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**Revised Energy Strategy
– Condition 28a**

Peabody Trust, Catalyst by Design
and Hill Residential Limited

St Ann's Phase 1A

Draft

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Executive Summary

This report summarises the latest proposed energy strategy for the development at St Ann's Phase 1A, in the London Borough of Haringey. The aim of this report is to show that the energy strategy meets the targets set out in Condition 28(a) of the masterplan planning consent (HGY/2022/1833), to partly discharge the condition for the residential portion of Phase 1A.

The key energy strategy targets noted within the condition are as follows:

- > Achieve a minimum 26% CO₂ emissions reduction at the **Be Lean** stage, over a Part L 2013 baseline using SAP 10 emission factors.
- > Achieve a minimum 76.1% CO₂ emissions reduction overall, over a Part L 2013 baseline, using SAP 10 carbon emission factors.
- > Provide a minimum 178 kWp across Phase 1A of the development.
- > Offset any remaining CO₂ emissions up to a standard of *Zero Carbon*, using the carbon offset price of £95/tonne for a period of 30 years.

The proposed development will be built under Part L 2021 Building Regulations. However, in line with the requirements of Condition 28(a), the figures in this report are based over a Part L 2013 baseline, using SAP 10 carbon emission factors.

Phase 1A will provide 239 dwellings, including 26 houses, and 213 apartments. Work has not yet started on the non-residential, existing buildings on the scheme, and so this report focuses on the energy strategy for the new build residential dwellings. The strategy for the non-residential buildings will be reported on separately.

The energy strategy includes a range of **Be Lean** energy efficiency measures, including triple glazing and mechanical ventilation with heat recovery. This allows the development to achieve a **26.3%** reduction over a Part L 2013 baseline, using SAP 10 emission factors. This meets the **Be Lean** requirement of Condition 28(a) for the residential development.

In line with the consented masterplan energy strategy, a site wide heat network comprising air source heat pumps and electric boilers, will provide the space heating and hot water demand to all apartments on site. This delivers a further site wide CO₂ reduction of **33.1%**, using SAP 10 carbon emission factors. The houses will have heating and hot water supplied by individual air source heat pumps to each dwelling which is reported at the **Be Green** stage.

In line with the masterplan energy strategy, a number of **Be Green** renewable energy technologies are included as part of the energy strategy. Individual air source heat pumps will provide heating and hot water to the houses on the development. In addition, in line with Condition 28(a), 178 kWp of solar PV is proposed

for Phase 1A. This will be located on the roofs of Block C and Block D. These measures deliver a further site wide CO₂ reduction of **76.2%**, using SAP 10 carbon emissions.

Table *i*, below, summarises the anticipated site wide CO₂ emissions for Phase 1A of the St Ann's development. The combination of the **Be Lean**, **Be Clean** and **Be Green** measures, as outlined above, result in an overall **76.2%** reduction in CO₂ emissions over a Part L 2013 baseline, using SAP 10 carbon emission factors. This meets the targets set out in Condition 28(a) of the planning conditions.

The development will be built to Part L 2021 Building Regulations. Table *ii* shows the estimated performance over a Part L 2021 baseline.

The development will commit to offset the remaining CO₂ emissions through a carbon offset payment to the London Borough of Haringey. The remaining CO₂ emissions to be offset are estimated at **58.5 Tonnes CO₂ per annum**, based on the calculations over the Part L 2021 baseline. Using the carbon offset price of £95 per tonne of CO₂ for a period of 30 years, as outlined in the S106 agreement, the carbon offset payment is calculated to be **£166,725**.

Table *i*: Residential Carbon Dioxide Emissions and Savings after each stage of the Energy Hierarchy

Stage	Carbon Dioxide Emissions (Tonnes CO ₂ per Annum)	
	Regulated	
Baseline: Part L 2013 Compliant Development	279	
After <i>Be Lean</i> Measures	205	
After <i>Be Clean</i> Measures	113	
After <i>Be Green</i> Measures	66	
Stage	Regulated Carbon Dioxide Savings	
	Tonnes CO ₂ per Annum	Percentage
Savings from <i>Be Lean</i> Measures	73	26.3%
Savings from <i>Be Clean</i> Measures	92	33.1%
Savings from <i>Be Green</i> Measures	47	16.8%
Cumulative On-Site Savings	212	76.2%

Table ii: Regulated Carbon Dioxide Emissions over a Part L 2021 baseline

Stage	Carbon Dioxide Emissions (Tonnes CO ₂ per Annum)
	Residential
Part L 2021 Baseline	231.0
Final Energy Strategy	58.5
Total Emissions Reduction	172.5
Percentage Reduction	74.7%

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1. INTRODUCTION

- 1.1** This document has been prepared by Hodkinson Consultancy, a specialist energy and environmental consultancy for planning and development.
- 1.2** This document sets out the energy strategy on behalf of Peabody Trust, Catalyst by Design and Hill Residential Limited ('The Developer') for Phase 1A of the St Ann's development, located in the London Borough of Haringey.
- 1.3** The site benefits from planning consent (HGY/2022/1833), with a masterplan Energy Statement prepared by XCO2 (May 2022) which sets the site wide energy strategy. Condition 28(a) of the consent sets out the energy requirements for Phase 1A of the development, including the following targets:
- > A minimum residential 26% CO₂ emissions reduction at the **Be Lean** stage (over Part L 2013, with SAP 10 emission factors);
 - > A minimum residential 76% CO₂ emissions reduction overall (over Part L 2013, with SAP 10 emission factors);
 - > A minimum 178 kWp located within Phase 1A of the development.
- 1.4** This report aims to partially discharge the condition by presenting the energy strategy for the residential part of Phase 1A. The non-residential buildings will be addressed separately.
- 1.5** Detailed design work has started for Phase 1A, and therefore this reports demonstrates the performance of the latest design information available.
- 1.6** The aims of the energy strategy are summarised as follows:
- > To provide comfortable high-quality homes that people aspire to live in;
 - > To be low carbon from the outset, with plans for further decarbonisation;
 - > To take account of specific site characteristics that link to the energy strategy, for instance, acoustics and air quality;
 - > To supply a resilient supply of reasonably priced heat to residents;
 - > To address the requirements of the planning consent, as well as relevant Building Regulations.

2. DEVELOPMENT OVERVIEW

- 2.1** The development is located in the London Borough of Haringey, at the St Ann's hospital site, as shown in Figure 1, below.



Figure 1: Site location - circled in red (Google Maps 2023)

- 2.2** Figure 2 shows the proposed site plan for Phase 1A.

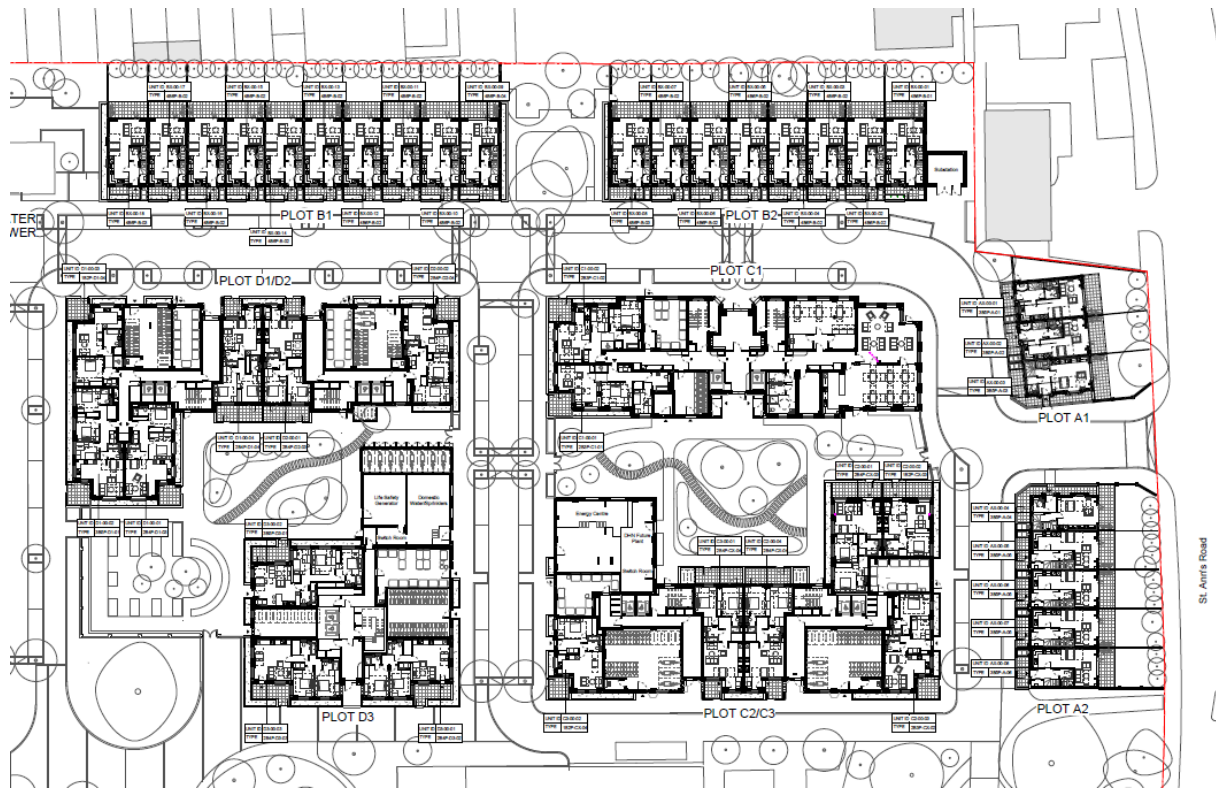


Figure 2: Proposed Site Layout – KCA, August 2023

3. PLANNING CONDITIONS

3.1 A hybrid planning consent was granted in 2022 for the site (HGY2022/1833). This consisted of detailed consent for Phase 1A and outline consent for Phases 1B, 2 and 3. The aim of this report is to partly discharge Condition 28(a) of the decision notice, for the residential portion of the development, relating to the energy strategy for Phase 1A of the development, as below.

3.2 Condition 28 – Revised Energy Statement

“(a) Prior to the commencement of above ground works to Phase 1a, a Revised Energy Strategy shall be submitted to and approved by the Local Planning Authority. This shall be based on the approved Energy Strategy prepared by XCO2 (dated October 2022), delivering as a minimum a 76.1% (new build) and 56.6% (refurbishment) improvement on carbon emissions over 2013 Building Regulations Part L, with SAP 10 emission factors, high fabric efficiencies, a low-carbon heating strategy, and a minimum 178 kWp solar photovoltaic (PV) array. The strategy will set out:

- Confirmation of how this phase will meet the zero carbon policy requirement in line with the Energy Hierarchy;*
- Confirmation of achieving the highest possible fabric improvements, aiming for a minimum reduction of 26% reduction under Be Lean;*
- Specifications, location, pipework routes for the proposed heating and ventilation strategies;*
- Confirmation of the annual and peak space heating demand of the retained and new buildings;*
- Air tightness testing results and strategy to improve air tightness in the existing buildings;*
- Strategy to reduce thermal bridging and insulation of existing buildings;*
- Confirmation that the two large retained buildings will be connected to the Phase 1a heat network;*
- Confirmation and details of how Phase 1a will form part of a site-wide heat network in future phases;*
- How the solar PVs have been maximised on Blocks A, C and D, and the retained buildings;*
- The proposed heating, renewable energy and ventilation strategies (including their efficiency, output, location and pipework layout);*
- A metering strategy.*

The final agreed energy strategy shall be installed and operation prior to the first occupation of the development. The development shall be carried out strictly in accordance with the details so approved and shall be operated and maintained as such thereafter.

(b) The solar PV arrays must be installed and brought into use by block prior to the first occupation of that block. Two months prior to first occupation of that block, evidence that the solar PV arrays have been installed correctly shall be submitted to and approved by the Local Planning Authority, including photographs of the solar array, installer confirmation, and an energy generation statement for the period that the solar PV array has been installed.

Within six months of completion of each block, a final Energy Assessment must be submitted to the local planning authority to demonstrate achieved carbon emission savings on site. Evidence shall also

be submitted to the Local Planning Authority that the development has been registered on the GLA's Be Seen energy monitoring platform.

Reason: To ensure the development reduces its impact on climate change by reducing carbon emissions on site in compliance with the Energy Hierarchy, and in line with London Plan (2021) Policy SI2 and SI3, and Local Plan (2017) Policies of SP4 and DM22."

- 3.3** Condition 29 of the decision notice relates to the overheating strategy, and has been addressed in a separate report.

Summary of Requirements

- 3.4** In order to meet the requirements of Condition 28, this energy strategy aims to show that the residential portion of the development at Phase 1A will:
- > Achieve a minimum 26% CO₂ emissions reduction at the **Be Lean** stage, over a Part L 2013 baseline using SAP 10 emission factors.
 - > Achieve a minimum 76.1% CO₂ emissions reduction overall, over a Part L 2013 baseline, using SAP 10 carbon emission factors.
 - > Provide a minimum 178 kWp across Phase 1A of the development.
 - > Offset any remaining CO₂ emissions up to a standard of *Zero Carbon*, using the carbon offset price of £95/tonne for a period of 30 years as outlined in the S106 agreement.

4. ASSESSMENT METHODOLOGY – BASELINE EMISSIONS

- 4.1** This statement first establishes a baseline assessment of the energy demands and associated CO₂ emissions for the proposed development. The energy strategy then follows the GLA hierarchy approach of **Be Lean, Be Clean, Be Green** and **Be Seen**.
- 4.2** The development is expected to be built under Part L 2021 Building Regulations. However, in line with Condition 28(a) of the decision notice, this report shows that targets over a Part L 2013 baseline, using SAP 10 carbon emission factors, have been achieved. Through the design process, the energy strategy is being developed to ensure that Part L 2021 compliance is also achieved.
- 4.3** The estimated annual energy demand for dwellings has been calculated using Standard Assessment Procedure (SAP) methodology. SAP calculates the regulated energy demands associated with hot water, space heating demand and fixed electrical items.
- 4.4** Calculations have been performed on representative dwelling types. These encompass an array of flat and house types which differ in orientation and size, and take into account a mix of ground floor, mid floor and top floor apartments. The selected dwellings therefore represent a fair aggregation of the proposed unit mix.
- 4.5** The performance of the sample dwelling types has then been extrapolated to reflect the whole of Phase 1A.

Baseline Emissions

- 4.6** A baseline calculation has been carried out to establish the regulated CO₂ emissions by which this energy strategy will be compared against. Table 1, below, shows the Part L 2013 regulated baseline CO₂ emissions rate, using SAP 10 emission factors. TER worksheets supporting this calculation are in Appendix A.

Table 1: Carbon Dioxide Emissions Baseline (SAP 10 Carbon Emission Factors)	
	Regulated [T CO ₂ /year]
Residential	279

5. BE LEAN – ENERGY EFFICIENCY

- 5.1 This section describes how the development has been designed to achieve the **Be Lean** requirements of Condition 28(a) of the planning permission (REF:HGY/2022/1833).

Insulation Standards

- 5.2 The detailed design stage is in progress, the fabric energy performance outlined below have been calculated from the current proposed build ups for the development.
- 5.3 All dwellings will incorporate enhanced insulation in the building envelope (walls, roofs, floors and glazing) to achieve the following U-values:
- > Glazing with a U-value of 0.80 W/m²K;
 - > External wall U-value of 0.15 W/m²K for apartments, and 0.16 W/m²K for houses;
 - > Apartment corridors assumed to have no active heating. Wall U-value of 0.15 W/m²K (with a shelter factor applied);
 - > Party walls to be fully filled and insulated (achieving an effective U-value of 0.00 W/m²K);
 - > Exposed/Ground floor U-values of 0.12 W/m²K;
 - > Main roof U-values of 0.10 W/m²K for apartments and 0.11 W/m²K for houses.

Air Tightness and Ventilation

- 5.4 Air tightness standards will confirm to, and exceed, Approved Document Part L requirements. By reducing air leakage loss and convective bypass of insulation, an improvement of design air permeability rate from 8m³/h.m² to 3.0 m³/h.m² or less (for houses) or 2.5 m³/h.m² (for apartments) will further reduce space heating demands.
- 5.5 Mechanical Ventilation with Heat Recovery (MVHR) will be installed in all dwellings. These systems will remove stale air and odours from kitchens and wet rooms, whilst retaining the heat within the home, as shown in Figure 3, below. In this way, substantial energy savings will be made.

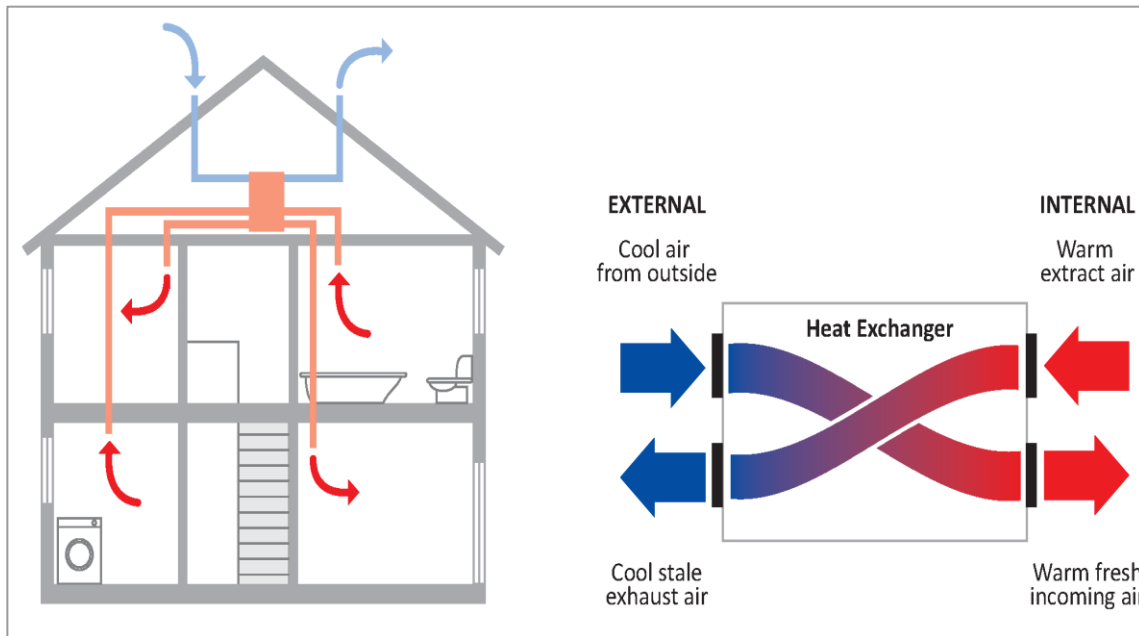


Figure 3: MVHR in operation

- 5.6** The overheating analysis, summarised in a separate report, proposes the use of MVHR units which are compatible with bolt-on peak-lopping units for the dwellings that are most affected by external noise. There are limited products available with this option, and those that are available generally have lower efficiencies than standard MVHR units. Therefore, two separate systems are proposed to maximise energy performance in the dwellings that do not have noise constraints. The proposed performance of each system is summarised in Table 2, below.

Table 2: MVHR Performance – Phase 1A Dwellings

	Noise Affected Dwellings	All Other Dwellings
Dwellings with 1 wet room + kitchen	SFP – 0.56 W/l/s Heat recovery – 87%	SFP – 0.52 W/l/s Heat recovery – 92%
Dwellings with 2 wet rooms + kitchen	SFP – 0.68 W/l/s Heat recovery – 87%	SFP – 0.65 W/l/s Heat recovery – 92%

- 5.7** Additionally, where possible, all homes will have openable windows and therefore the ability to naturally ventilate should the occupant desire. This is restricted in some scenarios, on some facades. This has been taken account in the accompanying Overheating Report.

Thermal Bridging

5.8 In well insulated buildings, as much as 30% of heat loss can occur through thermal bridges, which occur when highly conductive elements (e.g metal studs) in the wall construction enable a low resistance escape route for heat. The Applicant is committed to delivering a development which prioritises the conservation of energy through lean design and has therefore placed particular importance on the development of construction details which minimise the effect of thermal bridges.

5.9 Figure 4 below illustrates the benefits of reducing thermal bridges.

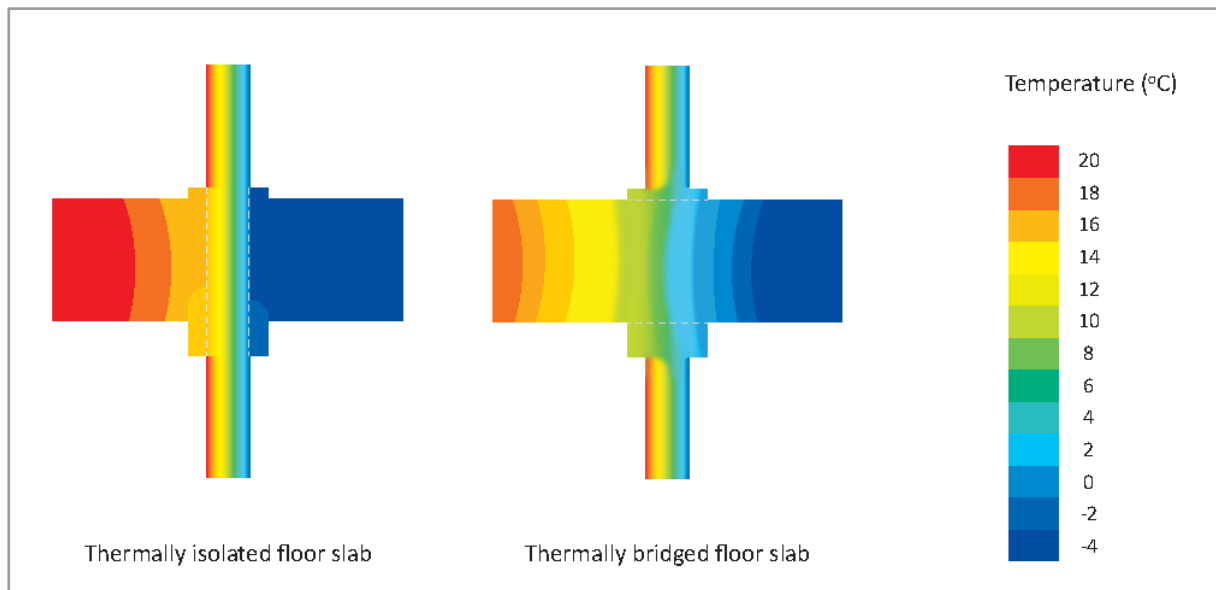


Figure 4: Thermal Bridging

5.10 Bespoke thermal bridging psi value calculations have been completed for the proposed development. The achieved performance is summarised below and has been accounted for within the SAP calculations. For any junctions that have not been calculated, default performance is used.

5.11 The calculated thermal bridging performance is as follows:

- > Lintels (apartments) – 0.021 W/mK;
- > Lintels (houses) – 0.049 W/mK;
- > Sill (apartments) – 0.086 W/mK;
- > Jamb (apartments) – 0.098 W/mK;
- > Ground floor (apartments) – 0.089 W/mK;

- > Exposed floor (apartments) – 0.13 W/mK;
- > Intermediate floor (apartments) – 0.129 W/mK;
- > Balcony between dwellings (apartments) – 0.597 W/mK;
- > External corner (houses) – 0.06 W/mK;
- > Party corner (apartments) – 0.053 W/mK;
- > Party corner (houses) – 0.053 W/mK;
- > Party roof (apartments) – 0.029 W/mK;
- > Party roof (houses) – 0.055 W/mK.

Space Heating & Hot Water

- 5.12** The space heating requirement will be reduced by the fabric, air tightness and ventilation measures detailed above.
- 5.13** In line with the masterplan energy strategy, a gas boiler baseline has been used in the **Be Lean** stage assessment. An efficiency of 95% has been assumed.
- 5.14** The final energy strategy will be for the apartments to connect to the proposed St Ann's site wide heat network. Further details of this will be outlined at the **Be Clean** stage. The houses will be heated by individual Air Source Heat Pumps (ASHP) in line with the consented energy strategy. This will be reflected in the **Be Green** stage calculations.

Lighting and Appliances

- 5.15** Energy efficient lighting will be installed in 100% of internal fittings in the homes.
- 5.16** It is very difficult to design and construct homes to reduce the unregulated electricity demands because this is almost entirely dependent on the occupant of a home and can vary substantially. However, the Developer is committed to ensuring that all efforts are made to enable the residents to minimise their unregulated electricity consumption.

Limiting the Risk of Summer Overheating

- 5.17** Minimising the risk of summer overheating is important so as to ensure that homes are adapted to climate change and remain comfortable to occupy in the future. Accordingly, dynamic thermal modelling has been undertaken on a selection of unit types to ensure that the development does not cause an unacceptable risk of summer overheating within the dwellings.

5.18 The full results of the overheating analysis are presented in a separate Dynamic Overheating Report, with results and detailed mitigation strategies. As a summary, the main points impacting the energy strategy are:

- > Solar control glazing (g-value) to reduce uncomfortable solar gains. A g-value of 0.42 has been used for West, East and South facades, and a g-value of 0.50 on North facades.
- > Openable windows used as the primary means of ventilation where there is minimal noise risk.
- > Air tempering bolt-on to MVHR proposed for dwellings with window opening limitations due to external noise.

CO₂ Emissions at *Be Lean* Stage

5.19 Table 3, below, shows the site wide estimated Regulated CO₂ emissions following the ***Be Lean*** measures outlined above for Phase 1A. As shown, these result in a CO₂ emissions reduction of 26.3% over a Part L 2013 baseline, assuming SAP 10 carbon emission factors. This meets the requirements of Condition 28(a). DER worksheets supporting these calculations can be found in Appendix A.

**Table 3: Regulated Carbon Dioxide Emissions at *Be Lean* Stage
(SAP 10 carbon emission factors)**

Stage	Carbon Dioxide Emissions (Tonnes CO ₂ per Annum)
	Residential
Baseline: Part L 2013 Compliant Development	279
After <i>Be Lean</i> Measures	205
Total Emissions Reduction	73
Percentage Reduction	26.3%

6. BE CLEAN – DECENTRALISED ENERGY

Masterplan Heating Strategy

- 6.1** As outlined in the masterplan energy strategy by XCO2 (May 2022), there will be a site wide heat network for the St Ann's development, of which the apartments in Phase 1A will be connected to.
- 6.2** The masterplan energy strategy concluded that due to the phasing of land ownership and availability, a single centralised energy centre would not be compatible. Because of this, three energy centres are planned for the network (Phase 1A, 1B/2, and 3). Therefore, the Phase 1A energy centre will be sized to meet the demands of Phase 1A only. However, it will connect to the other phases of the network once they become operational too.
- 6.3** The energy centre for Phase 1A is located within Plot C2/C3. A schematic of the energy centre can be found in Appendix B, with a plan showing the primary pipework route in Appendix C.
- 6.4** As set out in the masterplan energy statement, the site network will generate heat from the following sources:
- > ASHPs – 95% of heat demand (primary source);
 - > Electric boilers – 5% of heat demand.
- 6.5** The full design of the heat network is not yet finalised, but the efficiencies of the network will be optimised as far as possible. For the purpose of this report, a Seasonal Coefficient of Performance (SCOP) of 3.20 has been assumed for the heat pumps. This aligns with the propane-based heat pumps such as the Thermonova models which are currently under consideration. The efficiency of the electric boilers is assumed to be 95%. This will be optimised through the detailed design.
- 6.6** A distribution loss factor of 1.05 has been used in the SAP calculations (as per SAP 2012 default allowances). It is understood that this underestimates actual network losses, even with an excellent design adhered to. However, this factor has been used to be consistent with the masterplan energy calculations. Heat losses will be minimised as far as possible through the detailed design stage, but it is expected that actual loss factor within the final Part L 2021 calculations will be higher.
- 6.7** With the electricity grid projected to continue to decarbonise into the 2020s and 2030s, the heat pump and electric boiler strategy will ensure that the site continues to improve its carbon performance even after occupation.

CO₂ Emissions at *Be Clean* Stage

6.8 Table 4, below, shows the Regulated CO₂ emission reductions following the application of ***Be Clean*** measures. DER worksheets to support these calculations are in Appendix D.

Table 4: Regulated Carbon Dioxide Emissions at <i>Be Clean</i> Stage (SAP 10 carbon emission factors)	
Stage	Carbon Dioxide Emissions (Tonnes CO₂ per Annum)
	Residential
After <i>Be Lean</i> Measures	205
After <i>Be Clean</i> Measures	113
Total Emissions Reduction	92
Percentage Reduction	33.1%

6.9 Table 5, below, shows the expected space heating demand of the proposed development.

Table 5: Space Heating Demand	
Building Use	Space Heating Demand (kWh/m²/year)
Phase 1A Residential	18.05

7. BE GREEN – RENEWABLE ENERGY TECHNOLOGIES

- 7.1 The final part of the energy hierarchy is **Be Green** which seeks for renewable energy technologies to be specified to provide, where feasible, a reduction in expected CO₂ emissions.
- 7.2 The Applicant has already demonstrated a clear commitment to applying renewables across the site with the inclusion of ASHPs as the lead heat source on the heat network to supply heating and hot water to all apartments.
- 7.3 In line with the masterplan energy strategy, the following renewable energy technologies are proposed for Phase 1A of the development.

Air Source Heat Pumps

- 7.4 Individual ASHPs are expected to be used for all houses on the proposed development. The houses have utilised a space heating COP of 3.6.

Photovoltaic (PV) Panels

- 7.5 In line with condition 28 and the masterplan energy strategy, 178 kWp of solar PV is proposed for Phase 1A of the development. It is proposed that 78 kWp is located on the roof of Block C, and 100 kWp located on the roof of Block D. An indicative roof plan is located in Appendix E.
- 7.6 Panels should be positioned at an angle of 5-10 degrees towards a southerly direction.

CO₂ Emissions at *Be Green* Stage

- 7.7 Table 6, below, shows the regulated CO₂ emission reductions following the application of the **Be Green** measures as outlined above, assuming SAP 10 carbon emission factors. DER worksheets supporting these calculations are in Appendix F.

Table 6: Regulated Carbon Dioxide Emissions at *Be Green* Stage (SAP 10 carbon emission factors)

Stage	Carbon Dioxide Emissions (Tonnes CO ₂ per Annum)
	Residential
After <i>Be Clean</i> Measures	113
After <i>Be Green</i> Measures	66
Total Emissions Reduction	47
Percentage Reduction	16.8%

Part L 2021 Energy Performance

- 7.8 The development at St Ann's Phase 1A will be built under Part L 2021 building regulations. Table 7, below, summarises current estimated energy performance over a Part L 2021 baseline, using the assumptions outlined throughout this report following all *Be Lean*, *Be Clean* and *Be Green* measures.

Table 7: Regulated Carbon Dioxide Emissions over a Part L 2021 baseline

Stage	Carbon Dioxide Emissions (Tonnes CO ₂ per Annum)
	Residential
Part L 2021 Baseline	231.0
Final Energy Strategy	58.5
Total Emissions Reduction	172.5
Percentage Reduction	74.7%

8. BE SEEN – ENERGY MONITORING

- 8.1 The London Plan introduces a fourth stage to the energy hierarchy; the *Be Seen* stage, which proposes monitoring and reporting of the actual operational energy performance of major developments for at least five years.
- 8.2 An effectively implemented post-construction monitoring regime can have several benefits including environmental (e.g. reduced grid infrastructure strain, carbon emissions reduction) and socio-economic (e.g. reduced occupants bills and raised awareness around energy use).
- 8.3 The *Be Seen* stage aims to monitor the actual energy and carbon performance of buildings and compare with the estimated figures put forward at both planning and as-built stages. This will assist with achieving a zero-carbon London and determining the effectiveness of the incumbent policies.
- 8.4 The figure below outlines the three stages for submission of information, and who is responsible for compiling all necessary outputs.

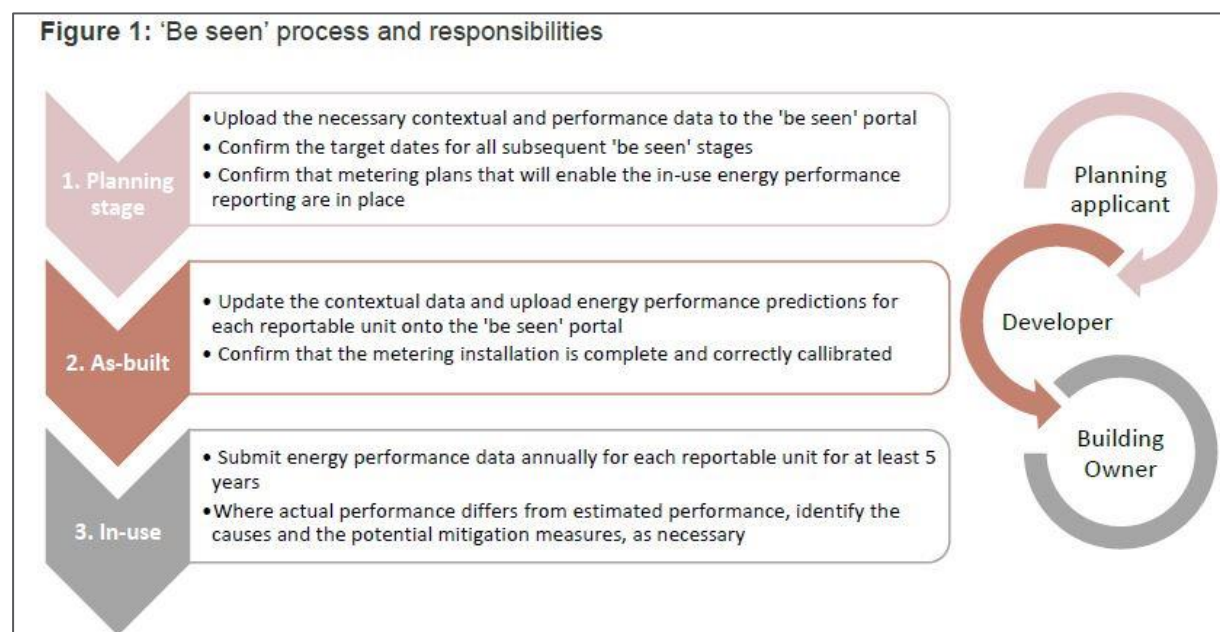


Figure 5: *Be Seen* Stages

- 8.5 See Appendix G for a proposed metering and monitoring plan for Phase 1A.

9. ZERO CARBON

- 9.1** The proposed development is required to achieve a minimum on-site CO₂ reduction of 76.1% beyond Part L 2013 using SAP 10 carbon emission figures.
- 9.2** In addition to this, the development is also subject to an additional off-setting contribution to meet a total 100% reduction in Regulated CO₂ emissions in order to achieve a standard of *Zero Carbon*.
- 9.3** As the site will be built to Part L 2021, the carbon offsetting contribution has been based on this calculation. The residual 58.5 tonnes of CO₂, as shown in Table 7, will therefore be subject to an offsetting price of £95/tonne for a period of 30 years (as per London Plan requirements and in line with the XCO2 masterplan strategy).
- 9.4** Table 8, below, shows the calculated carbon offsetting cost to the application, following the **Be Lean, Be Clean** and **Be Green** measures outlined in this report.

Table 8: Carbon Offset Payment		
Stage	Residual CO ₂ (Tonnes)	Offset Payment (£95/tonne/30yrs)
Residential	58.5	£166,725

10. SUMMARY

- 10.1** This report summarises the latest proposed energy strategy for the development at St Ann's Phase 1A, in the London Borough of Haringey. The aim of this report is to show that the energy strategy meets the targets set out in Condition 28(a) of the masterplan planning consent (HGY/2022/1833), to partly discharge the condition for the residential portion of Phase 1A.
- 10.2** The key energy strategy targets noted within the condition are as follows:
- > Achieve a minimum 26% CO₂ emissions reduction at the **Be Lean** stage, over a Part L 2013 baseline using SAP 10 emission factors.
 - > Achieve a minimum 76.1% CO₂ emissions reduction overall, over a Part L 2013 baseline, using SAP 10 carbon emission factors.
 - > Provide a minimum 178 kWp across Phase 1A of the development.
 - > Offset any remaining CO₂ emissions up to a standard of *Zero Carbon*, using the carbon offset price of £95/tonne for a period of 30 years.
- 10.3** The proposed development will be built under Part L 2021 Building Regulations. However, in line with the requirements of Condition 28(a), the figures in this report are based over a Part L 2013 baseline, using SAP 10 carbon emission factors.
- 10.4** Phase 1A will provide 239 dwellings, including 26 houses, and 213 apartments. Work has not yet started on the non-residential, existing buildings on the scheme, and so this report focuses on the energy strategy for the new build residential dwellings. The strategy for the non-residential buildings will be reported on separately.
- 10.5** The energy strategy includes a range of **Be Lean** energy efficiency measures, including triple glazing and mechanical ventilation with heat recovery. This allows the development to achieve a **26.3%** reduction over a Part L 2013 baseline, using SAP 10 emission factors. This meets the **Be Lean** requirement of Condition 28(a) for the residential development.
- 10.6** In line with the consented masterplan energy strategy, a site wide heat network comprising air source heat pumps and electric boilers, will provide the space heating and hot water demand to all apartments on site. This delivers a further site wide CO₂ reduction of **33.1%**, using SAP 10 carbon emission factors. The houses will have heating and hot water supplied by individual air source heat pumps to each dwelling which is reported at the **Be Green** stage.
- 10.7** In line with the masterplan energy strategy, a number of **Be Green** renewable energy technologies are included as part of the energy strategy. Individual air source heat pumps will provide heating and hot water to the houses on the development. In addition, in line with Condition 28(a), 178 kWp

of solar PV is proposed for Phase 1A. This will be located on the roofs of Block C and Block D. These measures deliver a further site wide CO₂ reduction of **76.2%**, using SAP 10 carbon emissions.

- 10.8** Table *i*, below, summarises the anticipated site wide CO₂ emissions for Phase 1A of the St Ann's development. The combination of the ***Be Lean***, ***Be Clean*** and ***Be Green*** measures, as outlined above, result in an overall **76.2%** reduction in CO₂ emissions over a Part L 2013 baseline, using SAP 10 carbon emission factors. This meets the targets set out in Condition 28(a) of the planning conditions.
- 10.9** The development will be built to Part L 2021 Building Regulations. Table 10 shows the estimated performance over a Part L 2021 baseline.
- 10.10** The development will commit to offset the remaining CO₂ emissions through a carbon offset payment to the London Borough of Haringey. The remaining CO₂ emissions to be offset are estimated at **58.5 Tonnes CO₂ per annum**, based on the calculations over the Part L 2021 baseline. Using the carbon offset price of £95 per tonne of CO₂ for a period of 30 years, as outlined in the S106 agreement, the carbon offset payment is calculated to be **£166,725**.

Table 9: Residential Carbon Dioxide Emissions and Savings after each stage of the Energy Hierarchy

Stage	Carbon Dioxide Emissions (Tonnes CO ₂ per Annum)	
	Regulated	
Baseline: Part L 2013 Compliant Development	279	
After <i>Be Lean</i> Measures	205	
After <i>Be Clean</i> Measures	113	
After <i>Be Green</i> Measures	66	
Stage	Regulated Carbon Dioxide Savings	
	Tonnes CO ₂ per Annum	Percentage
Savings from <i>Be Lean</i> Measures	73	26.3%
Savings from <i>Be Clean</i> Measures	92	33.1%
Savings from <i>Be Green</i> Measures	47	16.8%
Cumulative On-Site Savings	212	76.2%

Table 10: Regulated Carbon Dioxide Emissions over a Part L 2021 baseline	
Stage	Carbon Dioxide Emissions (Tonnes CO ₂ per Annum)
	Residential
Part L 2021 Baseline	231.0
Final Energy Strategy	58.5
Total Emissions Reduction	172.5
Percentage Reduction	74.7%

APPENDICES

Appendix A: TER / DER Worksheets – *Be Lean*

Appendix B: Energy Centre Schematic

Appendix C: Primary Heat Network Pipework Route

Appendix D: TER / DER Worksheets – *Be Clean*

Appendix E: Proposed Roof Plan

Appendix F: TER / DER Worksheets – *Be Green*

Appendix G: Monitoring and Metering Plan