Consult Sustainability

Energy Statement

Project:	**Land rear of 57 Warminster Road, South Norwood, London, SE25 4DF**
Client:	**Frankham Projects Ltd** Irene House, 7b Five Arches Business Park, Maidstone Rd, Sidcup DA14 5AE
Local Authority:	**London Borough of Croydon** Bernard Weatherill House, 8 Mint walk, Croydon CR0 1EA
Architect:	**Gebhard and Goodwin Architects Ltd** Broad House, The Broadway, Old Hatfield, Hertfordshire AL9 5BG
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Revision:	04

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1. Executive Summary

Scope	Consult Sustainability has been appointed to prepare an energy statement for the proposed development located on land rear of 57 Warminster Road, South Norwood, London, SE25 4DF, in support of planning approval for the scheme detailed below.
Description	New build development to create eight residential apartment dwellings in a single, three-storey block providing a mixture of one- & two-bedroom units. The scheme is not considered to be a 'major' development as defined under the London Plan planning policy.
Author	Mr S Searle MRICS (0854781) OCDEA (Elmhurst EES/022737).
Methodology	Energy demand and CO_2 emission figures are based on draft energy modelling undertaken using Design SAP10 software provided by Elmhurst Energy Systems Ltd. Calculations are based on the current Building Regulations (2021) applicable at the time of this report. 100% sample of units have been modelled to provide an accurate representation of the proposed site.
Planning	The development is located within the jurisdiction of the Croydon Council who support the requirements and targets set out in national and regional planning policy and guidance, in particular the requirements set out in the Mayor's London Plan (2021) Policy SI 2 & SI 3 regarding minimising greenhouse gas emissions and energy infrastructure. Croydon Council's SP6.3 requires new-build residential development of fewer than 10 units to achieve the national technical standard for energy efficiency in new homes which is set at a minimum of 19% CO_2 reduction beyond the Building Regulations Part L (2013). For the purposes of this report, all CO_2 emission figures are reported against Building Regulations Part L (2021) through the GLA Carbon Emission Reporting Spreadsheet.
Proposal	Following the energy hierarchy, this development will adopt the following strategy: **Be lean: use less energy and manage demand during operation** by constructing to high thermal performance standards with u-values exceeding minimum Building Regulation fabric targets as detailed under section 6.1 of this report. **Be clean: exploit local energy resources (such as secondary heat) and supply energy efficiently and cleanly:** No opportunities are deemed to exist under this stage of the hierarchy as detailed under section 6.2 of this report. **Be green: maximise opportunities for renewable energy by producing, storing and using renewable energy on-site:** Introduce individual ASHP's to complete the energy strategy as detailed under section 6.3 of this report.

Summary

The development will follow the Mayor of London's London Plan requirements and achieve:

- **An average 11% reduction in regulated CO_2 emissions through enhanced building fabric measures as detailed under section 6.1 of this report.**
- **No opportunities are deemed to exist under the 'Clean' stage of the energy hierarchy.**
- **An average 54% reduction in regulated CO_2 emissions through the introduction of individual heat pumps as detailed under 6.3 of this report.**
- **An average 65% total reduction in regulated CO_2 emissions through the combined hierarchal measures, exceeding the Local Authority minimum target of 19%.**

2. Introduction

Consult Sustainability has been appointed to prepare an energy statement for the proposed development located on land rear of 57 Warminster Road, South Norwood, London, SE25 4DF, in support of planning approval for the scheme detailed below.

The scheme comprises a new build development to create eight residential apartment dwellings in a single, three-storey block providing a mixture of one- & two-bedroom units. The scheme is not considered to be a 'major' development as defined under the London Plan planning policy.

This report has been prepared by Mr S Searle who is a Member of the Royal Institution of Chartered Surveyors (MRICS 0854781) and Accredited On-Construction domestic Energy Assessor (OCDEA Elmhurst EES/022737).

Energy demand and CO2 emission figures are based on draft energy modelling undertaken using Design SAP10 software provided by Elmhurst Energy Systems Ltd.

Calculations are based on the current Building Regulations (2021) applicable at the time of this report.

100% sample of units have been modelled to provide an accurate representation of the proposed site.

For the purposes of this report, all CO_2 emission figures are reported using the current GLA Carbon Emission Reporting Spreadsheet.

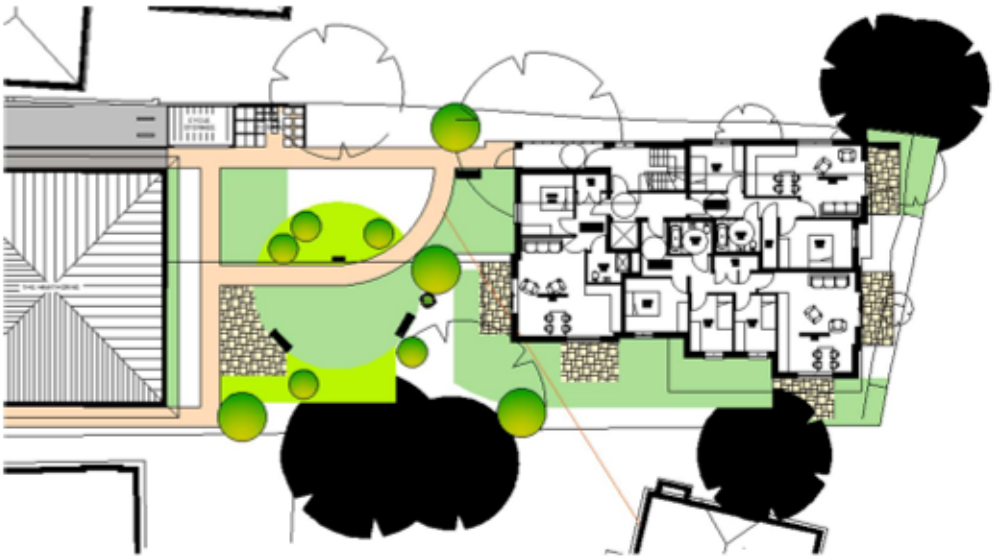
3. Site Specifics

Unit Schedule

Table 1

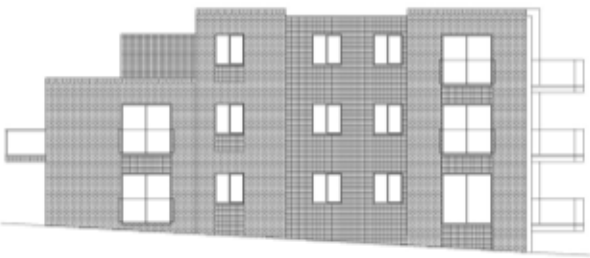
Plot	Floor Level	Type	GIFA (m^2)	Modelling Undertaken
1	G	1B2P	53	YES
2	G	2B3P	66	YES
3	G	3B4P	80	YES
4	1	1B2P	53	YES
5	1	2B3P	66	YES
6	1	3B4P	80	YES
7	2	2B3P	66	YES
8	2	3B4P	80	YES
		Total	**544**	

Site Plan

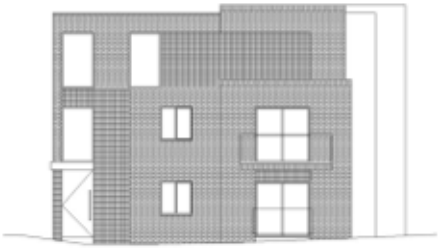


Sample Elevations

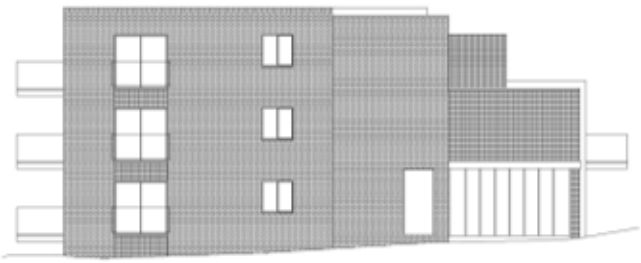
Flank South Elevation



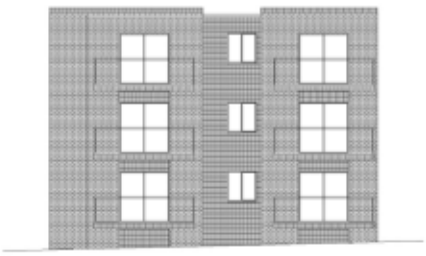
Front West Elevation



Flank North Elevation



Rear East Elevation



4. Planning Requirements

National Policy

At national level, National Planning Policy Framework (2023) sets out the Governments planning policies for England, identifying how the planning system should support the transition to a low carbon future in a changing climate, taking full account of flood risk and coastal change. The NPPF should help to shape places in ways that contribute to radical reductions in greenhouse gas emissions, minimise vulnerability and improve resilience; encourage the reuse of existing resources, including the conversion of existing buildings; and support renewable and low carbon energy and associated infrastructure.

Local planning authorities must 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 in line with the objectives and provisions of the Climate Change Act 2008.

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.

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.

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

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.

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.

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.

c) In the case of applications for the repowering and life-extension of existing renewable sites, give significant weight to the benefits of utilising an established site, and approve the proposal if its impacts are or can be made acceptable.

Spatial Development Strategy

At a strategic level, the London Plan (March 2021) sets out policies for the overall strategic plan for London, it sets out an integrated economic, environmental, transport and social framework for the development of London over the next 20-25 years. This policy includes:

Policy SI 2 Minimising greenhouse gas emissions.

The proposed development is not considered to be a 'major development' as defined under Annex Six of the London Plan and therefore no specific CO_2 reduction targets are applicable.

Developments should reduce 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.

Local Policy

Croydon Council support the strategy outlined in the Mayor of London's London Plan, detailed under the Croydon Local Plan 2018, Policy SP6: Environment and Climate Change.

Policy SP6: Environment and Climate Change

SP6.1 In order to reduce greenhouse gas emissions and deliver development that is adaptable in a changing climate, the Council will apply a presumption in favour of development provided applications meet the requirements of Policy SP6 and other applicable policies of the development plan.

Energy and carbon dioxide (CO_2) reduction

SP6.2 The Council will ensure that future development makes the fullest contribution to minimising carbon dioxide emissions in accordance with the London Plan energy hierarchy (use less energy, supply energy efficiently and use renewable energy), to assist in meeting local, London Plan and national CO_2 reduction targets. The Council will promote the development of district energy networks where opportunities exist due to high heat density or an increase in heat density brought about by new development.

Sustainable design and construction

SP6.3 The Council will seek high standards of sustainable design and construction from new development, conversion and refurbishment to assist in meeting local and national CO_2 reduction targets. This will be achieved by:

a. Requiring new-build residential development of fewer than 10 units to achieve the national technical standard for energy efficiency in new homes (2015). This is set at a minimum of 19% CO_2 reduction beyond the Building Regulations Part L (2013).

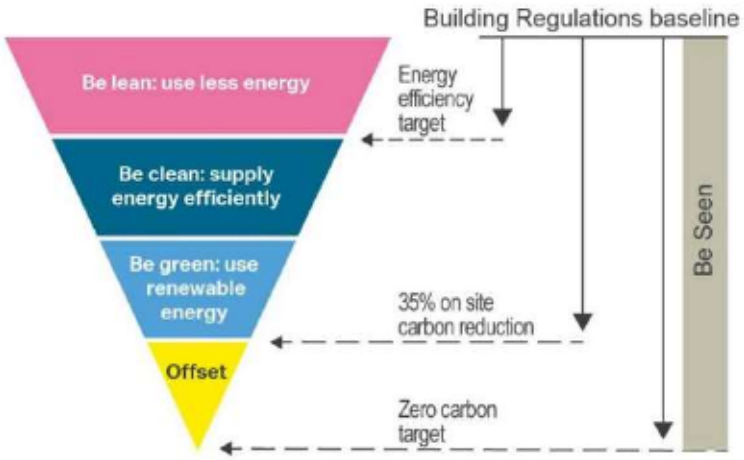
Planning Summary	**Croydon Council support the energy reduction strategy outlined in the London Plan planning policy. Developments should follow the Mayor of London's energy hierarchy to:** **1. Be lean: use less energy and manage demand during operation.** **2. Be clean: exploit local energy resources (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.** **New-build residential development of fewer than 10 units to achieve 19% CO_2 reduction beyond the Building Regulations Part L (2013).**

5. Energy Hierarchy

In line with the London Plan, development proposals of any scale are required to demonstrate sustainability principles by incorporating a series of measures outlined in the following energy hierarchy:

Be Lean	Use less energy and manage demand during operation through fabric and servicing improvements and the incorporation of flexibility measures.
Be Clean	Exploit local energy resources (such as secondary heat) and supply energy efficiently and cleanly by connecting to district heating networks.
Be Green	Maximise opportunities for renewable energy by producing, storing and using renewable energy on-site.
Be Seen	Monitor, verify and report on energy performance through the Mayor's post construction monitoring platform.

Figure 1: *The London Plan energy hierarchy*



6. Development Proposals

6.1 Be Lean

Energy efficiency measures for the building fabric are proposed to be incorporated to reduce the energy demand and CO_2 emission of the development.

The proposals include enhancement in building fabric to exceed minimum targets set under the current Building Regulations Approved Document L (2021) standards as outlined in Table 2 below.

Fabric Measures

Table 2	New Build Dwellings Approved Document L: Conservation of fuel and power		
Element	**Limiting U-values for new fabric elements (W/m²K)**	**Proposed Fabric U-values (W/m²K)**	**% Improvement over AD L1 2021**
External Walls	**0.26**	**0.18**	31%
Sheltered Walls	**0.26**	**0.18**	31%
Party Walls	**0.26**	**0.00**	100%
Roofs	**0.16**	**0.10**	38%
Floors	**0.18**	**0.10**	44%
Windows	**1.60**	**1.20**	25%
Doors	**1.60**	**1.20**	25%
Air tightness	**8.0m³/hr/m²**	**3.5m³/hr/m²**	56%

Thermal Bridging

In addition to the enhanced building fabric standards, the dwellings will be designed to minimise transmission of heat through thermal bridging and will, as a minimum, achieve ACD PSi values.

Thermal modelling will be carried out for all junctions to assist in contributing to an improved dwelling emission rate (DER) and dwelling fabric energy efficiency (DFEE).

The following PSi values are proposed to be achieved through good design detailing with thermal modelling undertaken to demonstrate the calculated values:

Table 3

Junction with an External Wall	SAP Table k1 Ref.	Proposed Ψ
Other lintel (inc. other steel)	E2	0.100
Sill	E3	0.040
Jamb	E4	0.050
Ground Floor (normal)	E5	0.160
Party Floor between dwellings (Flats)	E7	0.070
Balcony between dwelling (continuous insulation)	E9	0.150
Balcony within/between dwelling (penetrated)	E23	0.300
Eaves (Ins. at ceil level - inverted)	E24	0.150
Flat Roof	E14	0.160
Flat Roof with parapet	E15	0.300
Corner (normal)	E16	0.090
Corner (inverted - int. area greater than ext.)	E17	-0.090
Party Wall between dwellings	E18	0.060
Junctions with a Party Wall	**SAP Table k1 Ref.**	**Proposed Ψ**
Ground Floor	P1	0.320
Int. Floor between dwellings (flats)	P3	0.000
Roof (Insulation at ceil level)	P4	0.480

Air Tightness

Good site quality standards will be adhered to achieve high-performance buildings with low air permeability rates. The dwellings will not exceed **3.50m³/hr/m² at 50 Pascal's**.

Low air permeability will be achieved through ensuring attention to detail during construction and making sure all punctures through the building envelope are adequately sealed.

All dwellings will be air tested on completion to demonstrate the actual air permeability rates.

Openings

The contractor shall endeavour to install windows with a BFRC or BSI certification to the ensure robustness of performance data.

A minimum glazing g-value of 0.45 will be included to assist in mitigation of the potential risk of overheating to meet compliance with Building Regulations Approved Document O.

Ventilation

In addition to the enhanced fabric measures, mechanical ventilation with heat recovery (MVHR), will be provided to all dwellings.

Lighting

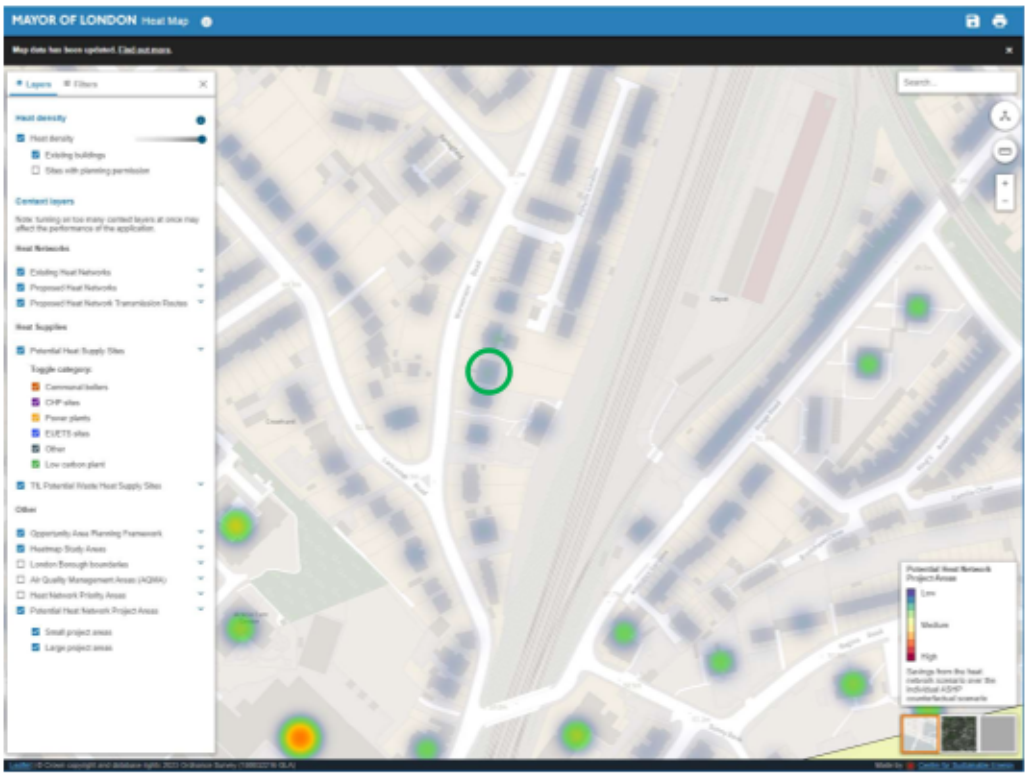
Installing efficient low energy light fittings internally and externally can significantly reduce a building's overall lighting load subsequently lowering its annual CO_2 emissions. To reduce the energy consumption associated with artificial lighting, energy-efficient fittings will be specified for 100% of internal and external lighting.

Lighting will be LED type and achieve a minimum 80 lumens per circuit watt.

Heating/HW	The use of electric heat pumps is proposed under the 'Green' stage of this assessment. In accordance with GLA energy assessment guidance, gas boilers have been included within the 'Baseline' and 'Lean' stage assessment calculations.
Appliances	Whilst not affecting the predicted regulated CO_2 emissions, where supplied, energy efficient, 'A' rated appliances will be incorporated to reduce unregulated energy demand. Advice will also be provided to the new occupants on energy efficiency and how to reduce energy use.
Be Lean Summary	**The proposal is to construct new dwellings to high thermal performance standards with u-values exceeding current minimum Building Regulation targets.** **The proposed building enhancements will result in an estimated 11% reduction in regulated CO_2 emissions against Building Regulations (2021) baseline emissions.**

6.2 Be Clean

The development falls within South Norwood, London, SE25 4DF, which is identified to be within a Heat Network Priority Area (HNPA) on the Mayor of London's Heat Map, extracts below, (site identified by green circle).



Heating Hierarchy

A. Connect to local existing or planned heat network

No existing network connections exist or are planned within proximity of the proposed development site.

B. Use zero-emission or local secondary heat sources

The second step of the heating hierarchy encourages the exploitation of local energy opportunities to maximise the use of locally available energy sources whilst minimising primary energy demand and carbon emissions. Secondary heat sources should be used before renewable energy sources but can also be used in conjunction with them to minimise the carbon intensity of the heat network.

Secondary heat includes environmental sources: air, water and ground; and waste sources: such as heat from the sewerage system, sewage treatment plants, the tube network, data centres and chiller systems.

No opportunities exist for the exploitation of local energy opportunities.

Use low-emission combined heat and power (only where there is a case for CHP to enable the delivery of an area-wide heat network, meet the development's electricity demand and provide demand response to the local electricity network)

Appendix 3 of the Mayor of London's Greater London Authority guidance on preparing energy assessments (October 2018), identifies the following types of development will not be considered appropriate for gas-engine CHP:

Small-medium Domestic developments: At this scale it is generally not economic to install CHP in domestic led, mixed-use developments, (and where CHP is installed it tends to have lower electrical efficiencies and therefore higher carbon emissions).

There are also growing concerns about the air quality impacts of gas-engine CHP at this scale.

In addition, due to the small landlord electricity demand, CHP installed to meet the base heat load would require the export of electricity to the grid. However, the administrative burden of managing CHP electricity sales at this small scale where energy service companies (ESCOs) are generally not active, and the low unit price available for small volumes of exported CHP electricity, means it is generally uneconomic for developers to pursue; this can lead to CHP being installed but not operated.

C. Use ultra-low NOx gas boilers

Current guidance suggests that a heating strategy led by ultra-low NOx gas boilers should only be considered when it has been clearly demonstrated that all of the above options have been investigated and ruled out or in cases where they represent interim heating solutions until a site is able to connect to an expanding or new heat network.

Be Clean Summary	**No district heat networks exist in close proximity to the development site. Site wide community heating is not considered economic to install in this small residential development.** **The use of ultra-low NOx gas boilers is not considered appropriate given the governments ambition to remove the inclusion of gas under the proposed 2025 Future Homes Standards.**

6.3 Be Green

Renewable Energy

A reduction in carbon emissions through the use of on-site renewable energy may be achieved through several technologies to generate heat or/and power. In determining the most suitable technology/ies consideration has been given to:

- Carbon reduction effectiveness.
- Cost feasibility.
- Practicality.
- Planning restrictions.
- Site related constraints.
- Operating noise consideration.
- Ongoing maintenance.
  Life Cycle Costs.

GSHPs

Ground Source Heat Pumps (GSHPs)	
CO_2 reduction effectiveness:	Estimated potential 60-70% reduction in CO_2 emissions.
Cost feasibility:	High.
Practicality:	Practical for new buildings with high fabric efficiency standards and low energy demand.
Planning restrictions:	No abnormal planning restrictions.
Site related constraints:	Limited external space available for boreholes. Depth and feasibility would be subject to thermogeological assessment, heat loss calculations and detailed design feasibility.
Operating noise:	Low.
Ongoing maintenance:	Medium - None to boreholes, annual maintenance requirement for heat pumps.
Feasibility:	**Not considered feasible for this development.**

ASHPs

Air Source Heat Pumps (ASHPs)	
CO_2 reduction effectiveness:	Estimated potential 50-60% reduction in CO_2 emissions.
Cost feasibility:	Medium - dependant on detailed design.
Practicality:	Practical for new buildings with high fabric efficiency standards and low energy demand.
Planning restrictions:	Consideration of externally mounted plant and operating noise. Heat pumps would need to be located externally, near the dwellings, either disguised or discreetly hidden, to reduce their visual impact.
Site related constraints:	Space available for plant. Space exists to the terrace roof to accommodate plant.
Operating noise:	Low - consideration will be required to the siting of the heat pumps to ensure disturbance is not caused to the occupiers or neighbouring properties.
Ongoing maintenance:	Medium - Annual maintenance requirement for heat pumps.
Feasibility:	**ASHPs are considered appropriate for the building.**

PV

Photovoltaics (PV)	
CO_2 reduction effectiveness:	Significant % reductions available, limited only by available roof area. Unlikely to reach planning CO2 emission targets alone.
Cost feasibility:	Low – Circa £1,500/kWp.
Practicality:	PV easy to install and can be fed to building providing a reduction in the energy demand, fuel bills and CO_2 emissions.
Planning restrictions:	Consideration of externally mounted panels.
Site related constraints:	Limitation of pitched roof space in South (E-W arc), orientation due to roof configuration. Flat roofs proposed for biodiversity measures.
Operating noise:	None.
Ongoing maintenance:	Low – Occasional cleaning of panels.
Feasibility:	**Considered feasible for this development.**

Solar Thermal

Solar Thermal	
CO_2 reduction effectiveness:	Reduction in CO_2 emissions limited by available roof space and demand for hot water. Estimated potential 5-10% reduction in CO_2 emissions.
Cost feasibility:	Medium.
Practicality:	Distribution through building more difficult to achieve without heat losses and subsequent contribution to building overheating.
Planning restrictions:	Consideration of externally mounted panels.
Site related constraints:	Limitation of pitched roof space in South (E-W arc), orientation due to roof configuration. Flats roofs proposed for biodiversity measures.
Operating noise:	Negligible.
Ongoing maintenance:	Medium – Annual maintenance requirements of mechanical plant.
Feasibility:	**Not considered feasible for this development.**

Wind Turbines

Wind Turbines	
CO_2 reduction effectiveness:	Estimated potential 3-5% reduction in CO_2 emissions
Cost feasibility:	Medium – High.
Practicality:	The standalone wind turbine would require sufficient open space on the site to locate the turbine and be far enough away from buildings to be able to work effectively. Building mounted wind turbines have not been shown to be highly effective.
Planning restrictions:	Consideration of higher impact externally mounted plant and effect on neighbouring properties.
Site related constraints:	Limitations on available roof space.
Operating noise:	Medium-High
Ongoing maintenance:	High – Annual maintenance of motors.
Feasibility:	**Not considered feasible for this development.**

Proposal	On consideration of the above, individual ASHP's are considered the most feasible solution for providing heating and hot water to the dwellings and achieve a significant reduction in CO_2 emissions across the site. Electricity and in particular heat pumps form the key basis of the Governments current approach to achieving zero carbon and follows the suggested path outlined in the proposed Future Homes Standard. ASHP's can be located discreetly at ground level or to the terrace roofs externally to provide a low carbon source of heating and hot water. See appendix A for proposed ASHP locations.
Be Green Summary	**Individual ASHP's are considered the most feasible renewable technology for this development; an estimated 54% reduction in regulated CO_2 emissions will be achieved against Building Regulations (2021) baseline emissions.**

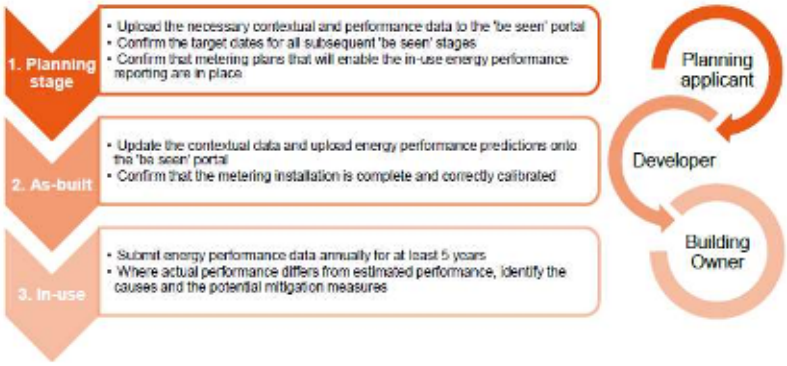
6.4 Be Seen

The 'be seen' policy establishes post-construction monitoring as good practice, enabling developers and building owners to better understand their buildings and identify methods for improving energy performance from the project inception stage and throughout the building's lifetime. An effectively implemented post-construction monitoring regime can have a number of benefits including environmental, (for example, carbon emissions reduction), and socio-economic, (for example, reduced occupants' bills, raised awareness around energy usage).

The 'Be seen' energy monitoring guidance requires the reporting of energy performance data as a scheme is planned, built out and in use. The responsibility for providing the data at each reporting stage lies with the legal owner of the development at that particular reporting stage.

Figure 2.1 outlines the 'be seen' process through the reporting stages of a development, including who specifically is responsible for reporting at each stage. Appendix 3 sets out these responsibilities in more detail.

Figure 2.1 'Be seen' process and responsibilities



Proposal

The Mayor of London, London Plan Guidance Documents, 'Be Seen' energy monitoring guidance (September 2021) will be followed in the reporting of energy performance data.

At planning stage, the applicant will adopt third-party quality assurance mechanisms to ensure accuracy in their submissions of both predicted and measured performance. The applicant will ensure that all affected parties are aware of their responsibilities at subsequent reporting stages.

At as-built stage, an update will be provided to the GLA from the Part L calculations used to predict the output of renewable energy technologies, and the SAP calculations used to predict the regulated energy uses for residential buildings. This data will be supplied by accredited assessors and will be subject to third-party audit.

Following completion, the building owner will take responsibility for submitting in-use data annually for at least 5 years.

Be Seen Summary	**The Mayor of London, London Plan Guidance Documents, 'Be Seen' energy monitoring guidance (September 2021) will be followed in the reporting of energy performance data.**

7. Carbon Emission Summary

Part L 2021 GLA Carbon Emission Reporting Spreadsheet Extract

Part L 2021 Performance

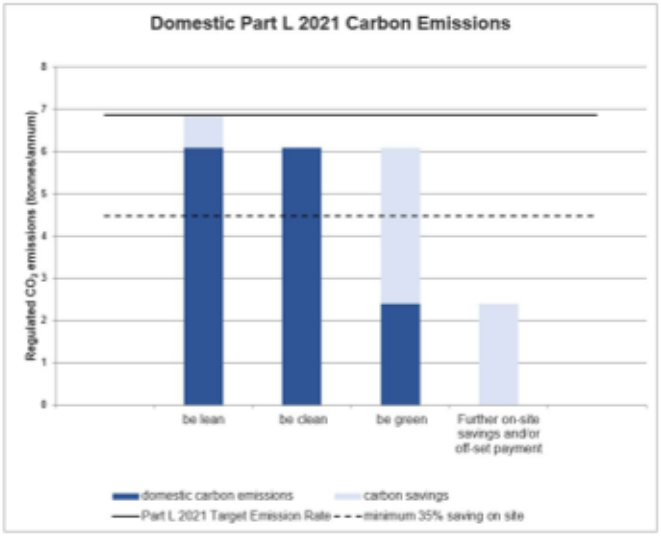
Residential

Table 1: Carbon Dioxide Emissions after each stage of the Energy Hierarchy for residential buildings

	Carbon Dioxide Emissions for residential buildings (Tonnes CO_2 per annum)	
	Regulated	Unregulated
Baseline: Part L 2021 of the Building Regulations Compliant Development	6.9	10.4
After energy demand reduction (be lean)	6.1	10.4
After heat network connection (be clean)	6.1	10.4
After renewable energy (be green)	2.4	10.4

Table 2: Regulated Carbon Dioxide savings from each stage of the Energy Hierarchy for residential buildings

	Regulated residential carbon dioxide savings	
	(Tonnes CO_2 per annum)	(%)
Be lean: savings from energy demand reduction	0.8	11%
Be clean: savings from heat network	0.0	0%
Be green: savings from renewable energy	3.7	54%
Cumulative on site savings	**4.5**	65%
Annual savings from off-set payment	2.4	-



See appendix C for SAP block compliance report.

Hierarchal Summary

The development is estimated to achieve a 65% reduction in regulated new build CO_2 emissions against Building Regulations (2021) baseline emissions, exceeding Croydon Council SP6.3, which requires new-build residential development of fewer than 10 units to achieve a minimum of 19% CO_2 reduction beyond the Building Regulations Part L (2013).

8.0 Summary of Proposals

Croydon Council support the energy reduction strategy outlined in the London Plan planning policy. Developments should follow the Mayor of London's energy hierarchy to:

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

New-build residential development of fewer than 10 units should achieve 19% CO_2 reduction beyond the Building Regulations Part L (2013).

The proposal is to construct new dwellings to high thermal performance standards with u-values exceeding minimum Building Regulation targets. These building enhancements will result in an estimated 11% site wide reduction in regulated CO_2 emissions against current Building Regulations (2021) baseline emissions.

No district heat networks exist in proximity to the development site and site wide community heating is not considered economic to install in this small residential development.

Individual ASHP's are considered the most feasible renewable technology for this development with an estimated 54% reduction in regulated CO_2 emissions predicted to achieved against current Building Regulations (2021) baseline emissions.

The Mayor of London, London Plan Guidance Documents, 'Be Seen' energy monitoring guidance (September 2021) will be followed in the reporting of energy performance data.

The development is estimated to achieve an overall 65% reduction in site wide regulated CO_2 emissions against Building Regulations (2021) baseline emissions, exceeding Croydon Councils SP6.3, which requires new-build residential development of fewer than 10 units to achieve a minimum of 19% CO_2 reduction beyond the Building Regulations Part L (2013).

The development will be constructed and meet compliance with all other criterion of Approved Document Part L of the current Building Regulations (2021).

Appendix A – Indicative ASHP Layout Plan

Second floor plan

Appendix B – Renewable Example Technical Details

Heating | Product Information

MITSUBISHI ELECTRIC

PUZ-WM60VAA(-BS)

Ecodan R32
Monobloc Air Source Heat Pump

R32

Key Features:

- A+++ high efficiency system
- Ultra quiet noise levels
- Maintains full heating capacity at low temperatures
- Zero carbon solution
- MELCloud enabled

Key Benefits:

- Ultra low running cost
- Flexible product placement
- Confident and quick product selection
- Help to tackle the climate crisis
- Remote control, monitoring, maintenance and technical support

MELCloud

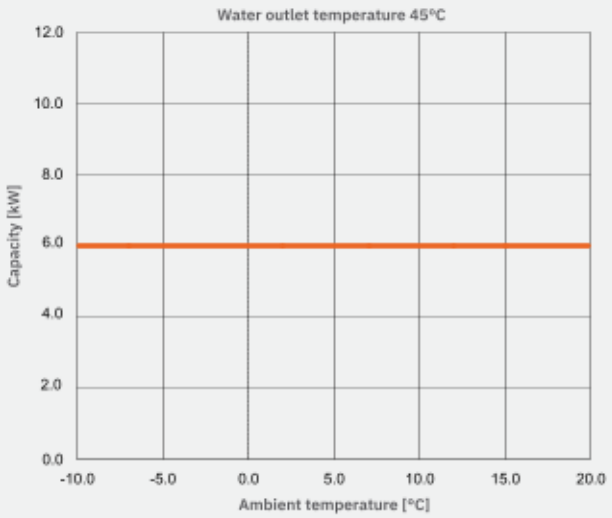
Manufactured in the UK

037-0033-20-01

PUZ-WM60VAA(-BS)
Ecodan R32
Monobloc Air Source Heat Pump

OUTDOOR UNIT		PUZ-WM60VAA(-BS)
HEAT PUMP SPACE HEATER - 55°C	ErP Rating	A++
	η_s	142%
	SCOP (MCS)	3.57
HEAT PUMP SPACE HEATER - 35°C	ErP Rating	A+++
	η_s	190%
	SCOP (MCS)	4.81
HEAT PUMP COMBINATION HEATER - Large Profile*1	ErP Rating	A+
	η_{wh}	145%
HEATING*2 (A-7/W35)	Capacity (kW)	6.0
	Power Input (kW)	1.88
	COP	3.20
OPERATING AMBIENT TEMPERATURE (°C DB)		-20 ~ +35
SOUND DATA*3	Pressure Level at 1m (dBA)	45
	Power Level (dBA)*4	58
WATER DATA	Pipework Size (mm)	22
	Flow Rate (l/min)	17
	Water Pressure Drop (kPa)	8.0
DIMENSIONS (mm)	Width	1050
	Depth	480
	Height	1020
WEIGHT (kg)		98
ELECTRICAL DATA	Electrical Supply	220-240v, 50Hz
	Phase	Single
	Nominal Running Current (MAX) (A)*5	5.68 [13]
	Fuse Rating - MCB Sizes (A)*6	16
REFRIGERANT CHARGE (kg) / CO_2 EQUIVALENT (t)	R32 (GWP 675)	2.2 / 1.49

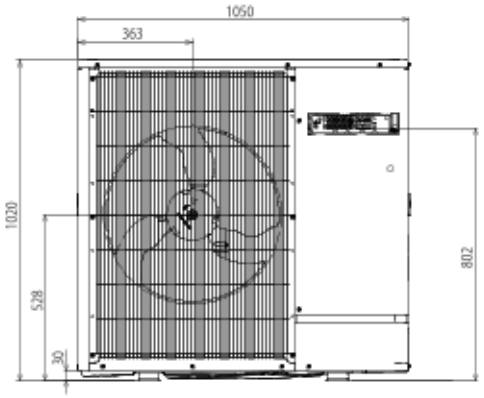
NOMINAL HEATING CAPACITY



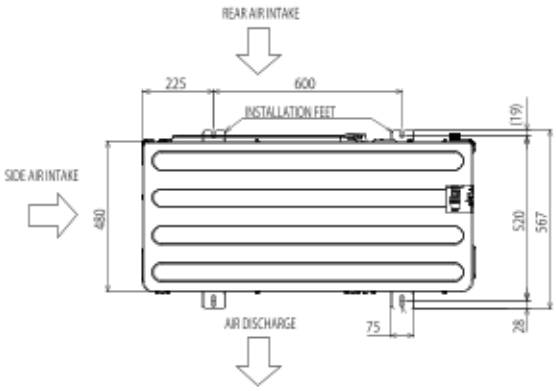
Notes:
*1 Combination with ESPT20X Cylinder
*2 Under normal heating conditions at outdoor temp: -7°CDB / -8°CWB, outlet water temp 35°C, inlet water temp 30°C.
*3 Under normal heating conditions at outdoor temp: 7°CDB / 6°CWB, outlet water temp 55°C, inlet water temp 47°C as tested to BS EN14511.
*4 Sound power level tested to BS EN12102.
*5 Under nominal heating conditions at outdoor temp: 7°C, outlet water temp: 35°C.
*6 MCB Sizes BS EN60898-2 & BS EN60947-2.
η_s is the seasonal space heating energy efficiency (SSHEE) η_{wh} is the water heating energy efficiency

PUZ-WM60VAA(-BS) DIMENSIONS

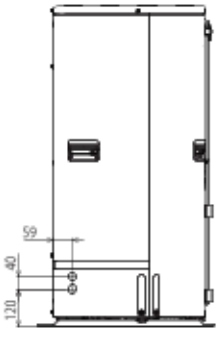
FRONT VIEW



UPPER VIEW



SIDE VIEW



All dimensions (mm)

MITSUBISHI ELECTRIC
Changes for the Better

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IRELAND Mitsubishi Electric Europe, Westgate Business Park, Ballymount, Dublin 24, Ireland. Telephone: (01) 419 8800 Fax: (01) 419 8890 International code: (003531)

Note: Refer to 'Installation Manual' and 'Instruction Book' for further 'Technical Information'. The fuse rating is for guidance only and please refer to the relevant databook for detailed specification. It is the responsibility of a qualified electrician/ electrical engineer to select the correct cable size and fuse rating based on current regulation and site specific conditions. Mitsubishi Electric's air conditioning equipment and heat pump systems contain a fluorinated greenhouse gas, R410A (GWP:2088), R32 (GWP:675), R407C (GWP:1774), R134a (GWP:1430), R513A (GWP:631), R454B (GWP:466), R1234ze (GWP:7) or R1234yf (GWP:4). *These GWP values are based on Regulation (EU) No 517/2014 from IPCC 4th edition. In case of Regulation (EU) No.626/2011 from IPCC 3rd edition, these are as follows. R410A (GWP:1975), R32 (GWP:550), R407C (GWP:1650) or R134a (GWP:1300).

Effective as of August 2020

Green Gateway greengateway.mitsubishielectric.co.uk

Appendix C – Draft SAP Block Compliance Report

Block Compliance

Block Reference	GREEN - 13/11/2023	Issued on Date	14/11/2023
Block Name			
Calculation Type	New Build (As Designed)		
Assessor Details	Mr. Liam Quinn	Assessor ID	Z699-0001
Client			

Block Compliance Report - DER

Block Reference: GREEN - 13/11/2023	Block Name:			
Property-Assessment Reference	Floor area (m^2)	DER ($kgCO_2/m^2$)	TER ($kgCO_2/m^2$)	% DER/TER
P01 - GREEN	53.00	4.97	13.40	62.91 %
P02 - GREEN	66.00	4.68	13.55	65.46 %
P03 - GREEN	80.00	3.98	11.61	65.72 %
P04 - GREEN	53.00	5.16	15.24	66.14 %
P05 - GREEN	66.00	4.17	11.43	63.52 %
P06 - GREEN	80.00	3.61	9.58	62.32 %
P07 - GREEN	66.00	4.87	14.66	66.78 %
P08 - GREEN	80.00	4.23	12.95	67.34 %
Totals:	544.00	35.67	102.42	
Average DER = 4.39 $kgCO_2/m^2$	% DER/TER	PASS		
Average TER = 12.62 $kgCO_2/m^2$	65.22 %			

Block Compliance Report - DFEE

Block Reference: GREEN - 13/11/2023	Block Name:			
Property-Assessment Reference	Floor area (m^2)	DFEE ($kWh/m^2/yr$)	TFEE ($kWh/m^2/yr$)	% DFEE/TFEE
P01 - GREEN	53.00	38.57	39.81	3.11 %
P02 - GREEN	66.00	37.62	37.09	-1.42 %
P03 - GREEN	80.00	30.67	32.27	4.97 %
P04 - GREEN	53.00	42.33	48.17	12.12 %
P05 - GREEN	66.00	27.72	27.37	-1.26 %
P06 - GREEN	80.00	22.42	22.88	2.03 %
P07 - GREEN	66.00	41.37	42.18	1.92 %
P08 - GREEN	80.00	35.57	38.36	7.28 %

Block Compliance

Totals:	544.00	276.26	288.13	
Average DFEE = 33.86 $kgCO_2/m^2$	% DFEE/TFEE	PASS		
Average TFEE = 35.26 $kgCO_2/m^2$	3.96 %			

Block Compliance Report - DPER

Block Reference: GREEN - 13/11/2023	Block Name:			
Property-Assessment Reference	Floor area (m^2)	DPER ($kWh/m^2/yr$)	TPER ($kWh/m^2/yr$)	% DPER/TPER
P01 - GREEN	53.00	52.77	70.33	24.97 %
P02 - GREEN	66.00	49.68	71.41	30.43 %
P03 - GREEN	80.00	42.37	60.93	30.46 %
P04 - GREEN	53.00	54.75	80.23	31.76 %
P05 - GREEN	66.00	44.58	60.00	25.70 %
P06 - GREEN	80.00	38.69	49.96	22.56 %
P07 - GREEN	66.00	51.64	77.41	33.29 %
P08 - GREEN	80.00	44.89	68.09	34.07 %
Totals:	544.00	379.37	538.36	
Average DPER = 46.70 $kgCO_2/m^2$	% DPER/TPER	PASS		
Average TPER = 66.32 $kgCO_2/m^2$	29.59 %			