

Energy Strategy Report

**For development at
21-23 High Road
Wood Green**

**November 2022
P22008-R-002 Revision 'A'**

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1. Executive Summary

1.1. Overview

NLY Building Services Ltd have been instructed to undertake an energy strategy assessment for the new development at 21-23 High Road, Wood Green.

This is a high-level report, recommending heat pumps that could be employed to meet all requirements of current regulations, along with passive measures, such as U-Values. It is not a detailed design.

This document sets out the Energy Strategy for the proposed scheme in the context of the current & emergency policy requirements of the Local Borough, the London Plan and in-line with the changes in Building Regulations.

The proposal for the scheme will follow the hierarchy of the London Plan.

1.2. "Energy Statement"

The following measures are intended as part of the formal Energy Strategy:

- Illustrates a reduction of greater than 35% in CO2 emissions over that of the baseline of Part L 2021
- U-Values as per the existing development
- Air Permeability 50% better than the Part L limiting parameter
- Provision of Exhaust Air Heat Pumps (EAHP) to provide low-carbon heating and hot water to each dwelling
- 100% LED lighting

2. Policy and Regulatory Framework

2.1. Policy Introduction

The development proposal is for a minor scheme and thus will seek to respond to the energy policies of the London Plan and that of the policies of the corresponding Local Borough. Policies applicable to the proposed development are illustrated within this section.

2.2. Regional Policies

- The London Plan (2021)
- The GLA Guidance on preparing energy assessments (April 2020)

2.3. Guidance on Preparing Energy Assessments

The GLA Guidance for Energy Statements (last updated in April 2020) provides guidance on preparing energy assessments to accompany strategic planning applications; it contains clarifications on Policy SI 2, of the new London Plan, carbon reduction targets in the context of zero carbon policy, as well as detailed guidelines on the content of the Energy Assessments undertaken for planning. This guidance has aided in the formulation of tables and figures fundamental for this report.

2.4. The GLA Guidance on Preparing Energy Assessments

The Mayor has declared a climate emergency and has set a target for London to be net zero by 2030. This puts London at the forefront of global cities and UK action on climate change. The Mayor's London Plan ensures that the planning system is playing its part in achieving the net zero target. On 15 June 2022, national building regulations were updated to enhance energy performance standards for new buildings through Part L 2021. A new Part O 2021 was also introduced, updating requirements to tackle overheating.

The Mayor's Energy Assessment Guidance has been updated to explain how London Plan policy should be applied now that these regulations have taken effect. This note summarises the key updates. An updated spreadsheet to report carbon emissions has also been published, which planning applicants should submit as part of the energy strategy when these are required. As the accompanying Part L 2021 software is not yet available, planning applicants should continue to use the 2020 guidance, spreadsheet and the Part L 2013 methodology until the software is available, expected to be 31st July 2022. Once the software is available, the updated guidance and spreadsheet should be used for all Stage 1 application submissions.

Part L 2021 is a stepping-stone towards the Future Homes Standard and Future Buildings Standard which the Government is expected to consult on in 2023 and introduce in 2025.

2.4.1. The Mayor's Net Zero Carbon Target For Major Developments

As of 15 June 2022, all major developments in London must continue to meet the London Plan net zero carbon target by following the energy hierarchy (Policy SI 2), the heating hierarchy (Policy SI 3) and by maximising on-site carbon reductions.

Planning applicants will be expected to demonstrate that at each stage of the energy hierarchy they have maximised opportunities for carbon reduction to achieve as close to zero as possible. An on-site carbon reduction of at least 35 per cent beyond Part L 2021 of building regulations should be achieved.

Once it has been demonstrated that carbon reductions have been maximised, any remaining emissions to zero should be offset by a contribution to the relevant borough's carbon offset fund. Applicants should also continue to meet the energy efficiency targets (Policy SI 2).

2.5. Policy CS 15

2.5.1. Climate Change

All minor and major developments will be required to demonstrate the following unless developers can robustly justify why full compliance with the policy requirements is not viable:

- How it makes effective use of resources and materials, minimises water use and CO2 emissions;
- How development proposals are making the fullest contribution to minimising carbon dioxide emissions in accordance with the following energy hierarchy:
 - Be lean: use less energy
 - Be clean: supply energy efficiently
 - Be green: use renewable energy
- How it is sited and designed to withstand the long term impacts of climate change, particularly the effect of rising temperatures on mechanical cooling requirements;
- Regeneration plan in town centre are an excellent opportunity to implement District Heat and Power networks, and all major development would be strongly encourage to be 'Multi Utility Services Company (MUSCo) ready where viable and actively contribute to the networks where possible;
- We will require all new development comprising the creation of new dwellings to achieve Code for Sustainable Homes Level 4;
- All non-domestic development over 500m2 which does not qualify for assessment under Code for Sustainable Homes will be expected to be built to a minimum of BREEAM (Building Research Establishment Assessment Method) Very Good standard, and meet CO2 reduction targets in line with the requirements of the London Plan or national policy, whichever is the greater.

Explanatory Note: Approaches to Sustainable Design and Construction (2020)

The purpose of this note is to provide guidance on the approach for sustainable design and construction for residential, non-residential and mixed-use developments, in accordance with the requirements set out in Policy CS15 (Climate Change) and notes the following regarding energy targets:

Minor development proposals should provide a sustainability statement (either within the Design and Access Statement or a standalone statement), and all supporting evidence, outlining how the development will make the fullest contribution to minimising carbon dioxide emissions in accordance with the Mayor's energy hierarchy as set out in section 4.2 above. As a minimum, minor schemes will need to achieve no less than a 19% reduction in regulated carbon dioxide emissions (beyond Buildings Regulations Part L 2013) on-site. However, please note, developers will be expected to demonstrate that on-site savings have been maximised at all stages of the energy hierarchy whether the minimum target has already been achieved or not.

2.6. Building Regulations (Part L 2021 & Future Homes Standard)

On 24th July 2018 the Department for Business Energy & Industrial Strategy (BEIS) published their update to SAP 9.92 (Part L 2013), called SAP 10.

In October 2019, the Ministry of Housing, Communities and Local Government (MHCLG) then issued consultation on changes to Part L of the Building Regulations. Dubbed The Future Homes Standard, it is an aspiration to ensure all new homes will have low carbon heating and "world-leading levels of energy efficiency" by 2025 and is intended to be the primary driver in achieving the Governments desire to reduce carbon emissions in the creation of new-build housing stock.

After years of delays, on 15th June 2022, Part L 2021 (and SAP 10.2) of the Building Regulations came into force. As per the requirements, all new homes must produce 31% less CO₂ emissions than that of Part L 2013 in-order to achieve Building Regulation compliance.

The major change in the regulations is the change in carbon factor of electricity to represent the decarbonisation of the National Grid. The GLA in the interim of the Part L update, did publish a Spreadsheet to convert Part L 2013 SAPs but this is now out-of-date due to further changes to the carbon factors in SAP 10.2 (published April 2022). The difference is:

Fuel	SAP 2012 CO ₂ (kgCO ₂ /kWh)	SAP 10 CO ₂ (kgCO ₂ /kWh)	Part L 2021 CO ₂ (kgCO ₂ /kWh)	Percentage Reduction
Main Gas	0.216	0.210	0.210	2.75%
Electricity	0.519	0.233	0.136	73.8%

Table 1: Change in Carbon Factors from Part L 2013 to Part L 2021

2.7. Policy Conclusion

Due to the proposed implementation of an Air Source Heat Pump system, an improvement around circa 45-60% better than Part L 2021 is anticipated and thus compliant with all current and emerging policies, both at a local and regional level.

3. Energy Strategy Specification

The design of the development prioritises passive measures to minimise heat loss. The air permeability rate has been selected to exceed the minimum requirements of the Building Regulations.

The development will incorporate efficient building services to limit carbon emissions, including a low-carbon heating system and low energy lighting. The proposed building services are compliant with the recommendations of the *Domestic Building Services Compliance Guide* (2021).

Table 2 and Table 3: Proposed Fabric Specification & Proposed M&E Specification

<i>ELEMENT</i>	<i>PART L1A LIMITING FABRIC PARAMETERS</i>	<i>PROPOSED U-VALUES (W/m²K)</i>
Walls		
External Wall	0.3 W/m ² K	0.22 W/m ² K
Sheltered Wall	0.3 W/m ² K	0.17 W/m ² K
Party Wall	0.2 W/m ² K	0 W/m ² K
Floors		
Ground Floor	0.25 W/m ² K	0.13 W/m ² K
Openings		
Windows	2.2 W/m ² K	1.31 W/m ² K
Thermal Bridging	Accredited Construction Details.	

<i>ELEMENT</i>	<i>PROPOSED DETAILS</i>
Air Permeability	4 m ³ /(hm ²) @50Pa
Ventilation	MEV (through EAHP)
Heating and Hot Water	Individual Heat Pump (EAHP) with Cylinder
Heating Controls	Time and Temperature Zone Control
Lighting	100% Low Energy

In order to achieve the required CO₂ reduction, the implementation of low carbon or renewable technology will be required.

The feasibility of renewable and low carbon technologies has been reviewed in light of the changes made in Part L 2021. Therefore, individual Exhaust Air Heat Pump systems are proposed to introduce renewable heating and hot water to all dwellings.

4. Exhaust Air Heat Pump Data

4.1. Overview

Very similar to the standard more common air-to-water heat pump, although are slightly less efficient than the standard air-to-water heat pump. These systems comprise a continuous extract (MEV) ventilation system, taking the heat from the dwelling and putting it back into the heating and hot water.

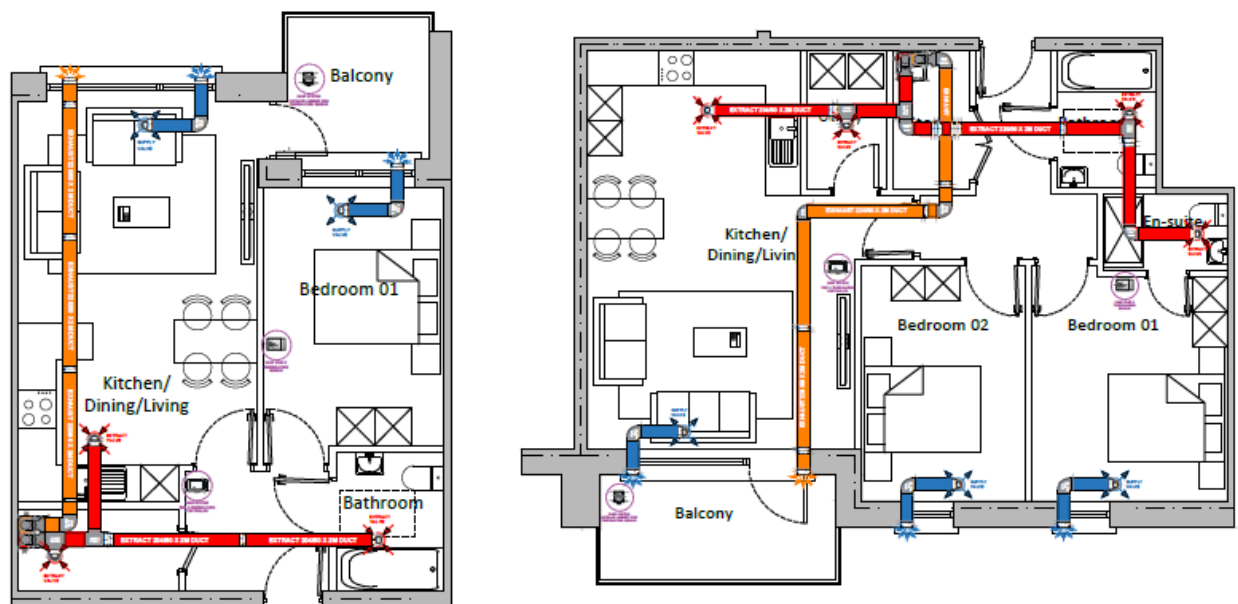
They can generally provide up to 5kW of energy which is sufficient for flats of up to 150m² in floor area.

4.2. Heating & Domestic Hot Water

The space heating emitters can be either radiators or underfloor heating, although it should be noted that the radiator size will be larger than for a more traditional heating system.

Domestic hot water will also be produced by the Exhaust Air Heat pump, utilising a pre-packaged cylinder. It is recommended that this cylinder is 200 litre capacity.

4.3. Typical Layouts



5. Energy Monitoring “Be Seen”

Policy SI 2 of The London Plan includes a fourth tier to the energy hierarchy to help major developments achieve the goals of net-zero carbon. This new hierarchy proposes energy monitoring post-construction. Performance of the development will be monitored and reported post-occupation. The relevant parties will also be made aware of their responsibilities.

In line with GLA guidance on Be Seen Energy Monitoring (September 2021), this monitoring strategy will cover the operational phase of the development for at least 5 years.

With regards to this development, the elements to be monitored as part of this monitoring strategy shall include primarily:

- Individual Exhaust Air Heating Pumps (EAHP)

5.1. Reporting

Applicants will need to report against the performance indicators at each stage of the process by downloading the ‘be seen’ reporting spreadsheet from the ‘be seen’ of the GLA’s website. Once the information has been completed the spreadsheet should be emailed back to:

ZeroCarbonPlanning@london.gov.uk.

These stages include and can be noted as:

Stage 1) *Within 8 weeks of the grant of planning permission, the Owner shall submit to the GLA accurate and verified estimates of the ‘Be Seen’ energy performance indicators*

This should be submitted to the GLA in accordance with the ‘Be Seen’ energy monitoring guidance using the ‘Be Seen’ planning stage reporting webform (<https://www.london.gov.uk/whatwe-do/planning/implementing-london-plan/london-plan-guidance-and-spgs/beseen-energy-monitoring-guidance>).

Performance Indicator group	Description
 Contextual data	• Information on quality assurance mechanisms
 Plant parameters Energy centre inputs	• Grid electricity consumption (kWh) • Gas consumption (kWh) • Other fuels consumption (kWh)
 Plant parameters Efficiency & contribution of each heating/cooling generation plant	• Energy input to each heating/cooling energy conversion plant (kWh for each energy carrier) • Energy output from each heating/cooling energy conversion plant (kWh for each energy carrier)

Performance indicator group	Description
 Plant parameters Network efficiency data	• Total district heating (and/or cooling) output from production centre • Total district heating/ cooling supplied to customers (kWh)
 Plant parameters Third party DHN networks	• District heating/cooling energy import (kWh) • District heating/cooling exported (to outside development) (kWh)
 Renewable energy	• Renewable electricity generation (gross) (kWh) • Solar thermal heat generation (kWh) • Renewable electricity exported (kWh) • Renewable electricity used on-site (kWh)
 Energy storage equipment	• Battery storage capacity (kWh) • Net electricity flow to EVs (kWh)

Stage 2) Prior to each unit being occupied, the Owner shall provide updated accurate and verified 'as-built' design estimates of the 'Be Seen' energy performance indicators for each Reportable Unit of the development, as per the methodology outlined in the 'As-built stage' chapter / section of the GLA 'Be Seen' energy monitoring guidance (or any document that may replace it)

All data and supporting evidence should be submitted to the GLA using the 'Be Seen' as-built stage reporting webform <https://www.london.gov.uk/whatwe-do/planning/implementing-london-plan/london-plan-guidance-and-spgs/beseen-energy-monitoring-guidance>

The owner should also confirm that suitable monitoring devices have been installed and maintained for the monitoring of the in-use energy performance indicators, as outlined in the 'In-use stage' of the GLA 'Be Seen' energy monitoring guidance document (or any document that may replace it).

Stage 3) Upon completion of the first year of Occupation or following the end of the Defects Liability Period (whichever is the later) and at least for the following four years after that date, the Owner is required to provide accurate and verified annual in-use energy performance data for all relevant indicators under each Reportable Unit of the development as per the methodology outlined in the 'In-use stage' chapter / section of the GLA 'Be Seen' energy monitoring guidance document (or any document that may replace it)

All data and supporting evidence should be submitted to the GLA using the 'Be Seen' in-use stage reporting webform <https://www.london.gov.uk/what-wedo/planning/implementing-london-plan/london-plan-guidance-and-spgs/beseen-energy-monitoring-guidance>

This obligation will be satisfied after the Owner has reported on all relevant indicators included in the 'In-use stage' chapter of the GLA 'Be Seen' energy monitoring guidance document (or any document that may replace it) for at least five years. Timings may need to be adjusted to account for the large, phased developments, particularly for energy centre reporting, as per the relevant section of the 'Be Seen' energy monitoring guidance document.

The same spreadsheet will be used for all stages of the process featuring separate tabs for each reporting stage (i.e. planning stage, as-built stage, in-use stage – see Figure 7).

Stage 4) In the event that the 'In-use stage' evidence submitted under Clause c) shows that the 'As-Built stage' performance estimates derived from Clause b) have 'Be Seen' energy monitoring not been or are not being met, the Owner should investigate and identify the causes of underperformance and the potential mitigation measures and set these out in the relevant comment box of the 'Be Seen' in-use stage reporting webform. An action plan comprising measures identified in Clause c) shall be submitted to and approved in writing by the GLA, identifying measures which would be reasonably practicable to implement and a proposed timescale for implementation. The action plan and measures approved by the GLA should be implemented by the Owner as soon as reasonably practicable.

5.2. Smart Metering

The necessary smart metering infrastructure will be installed to enable the collection of the indicators outlined above. These will be in line with the metering plans produced at as-built stage. Information will be submitted on the third-party quality assurance mechanisms that have been adopted for the data and metering arrangements. These will be provided for the individual flats of the development.

To submit in-use data, and in line with national metering requirements, the developer/building owner will ensure that individual smart meters are installed in each dwelling. The developers will include the necessary level of submetering and/or smart meters to enable this level of granularity which will be useful for occupants and developers. This will be in line with national metering requirements.