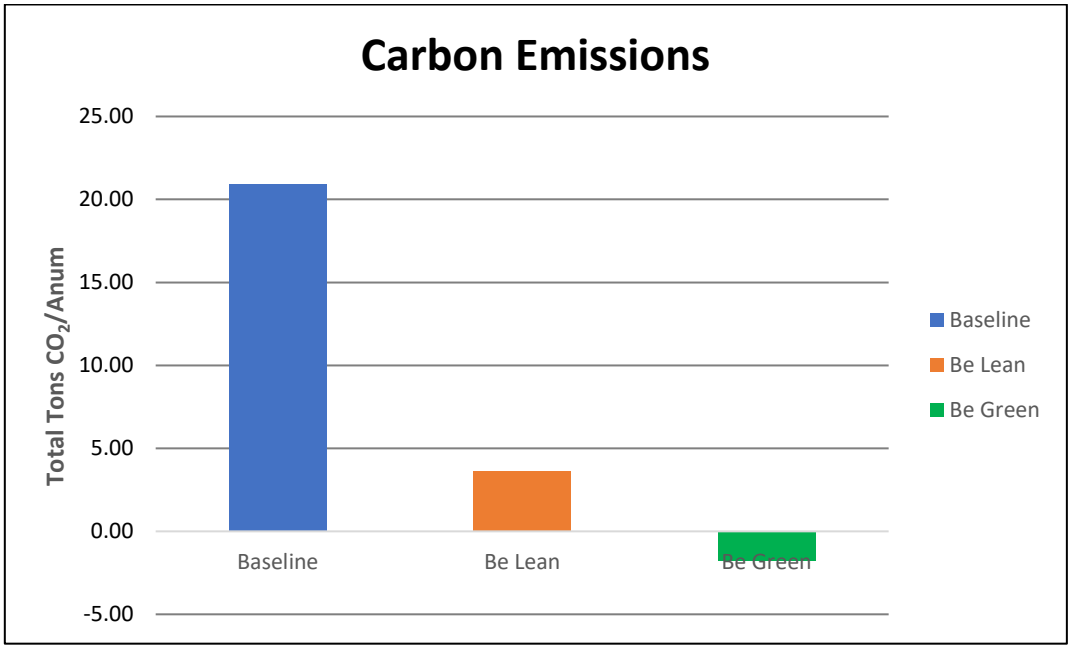


Figure 8.2 Annual Carbon Emissions for the development

9 PASSIVE DESIGN AND ENERGY EFFICIENT MEASURES

The following 'U' values shall be targeted within the development, in accordance with Part L2 (2021).

Feature	U – Value (W/m².K)	
External Walls	0.23	
Internal Partitions	0.23	
Exposed Floors	0.18	
Exposed Roof	0.15	
Personnel Door	1.6	
Rooflight	1.4	G'=0.36
Vehicle Door	1.3	
Glazing	U=1.4	G'=0.36
Air Permeability	3 m³/hr/m²@ 50 Pa	

Table 9.1 U – Values targeted in the development.

In conjunction with the GLAs Energy Assessment Guidance, the development has targeted at least a 15% carbon emission improvement beyond Part L from energy efficiency measures. The total energy and carbon emissions taking into account the following energy efficiency and passive measures will be calculated:

- *The provision of energy efficient lighting*
- *Provision of PIR controls and occupancy sensing in relevant areas;*
- *The provision of zonal thermal and lighting controls;*
- *The provision of variable speed pumps and fans;*
- *The enhancement of pipework and ductwork, thermal insulation;*
- *Specific Fan Powers improved beyond Part L requirements;*
- *High performance double glazing with low G values and shading co-efficient to limit the effects of solar gain.*

The units will be able to monitor their energy usage via electrical, heat and water meters. All major items of plant equipment will be monitored, and the systems will be monitored to enable a minimum of 90% of the energy used in the building to be easily attributed to an end use. Electrical supplies will be metered by smart meters. Heat will be billed and metered as required by the Metering and Billing Regulations 2014.

Air Permeability Improvement

Heat loss may also occur due to air infiltration. Although this cannot be eliminated altogether, good construction detailing, and the use of best practice construction techniques can minimise the amount of air infiltration.

The proposed development will aim to improve upon the Part L 2021 minimum standards for air permeability by targeting air permeability rates of 3 $m^3/hr/m^2$ at 50Pa.

Reducing The Need For Artificial Lighting

The development has been designed for good levels of daylight in all habitable spaces as a way of improving the health and wellbeing of its occupants.

All of the habitable areas will benefit from large areas of glazing to increase the amount of daylight within the internal spaces where possible and Warehouse storage spaces from the Rooflights. This is expected to reduce the need for artificial lighting whilst delivering pleasant, healthy spaces for occupants.

Highly Efficient Lighting

The development intends to incorporate low energy lighting fittings throughout the spaces. All light fittings will be specified as low energy lighting and will accommodate LED with lighting efficacy as shown below table 9.2.

Lighting	
Lighting Type	**lumens per circuit watt**
LED	Warehouse Storage – 95 lm/w Office Area's – 140 lm/w WC – 110 lm/w Circulation Area's – 110 lm/W

Table 9.2 Lighting efficacy targeted in the development.

HEAT RECOVERY VENTILATION

The mechanical ventilation system will include heat recovery in order to achieve ventilation in the most energy-efficient way. The table 9.3 below shows the heat recovery efficiencies for this development.

Mechanical Ventilation Heating Recovery (Typical Unit Chosen)				
Area Type	**Supply/Extract SFP (W/l/s)**	**Heat Recovery Efficiency (%)**	**Exhaust Flow Rate (l/s/m²)**	**Exhaust SFP (W/l/s)**
Offices	1.1	80	x	x
WC's	x	x	5	0.3

Table 9.3 Mechanical ventilation heat recovery efficiency

Comfort Cooling

ASHP system of high energy efficiency ratios is assumed for both heating and cooling in the development. Therefore, the impact of active cooling in terms of energy use and carbon emissions will be minimised.

Monitoring

In addition to the above design measures, the development will incorporate monitoring equipment and systems to enable occupiers to monitor and reduce their energy use. Smart meters will be installed to monitor the heat and electricity consumption of the development.

Thermal Bridging

The proposed development is intended to incorporate measures to minimise thermal bridging and associated heat losses at junctions between building elements. The design approach will seek to promote continuity of insulation throughout the building envelope, with consideration given to interfaces including wall-to-roof junctions, floor perimeters, openings, structural penetrations and loading bay thresholds where appropriate.

Measures currently being considered to further reduce thermal bridging include:

- Use of thermally broken construction details where feasible;
- Incorporation of insulated cavity closers around openings;
- Use of thermally broken cladding support systems;
- Improved junction detailing in line with Accredited Construction Details (ACDs) and best practice guidance where appropriate; and
- Coordination of the architectural, structural and MEP design to minimise unnecessary penetrations through the thermal envelope.

These measures will be considered further during the detailed design stages to support the overall fabric-first strategy of the development.

From the utilisation of the above measures the total energy and carbon emissions for the development (built to Part L 2021) are reduced to:

- *107,850.34 kWh/annum*
- *3.60 Tonnes CO_2/annum*

(A full set of calculations supporting these figures included in Appendix C of this document)

10 RENEWABLE ENERGY

The use of renewable and low or zero carbon (LZC) technologies within the development has been addressed and the following, Table 10.1, reviews the primary options for generation of on-site renewable / LZC energy and considers their suitability for use on the development.

Renewable Technology Feasibility Assessment		Feasible?
Bio Fuel Boilers 	Bio-fuel boilers are specifically designed to burn solid biomass or liquid bio-fuel in order to heat water, or raise steam. This can then be used for space heating or Domestic Hot Water (DHW) supply. Bio-fuel boilers could potentially provide the annual space heating and DHW demand for the Units, however they are not recommended for this development for the following reasons:- 1. Biomass boilers generate increased Oxides of Nitrogen (NOx) and particulates (PM10) which would affect air quality. 2. The storage requirements for the biofuel would require a large plant space, with an auxiliary storage facility to allow for a two week period where delivery of fuel might not be available.	No
<u>Land Use</u> Large volumes of storage is required for fuel at ground level or basement level with sufficient vehicular access for fuel delivered. <u>Noise</u> Noise levels are generated by the operation of the bio-fuel boiler and associated deliveries of the bio-fuel. The plant room enclosure will have to be attenuated to acceptable levels imposed by planning and Acoustician recommendations.		

Renewable Technology Feasibility Assessment		Feasible?
Wind Turbines 	Wind turbines convert the kinetic energy in the wind into mechanical energy which is then converted into electricity. Wind turbines can provide electrical power either directly to a load or via a battery system. The use of wind turbines is not recommended for this development for the following reasons:- 1. Wind turbines, of a size necessary to make a contribution to the Units' renewable energy requirements are considered inappropriate on spatial, planning, aesthetic and noise grounds. Noise pollution from commercial wind turbines can be quiet significant within a few hundred metres. 2. The site is not ideal; an ideal site is a hill with a flat, clear exposure. It should be free from strong turbulence and obstructions like large trees, houses or other buildings. As the development is surrounded by industrial buildings, turbulent wind flow will be experienced across the site which is not ideal for wind turbine installations. 3. The financial viability of a small scale installation on the site would be compromised by the operational efficiency of the units (circa 30%). 4. Wind turbines, can cause electrical interference within a 2km radius. 5. Finally, the main disadvantage is down to the winds unreliability factor. The wind strength is often too low in many areas, where this site is located the wind speed is 3.5 m/s at 10m, as can be seen in the wind map presented in Appendix B, in order for the wind turbines to be feasible, wind speeds of greater than 5.5m/s are required.	No
<u>Land Use</u> There would be an adverse visual impact on the site which will be dependent on the height at which the wind turbines are located. <u>Noise</u> Noise levels are generated by the rotating blades; these noise levels will vary dependent on wind velocity and will need to be in acceptable levels imposed by planning and Acoustician recommendations.		
Ground Source Heat Pumps 	Space cooling and heating can be provided by circulating water cooled or heated directly by the ground or via subterranean water. Ground water cooling and heating through the use of aquifers makes use of the relatively stable ground/ water temperature which is available at a temperature range of 10 – 14°C. The use of Ground Source Heat Pumps is not recommended for this development for the following reasons:- 1. Cost of boreholes may be prohibitive (subject to site geological conditions). 2. Favourable ground conditions may not exist. 3. Problems can arise with boreholes silting up (open-loop).	No

Renewable Technology Feasibility Assessment		Feasible?
	4. Changes in local ground conditions could affect water quality and the amount that can be extracted (open-loop).	
Land Use This installation would require Environmental Agency approval. Ground and Hydrology analysis would be required to investigate if favourable conditions exist. Noise There are no noise issues generated by this technology.		
Solar Water Heating 	Solar Water Heating systems use radiant energy from the sun to heat water. Systems comprise of a roof mounted heat collector piped to a coil located within a hot water storage cylinder. The use of Solar Panels are not recommended for this development for the following reasons: 1. The roof area is better utilised for the provision of PV Panels.	No
Land Use Roof space is better served for the installation of Photovoltaic panels. Noise Noise levels are generated by pumps at roof level, these are insignificant so should pose no issues.		
Air Source Heat Pumps 	An Air Source Heat Pump extracts heat from the outside air in the same way that a fridge extracts heat from its inside. It can extract heat from the air even when the outside temperature is as low as minus 15°C and typically draws approximately a quarter to a third of the electricity of a standard resistance heater for the same amount of heating, reducing utility bills. This typical efficiency compares to 70-95% for a fossil-fuel powered boiler.	Yes
Land Use Air Source Heat Pumps can be installed on ground mounted, roof mounted or wall mounted frames. When installing Air Source Heat Pumps there are various factors to consider; Heat Pumps should be positioned to provide shelter from high winds which can reduce efficiency by causing defrost problems. Noise Noise levels are generated by fans, and compressors causing vibrations. The noise levels are dependent on manufacturer and vary accordingly, these will need to be in acceptable levels imposed by planning and Acousticians recommendations.		

Renewable Technology Feasibility Assessment		Feasible?
Photovoltaics 	Photovoltaic (PV) modules convert sunlight directly to DC electricity. The solar cells consist of a thin piece of semiconductor material, in most cases silicon. A 380 kWp photovoltaic array is proposed for the Proposed Development to be located on the roof of the units. They have the following advantages for use on this development; 1. Photovoltaic panels can be situated at roof level, east facing, to provide a source of renewable energy. 2. Panels can be grid connected to sell surplus electricity produced. 3. Low maintenance issues. 4. Visual use of renewable energy can be seen by general public. The proposed south-facing monocrystalline PV array would be installed at an inclination angle of 10 degrees.	Yes
Land Use There are no land issues or adverse visual impacts as the photovoltaic panels are roof mounted. Noise There are no noise issues generated by this technology.		

Table 8.1 Renewable Technology Feasibility Assessment

The PV breakdown is as follows:

	PV (kWp)
Unit 1	90
Unit 2	110
Unt 3	180
Total	**380**

The incorporation of photovoltaic panels shall provide the following contribution in renewable energy to the Development.

Site PV Requirement	Energy Consumption from Renewable Energy (PV)
380 kWp system – circa 1,014 panels – Circa 1,824 sqm	295,840.48 kWh/annum

Table 10.1 PV Energy and Carbon Savings

The proposed development incorporates a south-facing monocrystalline photovoltaic (PV) array installed at a 10-degree inclination angle to maximise on-site renewable energy generation. In addition, heating and cooling to the office areas within the units will be provided via high-efficiency split system Air Source Heat Pumps (ASHPs), with the specific units selected by the mechanical engineer. The proposed ASHP systems achieve a Seasonal Coefficient of Performance (SCOP) of 3.65 and a Seasonal Energy Efficiency Ratio (SEER) of 6.23, supporting a low carbon and energy efficient building services strategy.

11 WATER CONSUMPTION

The ever-increasing impacts of climate change are continuously inflating demand for water, as well as increasing a need for awareness towards water usage. The UK is already under a large amount of pressure regarding water resources. To contribute towards mitigating this issue, the Proposed Development will consider various means of being economical with water consumption.

11.1 POLICY REVIEW

National Planning Policy Framework (2023)

Paragraph 20

Strategic policies should set out an overall strategy for the pattern, scale and design quality of places, and make sufficient provision for:

- infrastructure for transport, telecommunications, security, waste management, water supply, wastewater, flood risk and coastal change management, and the provision of minerals and energy (including heat);

The London Plan (March 2021)

Policy SI 5 Water Infrastructure

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 category160 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.

Haringey's Local Plan – Strategic Policies (March 2013)

SP5: Water Management and Flooding

The Council will require all development in Haringey to be water efficient during construction and operation and to reduce all forms of flood risk. All development shall:

- Improve the water environment, water quality and drainage systems; ▪ Minimise water use and illustrate how development would contribute to general and flash flooding;
- Take account of flood risk vulnerability classification as set out in paragraph 100 of the NPPF and will apply the NPPF Sequential Test and Exception Test;

- Implement measures to prevent (or mitigate as last resort) local surface water and downstream flooding; ▪ Implement Sustainable Drainage Systems from strategic to individual site level to improve water attenuation, quality and amenity;
- Restore and enhance the Blue Ribbon Network including Pymmes Brook, Moselle Brook, the River Lee and its tributaries, deculverting wherever feasible, to improve water quality and amenity of these waterways and to help reduce flood risk (in line with London River Action Plan); and
- Require higher resilience and levels of flood protection for critical infrastructure to ensure the protection of essential services such as water and power.

11.2 DEVELOPMENT SUSTAINABILITY FEATURES

In order to ensure the reduction and management of water consumption within the Proposed Development, it is anticipated that various measures shall be undertaken and specific features installed during the fit out works to minimise the building's potable water consumption.

It is anticipated that improvements in the consumption of potable water will be achieved through the specification of water efficient components within sanitary areas during the fit out works. Such features include the specification of low flow taps as well as dual flush toilets with reduced flush volumes.

To allow the various building users of the unit to monitor their water usage, it is also anticipated that water meters shall be specified on the mains supply of the unit. Water meters should have a pulsed output to allow connection to a Building Management System should one be installed at a later date.

11.3 SUMMARY

To ensure the sustainability of the development it is anticipated that water efficient fixtures will be incorporated into the design, such as low flow taps and dual flush toilets with reduced effective flush volumes.

To be further sustainable, it is anticipated that pulsed water meters will be installed on the mains water supply, to effectively monitor water consumption. The inclusion of the above sustainability features allows for the development to be deemed sustainable with regard to water consumption.

12 TRANSPORT

Transport produces a large proportion of the country's greenhouse gas emissions, something which government at both national and local level are striving to combat, especially through planning frameworks for new developments. Solutions to transport issues are to be incorporated into the design of the development.

12.1 POLICY REVIEW

National Planning Policy Framework (2023)

Promoting Sustainable Transport

104. Transport issues should be considered from the earliest stages of plan-making and development proposals, so that:

a) the potential impacts of development on transport networks can be addressed;
b) opportunities from existing or proposed transport infrastructure, and changing transport technology and usage, are realised – for example in relation to the scale, location or density of development that can be accommodated;
c) opportunities to promote walking, cycling and public transport use are identified and pursued;
d) the environmental impacts of traffic and transport infrastructure can be identified, assessed and taken into account – including appropriate opportunities for avoiding and mitigating any adverse effects, and for net environmental gains.

The London Plan (March 2021)

Policy T1 – Strategic Approach to Transport

A. Development Plans should support, and development proposals should facilitate:
   1) the delivery of the Mayor's strategic target of 80 per cent of all trips in London to be made by foot, cycle or public transport by 2041
B. All development should make the most effective use of land, reflecting its connectivity and accessibility by existing and future public transport, walking and cycling routes, and ensure that any impacts on London's transport networks and supporting infrastructure are mitigated.

Haringey's Local Plan – Strategic Policies (March 2013)

SP7: Transport Delivering Regeneration and Access

- In line with London Plan policies, the Local Implementation Plan (LIP) and the Mayor's Transport Strategy, the Council will work with its partners to promote the following key infrastructure proposals to support Haringey's regeneration and local/strategic access to London, employment areas and local services;
- The Council, in cooperation with neighbouring boroughs, will seek to reduce the impact of larger lorries in local residential areas and town centres and investigate the feasibility of a freight distribution hub;
- Improvements to the Piccadilly, Victoria and Northern Lines including new trains, new signalling and new control centres;

- Improvements to overground routes along West Anglia, East Coast (Great Northern) and Barking - Gospel Oak line that service the centre and east of the borough;
- Access and interchange improvements to overground stations at Alexandra Palace, Finsbury Park, Harringay, Hornsey White Hart Lane, Northumberland Park, South Tottenham, and Bruce Grove;
- Improvements to interchanges at Tottenham Hale and Seven Sisters;
- Improvements to the Tottenham Gyratory; and
- Improvements to east - west bus routes as well as promoting new east - west routes.

12.2 DEVELOPMENT SUSTAINABILITY FEATURES

The Proposed Development is located approximately 10 miles from central London. The site location is within a 6 minutes' walk from Trafalgar Avenue, White Hart Lane Bus Stop, which can be used to commute to and from the site. The development is 0.5 miles away from the White Hart Lane train station (figure 12.2). This would allow commuters from outside Tottenham to travel in by public transport, reducing reliance on private transport.

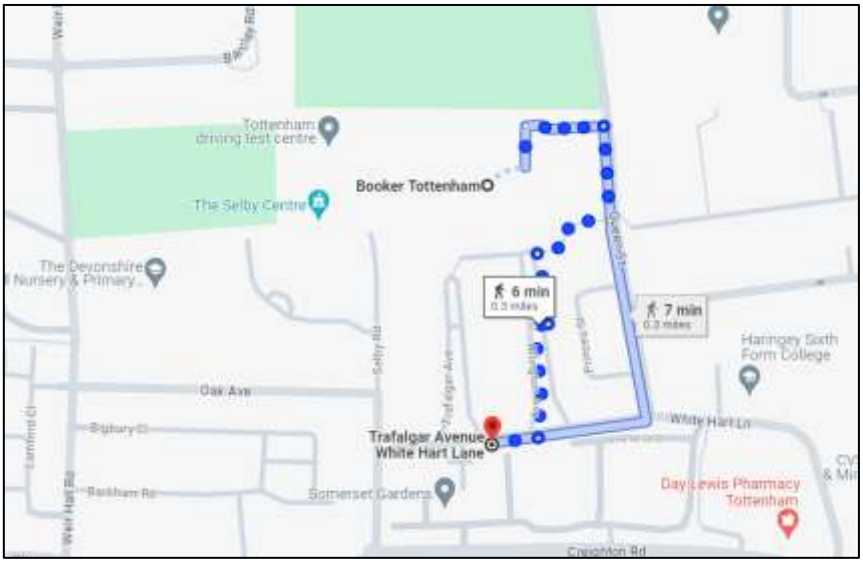


Figure 12.2 Nearest Train Station

In order to encourage sustainable means of transport rather than commuting in private vehicles it is anticipated there will be the provision of cycle storage facilities within the site, which will have the capacity to store 26 bikes. In addition, the existing 130 car parking spaces will be reduced to 26, also an additional 6 electric vehicle charging spaces are anticipated to be made. Incorporating EV charging points promotes sustainable transportation by encouraging the use of electric vehicles, which produce fewer greenhouse gas emissions compared to traditional gasoline-powered vehicles. This aligns with global efforts to reduce carbon footprints and combat climate change.

12.3 SUMMARY

The above provisions aim to make the proposed development easier to access for all building users, as well as offering a sustainable means of commuting rather than using traditional gasoline-powered vehicles, in addition is in close proximity to local amenities.

The proposed development is located in Tottenham is approximately 0.5 miles away from the White Hart Lane train station. The inclusion of the above sustainability features allows for the proposed to be deemed sustainable with regard to transport.

13 CONSTRUCTION SITE MANAGEMENT

The requirement for new materials needs to be minimised, by re-using existing buildings and materials where possible and providing a Site Waste Management Plan for all construction sites. This responsibility lies with the contractor and needs to be clarified at an early design stage. It is becoming a greater requirement now to construct buildings that are flexible and can be re-used.

13.1 POLICY REVIEW

National Planning Policy Framework (2023)

Local plans should set out strategic priorities for the area; this should include strategic policies to deliver the provision of infrastructure for waste management, water supply and wastewater.

Haringey's Local Plan – Strategic Policies (March 2013)

SP6: Waste and Recycling

- The Council supports the objectives of sustainable waste management set out by the Government in PPS10 Planning for Sustainable Waste Management and the Mayor's London Plan. To achieve these, the Council shall:
- Safeguard existing waste sites unless compensatory provision is made;
- Maximise self-sufficiency in waste management capacity;
- Seek to minimise waste creation, increase recycling rates in relation to commercial, industrial and municipal waste in order to achieve the Mayor's recycling targets;
- Address waste as a resource and look to disposal as the last option, in line with the Mayor's waste hierarchy;
- Require integrated, well-designed recycling facilities to be incorporated into all new developments;
- Monitor changes in the stock of waste management facilities, waste arisings, and the amount of waste recycled, recovered and going for disposal; and

Continue working with its partners in the North London Waste Authority to adopt the North London Waste Plan (NLWP) which has identified locations suitable for waste management facilities to meet the London Plan apportionment

13.2 DEVELOPMENT SUSTAINABILITY FEATURES

In order to comply with national and local policy, it is anticipated that certain measures will be put into place for this development, such as Outline Demolition Management Plan will be provided,

It is expected that the main contractor will also set targets and monitor site consumption data for water consumption, energy consumption as well as fuel from deliveries and collection of waste and materials to and from site. Monitoring of such actions can encourage contractors to become more resource efficient to meet given targets.

Additionally, it is expected the main contractor will comply with best standards as set out in the Considerate Constructors Scheme, achieving a score which is considered as exceeding compliance with the criteria of the scheme.

To ensure the sustainable construction of the development, the project will consider the concept of the waste hierarchy as seen in Figure 13.1 below. The waste hierarchy recognises the need for waste to be considered for a variety of waste streams before being sent to land fill as a last resort. The hierarchy is as follows:

- *Waste minimisation;*
- *Reusing or waste or up cycling;*
- *Recycling of all applicable materials;*
- *Recovery of energy from waste (anaerobic digestion plants);*
- *Waste is sent to landfill.*

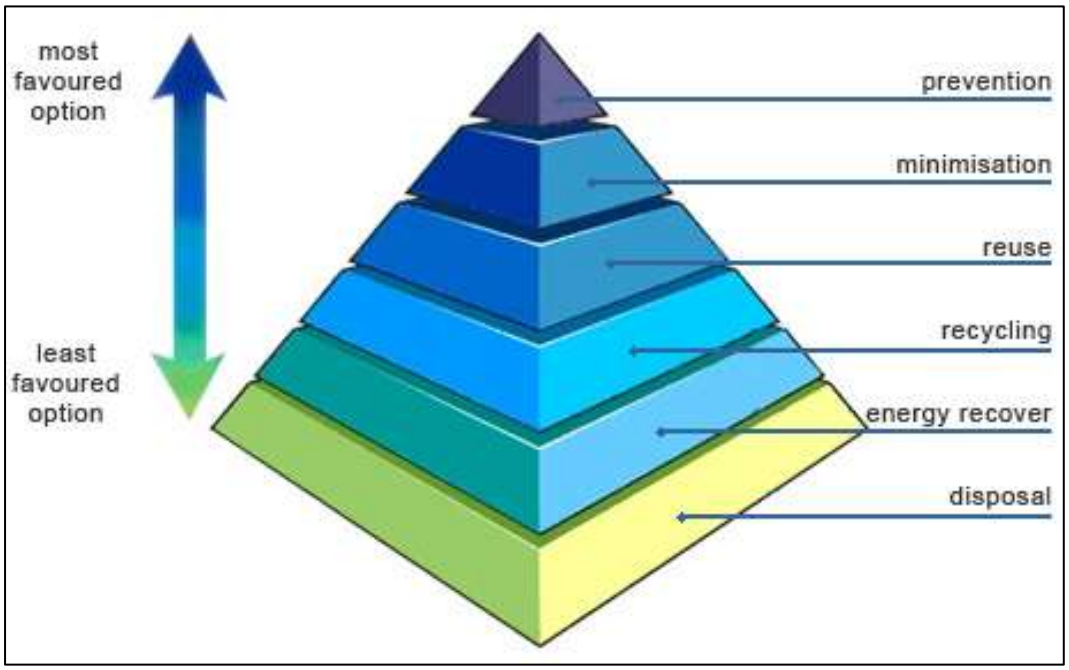


Figure 13.1 Waste Hierarchy Diagram

13.3 SUMMARY

The Proposed Development will produce an Outline Demolition Management Plan and also adhere to a Considerate Constructors Scheme, achieving a targeted score which exceeds 'compliance' with the criteria of the scheme. As a result of these measures, the development may be deemed sustainable as regards to construction site management.

14 SUSTAINABLE DESIGN

Good urban design is essential in providing a varied and sustainable environment, which can facilitate opportunities for positive contributions within communities. As part of sustainable design for developments, it is essential that suitable design principles are followed to maximise opportunities for energy reduction through design as well as ensuring buildings follow or enhance the character of an area. Developments should also give further consideration to the level of security and comfort that is provided for future building users, including thermal and visual comfort, inclusivity and safe access.

14.1 POLICY REVIEW

National Planning Policy Framework (2023)

Section 12- Achieving Well-Designed Places

The creation of high-quality buildings and places is fundamental to what the planning and development process should achieve. Good design is a key aspect of sustainable development, creates better places in which to live and work and helps make development acceptable to communities. Being clear about design expectations, and how these will be tested, is essential for achieving this. So too is effective engagement between applicants, communities, local planning authorities and other interests throughout the process.

Development Management DPD (July 2017)

Policy DM21: Sustainable Design, Layout and Construction

A. All new development, including building and landscape works, will be expected to consider and implement sustainable design, layout and construction techniques. Proposals should:
   a. Apply the energy hierarchy to minimise energy use in order to meet, and if possible exceed, minimum carbon dioxide reduction requirements;
   b. Apply the cooling hierarchy to reduce the potential for overheating and limit reliance on mechanical air conditioning systems;
   c. Maximise opportunities to enhance biodiversity on-site, including through appropriate landscaping, Sustainable Drainage Systems, living roofs and green walls
   d. Wherever possible, use building materials with high environmental performance ratings;

Haringey's Local Plan – Strategic Policies (March 2013)

SP11: Design

- All new development should enhance and enrich Haringey's built environment and create places and buildings that are high quality, attractive, sustainable, safe and easy to use. To achieve this all development shall:
- Be of the highest standard of design that respects its local context and character and historic significance, to contribute to the creation and enhancement of Haringey's sense of place and identity;
- Ensure impacts on health, climate change, natural resources and biodiversity are minimised by adopting and improving sustainable design and construction techniques;
- Seek the highest standards of access in all buildings and places; and
- Ensure buildings are designed to be flexible and adaptable – and able to integrate services

14.2 DEVELOPMENT SUSTAINABILITY FEATURES

The proposed development shall include a variety of features which are regarded as having a good sustainable design. It is anticipated that any external lighting specified will be designed to reduce unnecessary light pollution during night time hours, a lighting assessment has been undertaken to ensure this.

To ensure the risk of potential overheating is minimised building modelling of the unit has confirmed that no occupied space is at risk from excessive solar gains; this being achieved through use of glazing with a low shading coefficient. Additionally, to ensure that overheating will not occur during summer months and the building is suitably insulated as well as allowing for adaptation due to the effects of climate change, it is anticipated that the development will use building fabrics with enhanced 'U' values which go beyond the minimum requirements of Part L (2021), as seen within Table 14.1. Further to this the energy efficiency measures discussed within Section 6.0 will be incorporated into the design of the development. It is anticipated that such measures will lower the building's energy requirements making its operation feasible and practical for years to come.

Element	Part L Requirement	U Value Specified	% Improvement
Wall	0.26	0.23	11.53%
Roof	0.16	0.15	6.66%
Floor	0.18	0.18	N/A
Glazing	1.6	1.4	12.5%

Table 14.1 U Value Improvements

To provide a fully sustainable development it is also anticipated that the materials used for the following main elements of the development shall be rated under the Green Guide to Specification targeting ratings between A+ and D:

- *External walls;*
- *Ground floor;*
- *Roof;*
- *Windows.*

To provide a development which remains sustainable during its operation phase, it is anticipated that space will be provided for the provision of waste storage facilities with additional space of recyclable waste streams. This is to enable building users to sort waste before collection and minimise the quantity of waste that may end up at landfill.

14.3 SUMMARY

In order to comply with national and local policies, the development shall strive to provide both to building users and the local community a building of sustainable design.

Measures should be taken to ensure the thermal comfort of future building users, through efforts such as ensuring no occupied areas will result in excessive solar gains and in turn over heating.

External lighting except safety and security lighting should be designed to be switched off automatically through the use of timers of day light sensors as well as the specification of cut off luminaires to reduce any potential light spill on to neighbouring properties as covered in the lighting assessment.

The above design features allow for the proposed development to be of sustainable design.

15 FLOOD RISK

To prevent an increase in surface water run off through development of a site, it is imperative that consideration is given to the reduction of over land flow during storm events as well as the impact of development in potential flood risk areas.

15.1 POLICY REVIEW

National Planning Policy Framework (2023)

Section 14- Meeting the Challenge of Climate Change, Flooding and Coastal Change

Inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk (whether existing or future). Where development is necessary in such areas, the development should be made safe for its lifetime without increasing flood risk elsewhere.

Haringey's Local Plan – Strategic Policies (March 2013)

SP5: Water Management and Flooding

The Council will require all development in Haringey to be water efficient during construction and operation and to reduce all forms of flood risk. All development shall:

- Improve the water environment, water quality and drainage systems; ▪ Minimise water use and illustrate how development would contribute to general and flash flooding;
- Take account of flood risk vulnerability classification as set out in paragraph 100 of the NPPF and will apply the NPPF Sequential Test and Exception Test;
- Implement measures to prevent (or mitigate as last resort) local surface water and downstream flooding; ▪ Implement Sustainable Drainage Systems from strategic to individual site level to improve water attenuation, quality and amenity;
- Restore and enhance the Blue Ribbon Network including Pymmes Brook, Moselle Brook, the River Lee and its tributaries, deculverting wherever feasible, to improve water quality and amenity of these waterways and to help reduce flood risk (in line with London River Action Plan); and
- Require higher resilience and levels of flood protection for critical infrastructure to ensure the protection of essential services such as water and power

15.2 DEVELOPMENT SUSTAINABILITY FEATURES

The flood map sourced from The Government Flood Warning Information Service seen below in Figure 15.1 and 15.2, demonstrates that the proposed site is predominantly located within Flood Zone 1 and as such is at low risk of flooding from fluvial or surface water sources.

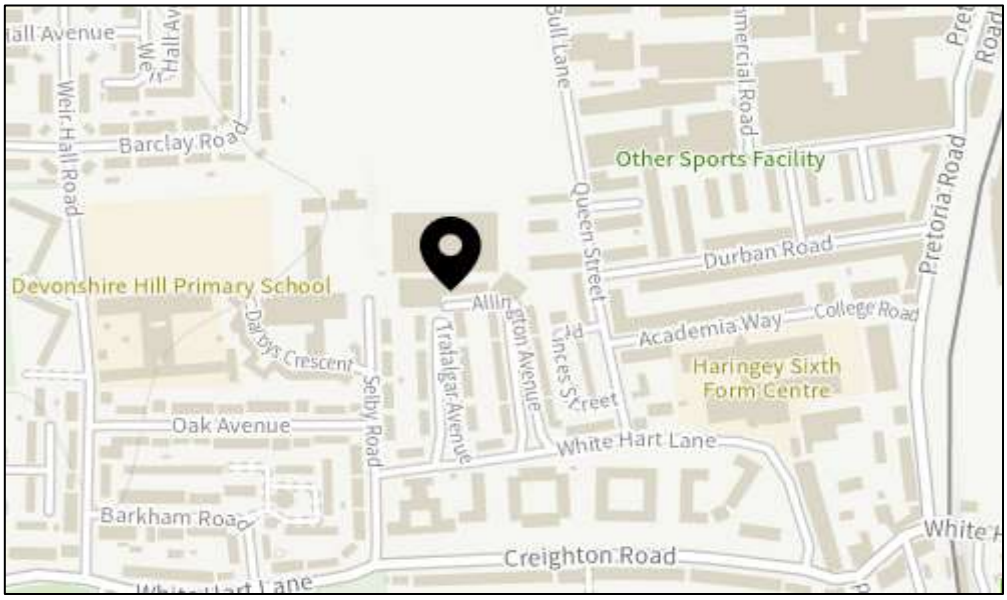


Figure 15.1: Fluvial Flooding (Sourced from Flood Warning Information Service)

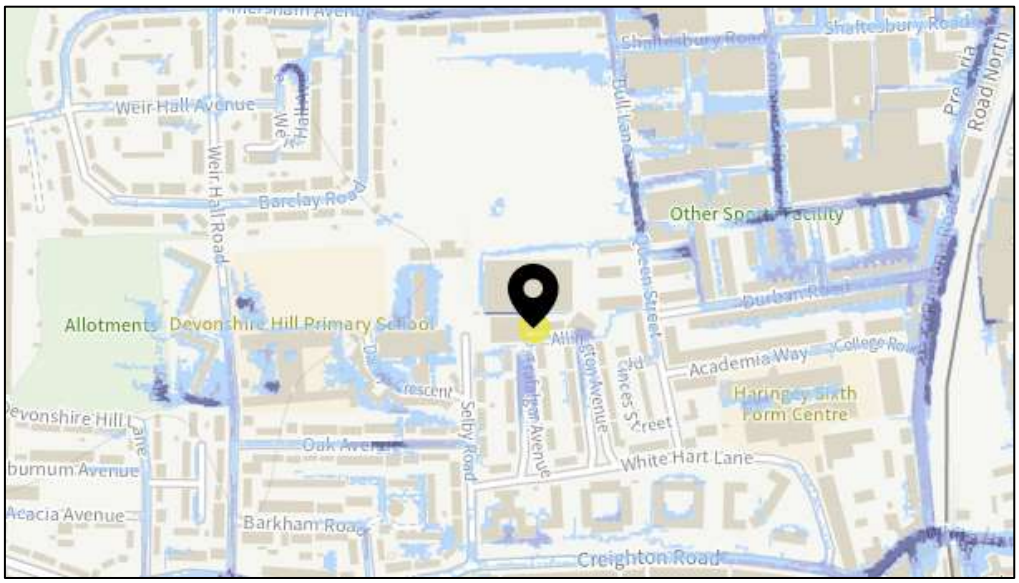


Figure 15.2: Surface Water Flooding (Sourced from Flood Warning Information Service)

15.3 SUMMARY

The above maps confirm that the site is located within Flood Zone 1 and is at a low risk from fluvial or reservoir flooding.

16 NOISE

Noise is a subjective concept that can affect people differently, however there are set standards as to acceptable levels of noise, for different areas and times of day. In this instance, the proposed development would be subject to potential noise pollution from road sources.

POLICY REVIEW

National Planning Policy Framework (2023)

Section 15- Conserving and Enhancing the Natural Environment

Planning policies and decisions should contribute to and enhance the natural and local environment by:

a) *preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability.*

16.1 DEVELOPMENT SUSTAINABILITY FEATURES

The proposed development is not subject to extreme noise pollution from road and rail sources, as can be seen in figure 16.1 and 16.2. It should be noted that the noise levels are 'A' weighted and as such only demonstrate sounds on a frequency that would affect human populations, it does not consider noise on frequencies that may affect any local habitats.



Figure 16.1: Road Noise Data Map (Postal Code Analysis, Sourced from Extrium)

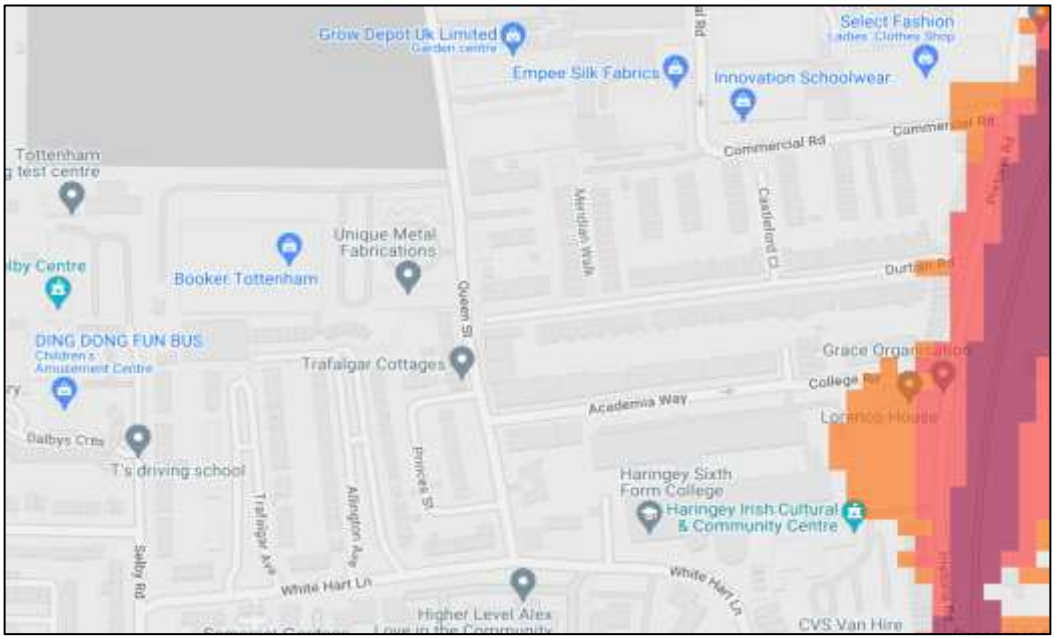


Figure 16.2 Rail Noise Data Map (Postal Code Analysis, Sourced from Extrium)

16.2 SUMMARY

The development would not be subject to sources of noise pollution from the surrounding roads or from rail sources and that there are no noise impacts generated by the development.

17 ECOLOGY

Ecology is essential within many communities, with the mix of flora and fauna facilitating benefits such as flood alleviation and pollution amelioration. In addition to this, areas with a wealth of green spaces and an abundance of biodiversity are seen to provide a positive contribution to a community.

17.1 POLICY REVIEW

National Planning Policy Framework (2023)

Section 15- Conserving and Enhancing the Natural Environment

The planning system should protect and enhance valued landscapes, minimise impacts on biodiversity.

Development Management DPD (July 2017)

Policy DM19: Nature Conservation

A. Development proposals on sites which are, or are adjacent to, internationally designated sites, Sites of Special Scientific Interest, Local Nature Reserves, Sites of Importance for Nature Conservation or Ecological Corridors, should protect and enhance the nature conservation value of the site.
B. Development that has a direct or indirect adverse impact upon important ecological assets, either individually or in combination with other development, will only be permitted where:
   a. The harm cannot be reasonably avoided; and
   b. It has been suitably demonstrated that appropriate mitigation can address the harm caused.

Haringey's Local Plan – Strategic Policies (March 2013)

SP13: Open Space and Biodiversity

All development shall protect and improve sites of biodiversity and nature conservation, including private gardens through its:

- Contribution to wildlife and ecological habitats and, where possible, include green and brown roofs, rainwater harvesting, green walls, bird and bat nesting/roosting opportunities;
- Protection, management and maintenance of existing trees and the planting of new trees where appropriate; and
- Protection, enhancement and creation of Sites of Importance for Nature Conservation (SINCs) and Local Nature Reserves (LNRs).

17.2 DEVELOPMENT SUSTAINABILITY FEATURES

An ecology conservation map (sourced from MAGIC) highlights there is No Site of Special Scientific Interest (SSSI) in the vicinity of the site development. A Site of Special Scientific Interest (SSSI) is a designation used in the United Kingdom and other countries to protect areas of particular importance for their biological, geological, or ecological value. These areas are recognized and legally protected under national legislation to conserve and enhance their special features.



Figure 17.1 Ecological Sensitivity (Sourced from MAGIC)

17.3 SUMMARY

The ecology map shown within Figure 17.1 highlights there is no Site of Special Scientific Interest (SSSI) surrounding the development. The nearest SSSI is 5 miles away from the site, meaning that the distance between the site and the SSSI is sufficient to confirm the SSSI will not be affected by the site. In addition, the site is anticipated to have a 10% Biodiversity Net Gain increase on the surrounding natural environment.

18 AIR QUALITY

Air quality is a concept that refers to the condition or cleanliness of the air in a specific environment, typically measured by the concentration of various pollutants and the presence of harmful substances.

18.1 POLICY REVIEW

Haringey's Local Plan – Strategic Policies (March 2013)

SP7: Transport Delivering Regeneration and Access

Delivering Action on Climate Change and Quality and Healthy Places In line with the London Plan, the Council will work with its partners to promote the following travel demand management schemes to tackle climate change, improve local place shaping and public realm, and environmental and transport quality and safety by:

- Minimising congestion and addressing the environmental impacts of travel;
- Promoting public transport, walking and cycling (including minimum cycle parking standards);
- Promoting road safety and pedestrian movement particularly in town centres and close to local services;
- Promoting car sharing and establishing car clubs; ▪ Seeking to locate major trip generating developments in locations with good access to public transport and so better integrate transport and land use planning;
- Adopting maximum car parking standards and car free housing wherever feasible;
- Seeking to mitigate the impact of road based freight and promote alternatives;
- Supporting measures to influence behavioural change such as promoting low carbon vehicles; and
- Requiring the submission of transport assessments and travel plans for large scale proposals in line with TfL guidance.

18.2 DEVELOPMENT SUSTAINABILITY FEATURES

The air quality map seen in Figure 18.1 (sourced from the Environment Agency) confirms that there are no breaches in air pollution within close proximity to the development location. The Environment Agency analysis reviews emission levels from the following pollutants:

- Carbon dioxide;
- Dioxins;
- Nitrogen oxides;
- Particulates (PM10);
- Sulphur oxides.



Figure 18.1 Air Pollution Analysis (sourced from the Environment Agency)

18.3 SUMMARY

Once the development is completed and operational, it will have insignificant impact on the local air quality, hence no mitigation would be required. The site is therefore considered to be suitable for its commercial use. Hence the proposed development can be deemed sustainable with regard to air quality.

APPENDIX A – CHP SEARCH



CHP availability Search Area

Sector Name	Share	Total MWh
Communications and Transport	0.05%	16 MWh
Commercial Offices	1.71%	493 MWh
Domestic	92.43%	26,662 MWh
Education	0.09%	26 MWh
Government Buildings	0%	0 MWh
Hotels	4.45%	1,283 MWh
Large Industrial	0%	0 MWh
Health	0.03%	8 MWh
Other	0.5%	144 MWh
Small Industrial	0.12%	36 MWh
Prisons	0%	0 MWh
Retail	0.59%	170 MWh
Sport and Leisure	0.02%	7 MWh
Warehouses	0%	0 MWh
District Heating	0%	0 MWh
Total heat load in Area		**28,846 MWh**

Total Heat Load Distribution

APPENDIX B – WIND MAP



Chart C.1 Wind Velocity Chart for the Development Site

APPENDIX C – CARBON CALCULATIONS

				Baseline		'Be Lean'	'Be Clean'	'Be Green'
Building Use	Model Area	Number of units	Total area represented by model	BRUKL TER	BRUKL Displaced electricity (-)	BRUKL BER	BRUKL BER	BRUKL BER
	(m^2)		(m^2)	($kgCO_2 / m^2$)	(kWh / m^2)	($kgCO_2 / m^2$)	($kgCO_2 / m^2$)	($kgCO_2 / m^2$)
Unit 1	3132.2	1	3132.2	3.23	-15.47	2.69	2.69	-0.34
Unit 2	2477.7	1	2477.7	2.61	-13.55	2.22	2.22	-0.21
Unit 3	1400.5	1	1400.5	3.06	-14.86	2.11	2.11	-0.15

Baseline		'Be Lean'			'Be Clean'			'Be Green'	
Part L 2021 CO_2 emissions	Energy saving/generation technologies	Part L 2021 CO_2 emissions	Part L 2021 CO_2 emissions with Notional PV savings included	'Be Lean' savings	Part L 2021 CO_2 emissions	Part L 2021 CO_2 emissions with Notional PV savings included	'Be Clean' savings	Part L 2021 CO_2 emissions	'Be Green' savings
($kgCO_2$ p.a.)	($kgCO_2$ p.a.)	($kgCO_2$ p.a.)	($kgCO_2$ p.a.)	($kgCO_2$ p.a.)	($kgCO_2$ p.a.)	($kgCO_2$ p.a.)	($kgCO_2$ p.a.)	($kgCO_2$ p.a.)	($kgCO_2$ p.a.)
10,117	-6,238.31	8,425.62	2,187	7,930	8,426	2,187	0	-1,065	3,252
6,467	-4,322.30	5,500.49	1,178	5,289	5,500	1,178	0	-520	1,699
4,288	-2,879.35	2,955.06	276	4,010	2,955	276	0	-210	486

Non-residential

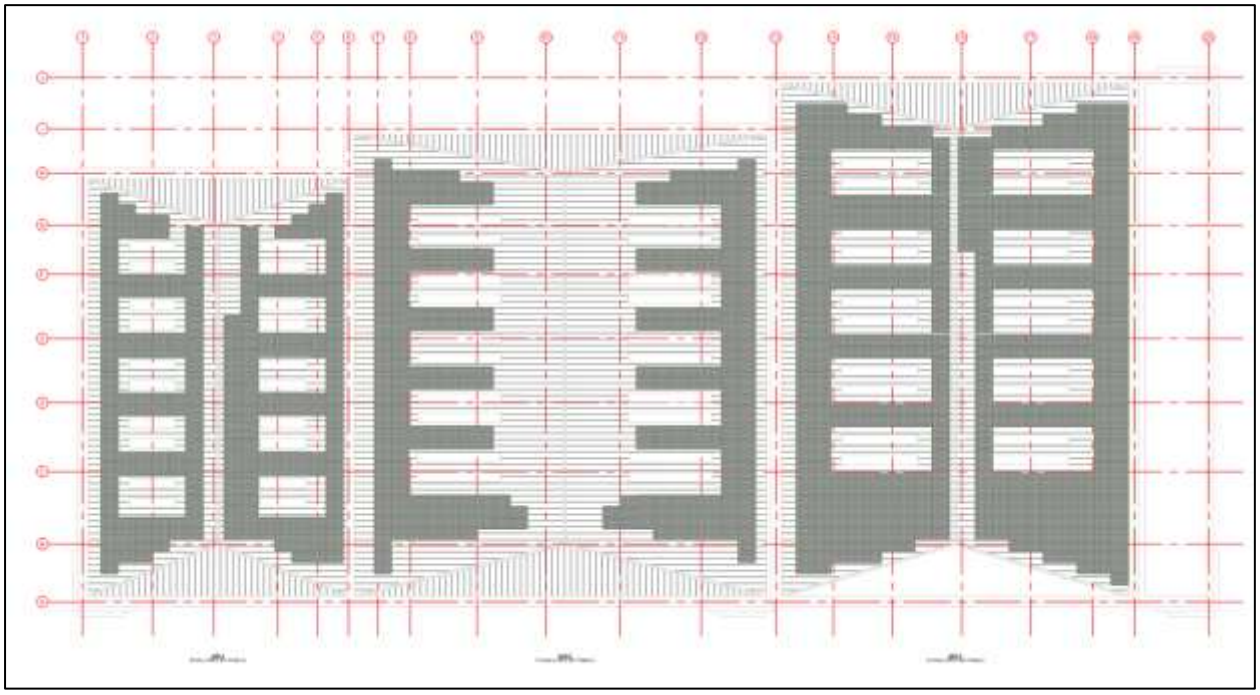
Table 3: Carbon Dioxide Emissions after each stage of the Energy Hierarchy for non-residential buildings

	Carbon Dioxide Emissions for non-residential buildings (Tonnes CO_2 per annum)	
	Regulated	Unregulated
Baseline: Part L 2021 of the Building Regulations Compliant Development	20.9	
After energy demand reduction (be lean)	3.6	
After heat network connection (be clean)	3.6	
After renewable energy (be green)	-1.8	

Table 4: Regulated Carbon Dioxide savings from each stage of the Energy Hierarchy for non-residential buildings

	Regulated non-residential carbon dioxide savings	
	(Tonnes CO_2 per annum)	(%)
Be lean: savings from energy demand reduction	17.2	83%
Be clean: savings from heat network	0.0	0%
Be green: savings from renewable energy	5.4	26%
Total Cumulative Savings	**22.7**	**109%**

APPENDIX D – PV ROOF LAYOUT



APPENDIX E – PV PAYBACK PERIOD

	PV (kWp)	Cost of PVs £	Energy generated from PV kWh/yr	Annual saving in £	Pyback Time in yrs
Development Total	380.0	247,000	295,840	£94,669	2.61
	380.0	247,000.0	295,840.5	94,669.0	2.61

APPENDIX F – LZC FOR BREEAM

LZC Section for BREEAM:

1. Energy generated from LZC energy source per year

Appendix F of this statement provides the energy generated from PV, which is equal to 295,840.48 kWh/Annum.

2. Carbon dioxide savings from LZC energy source per year

Refer to table 1.5 within section 1

3. Life cycle cost of the potential specification, accounting for payback

Refer Appendix E

4. Local planning criteria, including land use and noise

Please refer to section 5.0 which includes all local planning policies relevant to the energy and sustainability side of the development.

5. Feasibility of exporting heat or electricity from the system

During off peak hours, energy generated on site is expected to be exported to Grid.

6. Any available grants

No grants are currently available.

7. All technologies appropriate to the site

Refer to section 8, and table 8.1

8. Reasons for excluding other technologies

Refer to section 8, and table 8.1

Energy storage Feasibility

Energy storage is not proposed for the industrial units because of low energy demand, and renewable energy systems like photovoltaics (PV) and air source heat pumps (ASHP) can directly supply energy when needed.

Energy Modeller Qualification:

The Energy Modelling (SBEM) was carried out by Hasnaat Mahmood and his qualifications and CV can be seen in section G.

APPENDIX G – ENERGY MODELLER QUALIFICATIONS

Mahmood,Hasnaat Shahid
(0.56) Miles

Cudd Bentley Consulting
Ashurst Manor, Church Lane
Sunninghill, Ascot
SL5 7DD
United Kingdom
Email: hasnaat.mahmood@cuddbentley.co.uk
Tel: 01344628821

LCC: **LCC Building Design; LCC Simulation;**

LCEA: **LCEA EPC Level 3 and 4 EW&NI;**

HASNAAT MAHMOOD

TITLE: Senior Sustainability Engineer

QUALIFICATIONS:
BEng Mechanical Engineering
MSc Renewable Energy Systems
Part L Level 3/4 Energy Assessor
Hevacomp Part L Competent

EXPERIENCE:
Hasnaat joined Cudd Bentley in 2021 and is mainly involved in undertaking Energy and Sustainability assessments, Building Regulation compliance, SBEM/SAP modelling and ensuring local and national planning policy requirements are met for various projects. He has a MSc degree in Renewable Energy Systems from University of Surrey. He has experience in residential, industrial and mixed-use developments and since joining Cudd Bentley he has gained extensive experience within the sustainability sector and has been promoted from graduate to sustainability engineer.

Publications
Managing for Energy Performance – A Guiding Framework for Property Management

WOOLWICH PHASE 3 & PHASE 4
Part L compliance, Energy Statement, Sustainability Statement, Feasibility Study, Overheating Assessment

POYLE INDUSTRIAL DEVELOPMENT
Energy and Sustainability Statement, Feasibility Statement, BREEAM Assessment

Sainsbury's Ilford
The scheme consists of 7 multi-purpose blocks with over 1200 residential units with one block to serve student accommodation. Took the lead role in sustainability ensuring the best energy solution has been proposed in order to comply with the GLA planning policies. Worked on the Energy Statement, Sustainability Statement, Whole Life Cycle and GHG report.

West Midlands Interchange
The scheme consists of industrial warehouses (the largest in West Midlands) with office spaces on the ground and first floor. Worked on the net-zero report, in which a pathway was identified and proposed to make the building completely net zero in terms of operational energy and embodied carbon.

Thames Road
Produced an overheating assessment for the residential development in London and proposed mitigation measures in order to comply with CIBSE TM59 criteria.

Laporte Way, Luton
Worked on the Energy and Sustainability Statement for this industrial development for planning. Also, produced a net-zero carbon report in which solutions were proposed to make the development a net-zero building.

Unit Q West, Heathrow
This project consists of re-development of an existing building by changing the internal layouts and some building fabric. Worked on the operational energy calculation to determine amount of PV required to make building net-zero for operational use and offset embodied carbon.

APPENDIX H – SAMPLE BRUKL

BRUKL Output Document

HM Government

Compliance with England Building Regulations Part L 2021

Project name

Queens Street, Tottenham — As designed

Date: Tue Aug 27 11:18:15 2024

Administrative information

Building Details

Address: Queen St, London, N17 8HZ,

Certification tool

Calculation engine: SBEM
Calculation engine version: v6.1.d.0
Interface to calculation engine: Energy Simulator
Interface to calculation engine version: 10.9.2.36
BRUKL compliance module version: v6.1.d.0

Certifier details

Name: Sushil Pathak
Telephone number: 01344 628821
Address: Cudd Bentley, Ashurst Manor, Sunninghill, SL5 7DD

Foundation area [m²]: 227

The CO_2 emission and primary energy rates of the building must not exceed the targets

Target CO_2 emission rate (TER), kgCO_2/m²annum	2.62	
Building CO_2 emission rate (BER), kgCO_2/m²annum	-0.21	
Target primary energy rate (TPER), kWh/m²annum	27.55	
Building primary energy rate (BPER), kWh/m²annum	-5.59	
Do the building's emission and primary energy rates exceed the targets?	BER =< TER	BPER =< TPER

The performance of the building fabric and fixed building services should achieve reasonable overall standards of energy efficiency

Fabric element	$U_{i-Limit}$	U_{i-Calc}	U_{i-Calc}	First surface with maximum value
Walls*	0.26	0.24	0.34	Wall 1
Floors	0.18	0.18	0.18	Internal Floor 1
Pitched roofs	0.16	-	-	No heat loss pitched roofs
Flat roofs	0.18	0.15	0.15	Exposed Roof 1
Windows** and roof windows	1.6	1.4	1.4	Window 1
Rooflights***	2.2	-	-	No external rooflights
Personnel doors^	1.6	-	-	No external personnel doors
Vehicle access & similar large doors	1.3	-	-	No external vehicle access doors
High usage entrance doors	3	-	-	No external high usage entrance doors

$U_{i-Limit}$ = Limiting area-weighted average U-values [W/(m²K)] — U_{i-Calc} = Calculated maximum individual element U-values [W/(m²K)]
U_{i-Calc} = Calculated area-weighted average U-values [W/(m²K)]
* Automatic U-value check by the tool does not apply to curtain walls whose limiting standard is similar to that for windows.
** Display windows and similar glazing are excluded from the U-value check. *** Values for rooflights refer to the horizontal position.
^ For fire doors, limiting U-value is 1.8 W/m²K
NB: Neither roof ventilators (inc. smoke vents) nor swimming pool basins are modelled or checked against the limiting standards by the tool.

Air permeability	Limiting standard	This building
m³/(h.m²) at 50 Pa	8	3

Page 1 of 5

Building services

For details on the standard values listed below, system-specific guidance, and additional regulatory requirements, refer to the Approved Documents.

Whole building lighting automatic monitoring & targeting with alarms for out-of-range values	NO
Whole building electric power factor achieved by power factor correction	<0.9

1- Office

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	3,65	6,23	-	-	-
Standard value	2.5*	N/A	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					NO

* Standard shown is for all types >12 kW output, except absorption and gas engine heat pumps.

2- WC's

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	1	-	-	-	-
Standard value	N/A	N/A	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					YES

3- Circulaton Area

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	1	-	-	-	-
Standard value	N/A	N/A	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					YES

1- Default DHW

	Water heating efficiency	Storage loss factor [kWh/litre per day]
This building	1	-
Standard value	1	N/A

Zone-level mechanical ventilation, exhaust, and terminal units

ID	System type in the Approved Documents
A	Local supply or extract ventilation units
B	Zonal supply system where the fan is remote from the zone
C	Zonal extract system where the fan is remote from the zone
D	Zonal balanced supply and extract ventilation system
E	Local balanced supply and extract ventilation units
F	Other local ventilation units
G	Fan assisted terminal variable air volume units
H	Fan coil units
I	Kitchen extract with the fan remote from the zone and a grease filter

NB: Limiting SFP may be increased by the amounts specified in the Approved Documents if the installation includes particular components.

Zone name	SFP [W/(l/s)]									HR efficiency	
ID of system type	A	B	C	D	E	F	G	H	I		
Standard value	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1	Zone	Standard
U2.FF.OFF	-	-	-	-	1.1	-	-	-	-	0.8	N/A
U2.FF.WC1	-	-	0.3	-	-	-	-	-	-	-	N/A
U2.FF.WC2	-	-	0.3	-	-	-	-	-	-	-	N/A

Page 2 of 5

Zone name	SFP [W/(l/s)]									HR efficiency	
ID of system type	A	B	C	D	E	F	G	H	I		
Standard value	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1	Zone	Standard
U2.GF.WC1	-	-	0.3	-	-	-	-	-	-	-	N/A
U2.GF.WC2	-	-	0.3	-	-	-	-	-	-	-	N/A

General lighting and display lighting	General luminaire	Display light source	
Zone name	Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m²]
Standard value	95	80	0.3
U2.FF.OFF	140	-	-
U2.FF.WC1	110	-	-
U2.FF.WC2	110	-	-
U2.GF.WC1	110	-	-
U2.GF.WC2	110	-	-
U2.FF.CIR1	110	-	-
U2.FF.CIR2	110	-	-
U2.GF.CIR1	110	-	-
U2.GF.CIR2	110	-	-
U2.FF.RIS	95	-	-
U2.FF.ST	95	-	-
U2.UM	95	-	-
U2.WH	95	-	-

The spaces in the building should have appropriate passive control measures to limit solar gains in summer

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
U2.FF.OFF	NO (-42.9%)	NO
U2.UM	N/A	N/A
U2.WH	NO (-32.4%)	NO

Regulation 25A: Consideration of high efficiency alternative energy systems

Were alternative energy systems considered and analysed as part of the design process?	YES
Is evidence of such assessment available as a separate submission?	NO
Are any such measures included in the proposed design?	YES

Page 3 of 5

Technical Data Sheet (Actual vs. Notional Building)

Building Global Parameters

	Actual	Notional
Floor area [m²]	2477.7	2477.7
External area [m²]	6701.9	6701.9
Weather	LON	LON
Infiltration [m³/hm²@ 50Pa]	3	5
Average conductance [W/K]	1774.66	1968.82
Average U-value [W/m²K]	0.26	0.29
Alpha value* [%]	1.71	20.7

* Percentage of the building's average heat transfer coefficient which is due to thermal bridging

Building Use

% Area	Building Type
	Retail/Financial and Professional Services
	Restaurants and Cafes/Drinking Establishments/Takeaways
	Offices and Workshop Businesses
	General Industrial and Special Industrial Groups
100	**Storage or Distribution**
	Hotels
	Residential Institutions: Hospitals and Care Homes
	Residential Institutions: Residential Schools
	Residential Institutions: Universities and Colleges
	Secure Residential Institutions
	Residential Spaces
	Non-residential Institutions: Community/Day Centre
	Non-residential Institutions: Libraries, Museums, and Galleries
	Non-residential Institutions: Education
	Non-residential Institutions: Primary Health Care Building
	Non-residential Institutions: Crown and County Courts
	General Assembly and Leisure, Night Clubs, and Theatres
	Others: Passenger Terminals
	Others: Emergency Services
	Others: Miscellaneous 24hr Activities
	Others: Car Parks 24 hrs
	Others: Stand Alone Utility Block

Energy Consumption by End Use [kWh/m²]

	Actual	Notional
Heating	3.31	3.38
Cooling	0.97	1.16
Auxiliary	0.62	0.6
Lighting	18.25	14.58
Hot water	3.98	3.98
Equipment*	31.03	31.03
TOTAL**	**27.13**	**23.69**

* Energy used by equipment does not count towards the total for consumption or calculating emissions.
** Total is net of any electrical energy displaced by CHP generators, if applicable.

Energy Production by Technology [kWh/m²]

	Actual	Notional
Photovoltaic systems	32.06	5.27
Wind turbines	0	0
CHP generators	0	0
Solar thermal systems	0	0
Displaced electricity	*32.06*	*5.27*

Energy & CO_2 Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m²]	197.72	224.81
Primary energy [kWh/m²]	-5.59	27.55
Total emissions [kg/m²]	-0.21	2.62

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HVAC Systems Performance

System Type		Heat dem MJ/m2	Cool dem MJ/m2	Heat con kWh/m2	Cool con kWh/m2	Aux con kWh/m2	Heat SSEEF	Cool SSEER	Heat gen SEFF	Cool gen SEER
[ST] Split or multi-split system, [HS] ASHP, [HFT] Electricity, [CFT] Electricity										
	Actual	39.9	132.5	3.3	8.3	4.6	3.4	4.42	3.65	6.23
	Notional	74.9	96.4	7.9	9.9	3.8	2.64	2.7	—	—
[ST] Other local room heater - unfanned, [HS] Direct or storage electric heater, [HFT] Electricity, [CFT] Electricity										
	Actual	101.5	36	33.5	0	6.6	0.84	0	1	0
	Notional	78.9	50.2	16.3	0	13.1	1.34	0	—	—
[ST] Other local room heater - unfanned, [HS] Direct or storage electric heater, [HFT] Electricity, [CFT] Electricity										
	Actual	140.9	54.3	46.5	0	0	0.84	0	1	0
	Notional	200.4	33.8	41.5	0	0	1.34	0	—	—
[ST] No Heating or Cooling										
	Actual	100.3	102.1	0	0	0	0	0	0	0
	Notional	138.2	95.1	0	0	0	0	0	—	—

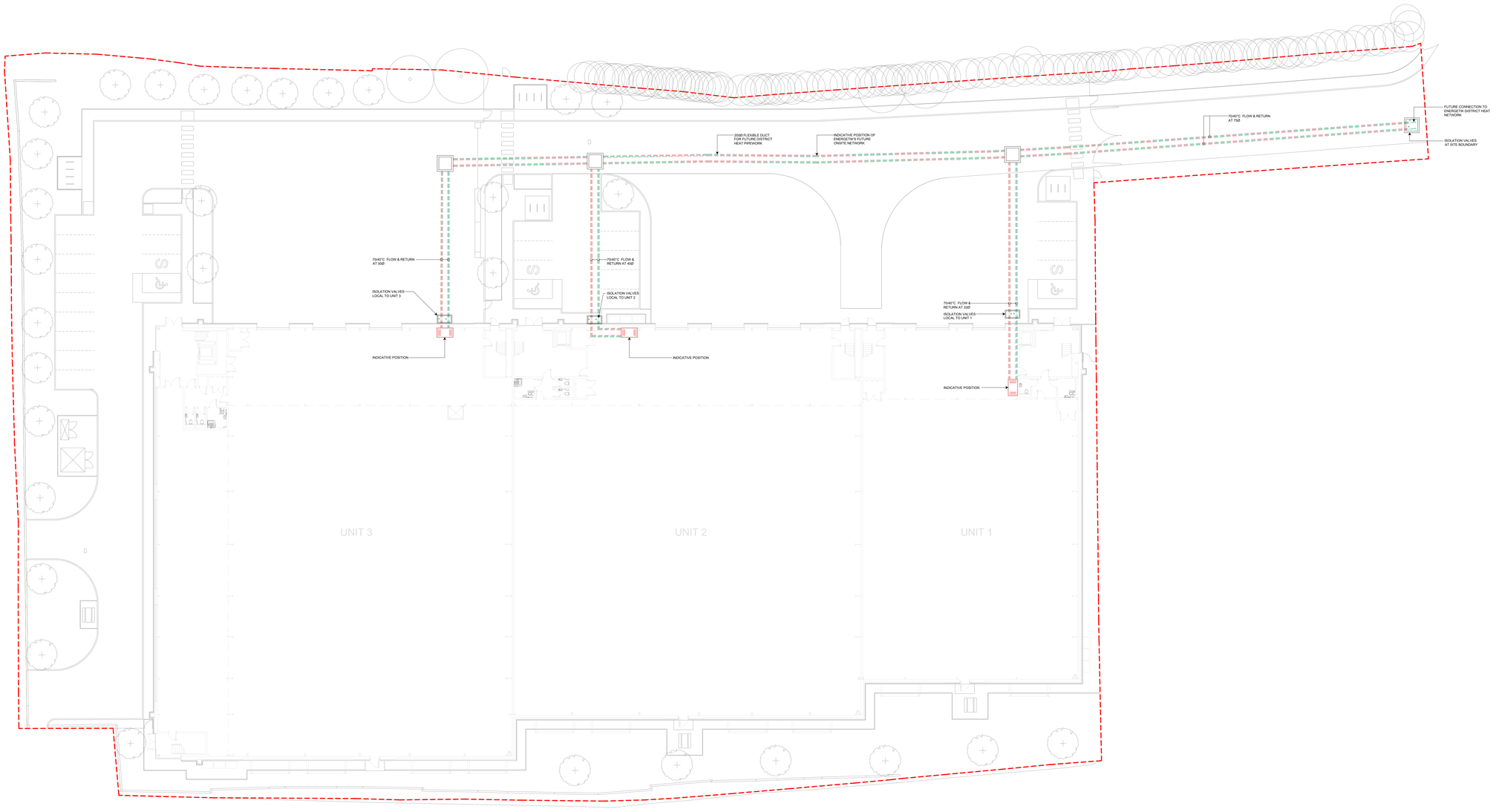
Key to terms

Heat dem [MJ/m2] = Heating energy demand
Cool dem [MJ/m2] = Cooling energy demand
Heat con [kWh/m2] = Heating energy consumption
Cool con [kWh/m2] = Cooling energy consumption
Aux con [kWh/m2] = Auxiliary energy consumption
Heat SSEFF = Heating system seasonal efficiency (for notional building, value depends on activity glazing class)
Cool SSEER = Cooling system seasonal energy efficiency ratio
Heat gen SSEFF = Heating generator seasonal efficiency
Cool gen SSEER = Cooling generator seasonal energy efficiency ratio
ST = System type
HS = Heat source
HFT = Heating fuel type
CFT = Cooling fuel type

Page 5 of 5

APPENDIX I – DISTRICT HEAT NETWORK SUPPORTING DOCUMENTATION

The following supporting documentation is provided to demonstrate the proposed approach to the District Heat Network (DHN) connection, including the proposed future DHN services layout drawing, correspondence with the local network provider Energetik.



GENERAL NOTES

1. THIS DRAWING IS THE COPYRIGHT OF CUDD BENTLEY AND MUST NOT BE RETAINED, COPIED OR USED WITHOUT CUDD BENTLEYS CONSULTING CONSENT.
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3. DO NOT SCALE FROM THIS DRAWING.
4. ALL DIMENSIONS AND LEVELS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.
5. ALL PLANT, MATERIALS AND EQUIPMENT TO BE INSTALLED STRICTLY IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.
6. ANY DISCREPANCY IS TO BE REFERRED TO CUDD BENTLEY CONSULTING.
7. ALL DIMENSIONS TO BE CHECKED AND VERIFIED ON SITE PRIOR TO THE COMMENCEMENT OF WORKS.
8. ALL PART NUMBERS SHALL BE VERIFIED BY THE CONTRACTOR.
9. THIS DRAWING IS TO BE READ IN CONJUNCTION AND CO-ORDINATED WITH ALL OTHER DESIGN TEAM PROJECT DRAWINGS, SCHEDULES AND SPECIFICATIONS.
10. FOR THE MEPH SYMBOL LEGEND PLEASE REFER TO CUDD BENTLEY DRAWING '6753-CBC-00-XX-DR-Z-040001'.

NOTE:

1. ALL PLATE HEAT EXCHNAGES ARE INDICATIVE ON LOCATION AND SIZE (3000 X 2500, W X D mm), AND SUBJECT TO CONFIRMATION BY A SPECIALIST.
2. ALL FLOW/RETURN TEMPERATURES AND PIPE SIZES ARE INDICATIVE, AND SUBJECT TO CONFIRMATION BY A SPECIALIST.

LEGEND:

- INDICATIVE CONNECTION INFRASTRUCTURE SAFEGUARDED ROUTE
- PROPOSED CONNECTION DUCTS
- INDICATIVE HEAT EXCHANGER
- ISOLATION VALVE
- MANHOLE

0 5 10 15 20

SCALE 1:200 m

T02	UPDATED AS PER ARCHITECTS COMMENTS	LSH	SP	RL	13-10-25
T01	TENDER ISSUE	ST	SP	RL	08-09-25
Revison	Description	Drawn By	Engineer	Approved	Date

Cudd Bentley Consulting

www.cuddbentley.co.uk

Cudd Bentley Consulting Ltd.
Ashurst Manor
Church Lane
Ascot
Berkshire
SL5 7DD

(t) 01344 62 8821
(e) info@cuddbentley.co.uk

Cudd Bentley Consulting Ltd.
12 Devonshire Street
London
W1G 7AB

(t) 0203 393 6446
(e) info@cuddbentley.co.uk

Cudd Bentley Consulting Ltd.
7 Charlotte Street
St James Tower
Manchester
M1 4DZ

(t) 0161 537 1901
(e) info@cuddbentley.co.uk

Drawing Status

TENDER

Client

VERITY TRUSTEE LTD

Project/Site Location

QUEEN STREET,
TOTTENHAM,
N17 8HZ

Drawing Title

PROPOSED EXTERNAL
DISTRICT HEATING NETWORK
SERVICES LAYOUT

Scale	Size	Drawn By	Engineer	Approved	Date Created
1:200	A0	ST	SP	RL	08/09/25

Drawing Reference: 6753-CBC-XX-XX-DR-M-196006

Revision: T02

File Location: U:\JN6000-6999\6753 (RD) Queens Street, Tottenham, N17 8HZ\3 CAD-BIM\06 Statutory Services\06 Series\6753-CBC-XX-XX-DR-M-196006.dwg

Hasnaat Mahmood

From: Stephen Diver <Stephen.Diver@energetik.london>
Sent: 09 July 2024 13:49
To: Shaan Patel
Cc: Ian Guest; Rhys Davies; Robert Lake; Sushil Pathak; Hasnaat Mahmood; Rob Callaghan
Subject: Re: 6753: Booker Site, Queen Street, Tottenham, N17 8HZ - District Heating Application

HI Shaan,

Your proposals seem reasonable based on the below - we'd welcome the opportunity to connect in future should the future tenants require a heating connection.

I would advise you to ensure there is a safeguarded route through/off site to allow for a simpler connection to the heat network, to avoid complex/impossible future civils should the need arise.

regards
Steve

Stephen Diver
Business Operations Manager

****Please note my normal working days are Monday to Thursday****
My working hours may not be the same as yours. If you receive this email outside of your working time I do not expect a reply.

energetik

Civic Centre, Silver Street, Enfield, EN1 3XA
E: stephen.diver@energetik.london
W: www.energetik.london
T: +44 20 8132 1387

Energetik is the trading name of Lee Valley Heat Network Operating Company Ltd
Company number: 09763702
VAT number: 389 8735 15

From: Shaan Patel <shaan.patel@cuddbentley.co.uk>
Sent: Monday, July 8, 2024 11:26
To: Stephen Diver <Stephen.Diver@energetik.london>
Cc: Ian Guest <Ian.Guest@energetik.london>; Rhys Davies <rhys.davies@cuddbentley.co.uk>; Robert Lake <robert.lake@cuddbentley.co.uk>; Sushil Pathak <sushil.pathak@cuddbentley.co.uk>; Hasnaat Mahmood <hasnaat.mahmood@cuddbentley.co.uk>
Subject: RE: 6753: Booker Site, Queen Street, Tottenham, N17 8HZ - District Heating Application

Hi Stephen,

Could you please provide an update on the below? Thanks.

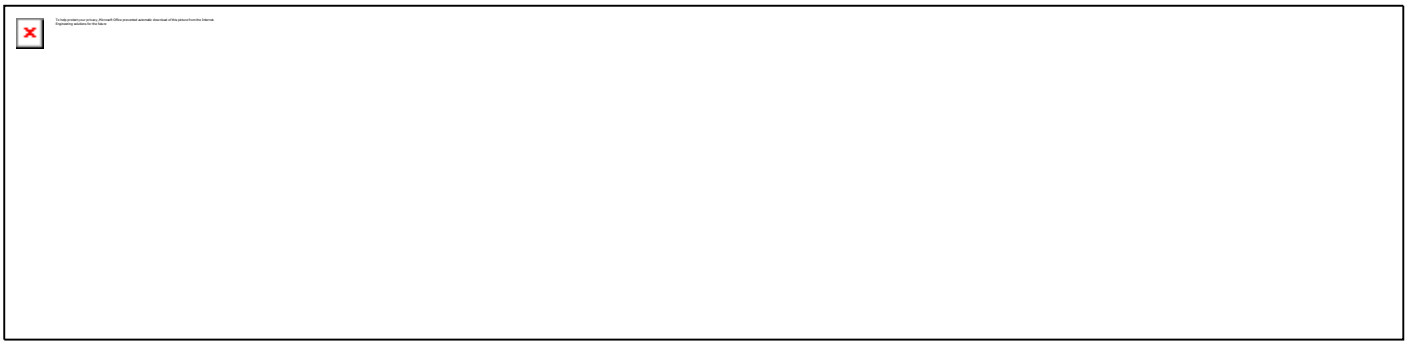
Kind regards

Shaan Patel | Graduate Mechanical Engineer

E: shaan.patel@cuddbentley.co.uk | **W:** www.cuddbentley.co.uk

T: 0203 393 6446 | **DDI:** 0203 828 2421

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From: Hasnaat Mahmood <hasnaat.mahmood@cuddbentley.co.uk>
Sent: Tuesday, July 2, 2024 11:58 AM
To: Stephen Diver <Stephen.Diver@energetik.london>
Cc: Ian Guest <Ian.Guest@energetik.london>; Rhys Davies <rhys.davies@cuddbentley.co.uk>; Robert Lake <robert.lake@cuddbentley.co.uk>; Shaan Patel <shaan.patel@cuddbentley.co.uk>; Sushil Pathak <sushil.pathak@cuddbentley.co.uk>
Subject: RE: 6753: Booker Site, Queen Street, Tottenham, N17 8HZ - District Heating Application

*** This E-Mail was generated from within your organisation ***
Hi Stephen,

Thanks for your email. The current energy strategy includes for reverse cycle heat pumps for the office areas and the warehouse is considered unheated.

The current energy proposals allows for a future DHN connection, if one becomes available at a later date.

Kind regards

Hasnaat Mahmood | Senior Sustainability Engineer

E: hasnaat.mahmood@cuddbentley.co.uk | **W:** www.cuddbentley.co.uk

T: 01344 628821 | **M:** 07824 415366 | **DDI:** 01344 298828

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From: Stephen Diver <Stephen.Diver@energetik.london>
Sent: Tuesday, July 2, 2024 10:51 AM
To: Shaan Patel <shaan.patel@cuddbentley.co.uk>
Cc: Ian Guest <Ian.Guest@energetik.london>; Rhys Davies <rhys.davies@cuddbentley.co.uk>; Robert Lake <robert.lake@cuddbentley.co.uk>; Hasnaat Mahmood <hasnaat.mahmood@cuddbentley.co.uk>
Subject: Re: 6753: Booker Site, Queen Street, Tottenham, N17 8HZ - District Heating Application

> You don't often get email from stephen.diver@energetik.london. Learn why this is important

Hi Shaan,

Thanks for sending the estimated figures below though. We'd like to connect as we'll be bringing a pipe down to the adjacent Selby Centre development if/when that goes ahead.

I'd be interested to know what your solution would be in your energy statement if not connecting to the heat network? Obviously if you want cooling for the offices, then we could understand that reverse cycle heat pumps would be a sensible route but if installing wet system/ASHP a connection to us would make the most sense.

Is there an outline strategy at this stage for heating the warehouses (frost protection or other), or for future use? I assume you're not planning to install a gas supply?

Steve

Stephen Diver
Business Operations Manager

****Please note my normal working days are Monday to Thursday****
My working hours may not be the same as yours. If you receive this email outside of your working time I do not expect a reply.

energetik

Civic Centre, Silver Street, Enfield, EN1 3XA
E: stephen.diver@energetik.london
W: www.energetik.london
T: +44 20 8132 1387

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From: Shaan Patel <shaan.patel@cuddbentley.co.uk>
Sent: Tuesday, June 25, 2024 15:56
To: Stephen Diver <Stephen.Diver@energetik.london>
Cc: Ian Guest <Ian.Guest@energetik.london>; Rhys Davies <rhys.davies@cuddbentley.co.uk>; Robert Lake <robert.lake@cuddbentley.co.uk>; Hasnaat Mahmood <hasnaat.mahmood@cuddbentley.co.uk>
Subject: RE: 6753: Booker Site, Queen Street, Tottenham, N17 8HZ - District Heating Application

Hi Stephen,

Apologies, missed the zeros off – please see the actual rough loads below:

Unit 1 – 44,000 kWh
Unit 2 – 23,000 kWh
Unit 3 – 21,000 kWh

Thank you.

Kind regards

Shaan Patel | Graduate Mechanical Engineer

E: shaan.patel@cuddbentley.co.uk | **W:** www.cuddbentley.co.uk

T: 0203 393 6446 | **DDI:** 0203 828 2421

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From: Stephen Diver <Stephen.Diver@energetik.london>
Sent: Wednesday, June 19, 2024 2:09 PM
To: Shaan Patel <shaan.patel@cuddbentley.co.uk>
Cc: Ian Guest <Ian.Guest@energetik.london>; Rhys Davies <rhys.davies@cuddbentley.co.uk>; Robert Lake <robert.lake@cuddbentley.co.uk>; Hasnaat Mahmood <hasnaat.mahmood@cuddbentley.co.uk>
Subject: RE: 6753: Booker Site, Queen Street, Tottenham, N17 8HZ - District Heating Application

Good afternoon Shaan,

Thank you for your enquiry – I recently responded to your colleague Ryan about another development site further to the east – that site was not possible for us to consider for a connection as it was too far away from existing/planned network. However, the site you are now enquiring about is much closer to a potential pipe extension we're currently considering/negotiating.

In answer to your question, we can operate our network at around 80 degrees, up to a maximum of 85 degrees, but would prefer to keep it lower than the maximum unless absolutely necessary/demand was such that warranted us running it that high. The flow and return temperatures on the secondary (your) side of the network are normally in the region of 70/40 down to around 60/30 for modern residential developments.

What would the heat capacity that you are interested in / potentially require for each of the units?

Regards
Steve

Stephen Diver
Business Operations Manager

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Civic Centre, Silver Street, Enfield, EN1 3XA
E: stephen.diver@energetik.london
W: www.energetik.london
T: +44 20 8132 1387

Energetik is the trading name of Lee Valley Heat Network Operating Company Ltd
Company number: 09763702
VAT number: 389 8735 15

From: Shaan Patel <shaan.patel@cuddbentley.co.uk>
Sent: 19 June 2024 13:55
To: Stephen Diver <Stephen.Diver@energetik.london>; noreply@energetik.london
Cc: Rhys Davies <rhys.davies@cuddbentley.co.uk>; Robert Lake <robert.lake@cuddbentley.co.uk>; Hasnaat Mahmood <hasnaat.mahmood@cuddbentley.co.uk>
Subject: 6753: Booker Site, Queen Street, Tottenham, N17 8HZ - District Heating Application

To whom it may concern,

We are investigating the possibility of providing a District Heating solution at a new build in Tottenham, London. The development includes demolishing 2no. existing industrial units and building 3no. new industrial units, with the intention to install 3no. capped connections to allow for future tenant fit out of the district heating option. Therefore, could you please provide the flow and return temperatures of the services at the above location to assess if district heating is a feasible option?

I have attached the site plan and a location plan. My details are as follows:

Name – Shaan Patel
Mobile – 07847546375
Email: shaan.patel@cuddbentley.co.uk